	ESWAR COLLEGE OF ENGINEERING NARASARAOPET Approved by AICTE, New Delhi., Affiliated to JNTU, Kakinada Kesanupalli Village, Narasaraopet – 522 601, A.P.
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SUMMARY OF COURSE OUTCOMES

ESWAR COLLEGE OF ENGINEERING

(Approved by AICTE, & Affiliated to JNTUK, A.P.)
KESANUPALLI (V), NARASARAOPETA-522549, AP
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DEPARTMENT OF CIVIL ENGINEERING

Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2022-2023**

Course Name: Mathematics –III	
Course Code: CE2101	
CE2101.1	Determine the physical meaning of different operators such as gradient, curl and divergence
CE2101.2	Estimate the work done against a field, circulation and flux using vector calculus
CE2101.3	Apply the Laplace transform for solving differential equations
CE2101.4	Compute the Fourier series of periodic signals
CE2101.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
CE2101.6	Identify solution methods for partial differential equations that model physical processes

Course Name: Strength of materials-I	
Course Code: CE2102	
CE2102.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
CE2102.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
CE2102.3	Knowledge of bending concepts and calculation of section modulus
CE2102.4	Determination of stresses developed in the beams and deflections due to various loading conditions
CE2102.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
CE2102.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Fluid Mechanics	
Course Code: CE2103	
CE2103.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
CE2103.2	Calculate the forces that act on submerged planes and curves
CE2103.3	Ability to analyse various types of fluid flows
CE2103.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
CE2103.5	Determination of order to predict relevant pressures, velocities and forces

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CE2103.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels
Course Name: Surveying and Geometrics	
Course Code: CE2104	
CE2104.1	To Apply the knowledge to calculate angles, distances and levels
CE2104.2	Identify data collection methods and prepare field notes
CE2104.3	Understand the working principles of survey instruments, measurement errors and corrective measures
CE2104.4	Determination of survey data and compute areas and volumes, levels by different type of equipment
CE2104.5	Apply the surveying principles to determine areas and volumes and setting out curves
CE2104.6	Able to Identification of source of errors and rectification methods

Course Name: Highway Engineering	
Course Code: CE2105	
CE2105.1	Able to draw a Plan highway network for a given area
CE2105.2	To Determine Highway alignment
CE2105.3	Design Intersections and prepare traffic management plans
CE2105.4	Judge suitability of pavement materials and design flexible and rigid pavements
CE2105.5	To classify the different concepts in the field of Highway Engineering
CE2105.6	Able to know the types and classification of roads and intersections

Course Name: Concrete Technology Lab	
Course Code: CE2106	
CE2106.1	Able to Determine the consistency and fineness of cement
CE2106.2	To understand the initial and final setting time of cement
CE2106.3	To know the knowledge about the specific gravity and soundness of cement
CE2106.4	To Determine the workability of cement concrete by compaction factor
CE2106.5	Applying the rebound hammer to know the non-destructive test of concrete
CE2106.6	Analyse flakiness and elongation index of aggregates

Course Name: Highway Engineering lab	
Course Code: CE2107	
CE2107.1	Able to Test aggregates and judge the suitability of materials for the road construction
CE2107.2	Analyse the optimum bitumen content for Bituminous Concrete
CE2107.3	To Determine the traffic volume, speed and parking characteristics
CE2107.4	Able to Draw the highway cross sections and intersections
CE2107.5	To differentiate the carry out surveys for traffic volume, speed and parking
CE2107.6	Understand to the stability for the given bituminous mix

Course Name: Surveying field work –I Lab	
Course Code: CE2108	
CE2108.1	To understand the various types of surveying methods
CE2108.2	Determination of the areas by applying the chain surveying
CE2108.3	Analyse the area calculations by triangulations methods
CE2108.4	Finding the area boundaries by plane table survey
CE2108.5	Determination of distance between two inaccessible points by using compass
CE2108.6	To understand the Height of the instrument method

Year/Sem: II B.Tech II SEM

Course Name: Complex Variables and Statistical Methods	
Course Code: CE2201	
CE2201.1	To apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic
CE2201.2	Able to know the differentiation and integration of complex functions used in engineering problems
CE2201.3	Understand the Cauchy residue theorem to evaluate certain integrals
CE2201.4	Apply discrete and continuous probability distributions
CE2201.5	Knowledge to design the components of a classical hypothesis test
CE2201.6	Differentiate the infer the statistical inferential methods based on small and large sampling tests

Course Name: Strength of materials -II	
Course Code: CE2202	
CE2202.1	Determination of Principal stresses and strains developed in cross section of the beams
CE2202.2	Understand the concepts of torsion and governing torsion equation, and there by calculate the power transmitted by shafts and springs
CE2202.3	To classify columns and calculation of load carrying capacity and to assess stresses due to axial and lateral loads
CE2202.4	Analyse the unsymmetrical bending in beams Location of neutral axis Deflection of beams under unsymmetrical bending
CE2202.5	Knowledge about different engineering applications like shafts, springs, columns and struts subjected to different loading conditions
CE2202.6	Classify the concepts of failures in the material by theories of failures

Course Name: Hydraulics and Hydraulic Machinery	
Course Code: CE2203	
CE2203.1	Differentiate uniform and non-uniform open channel flow problems
CE2203.2	Apply the principals of dimensional analysis and similitude in hydraulic model testing
CE2203.3	Understand the working principles of various hydraulic machineries and pumps
CE2203.4	Analyse the characteristics of hydraulic jump
CE2203.5	Determination of dimensional analysis for fluid flow problems
CE2203.6	Classify the various types of various types of hydraulic machines and Pumps

Course Name: Environmental Engineering	
Course Code: CE2204	
CE2204.1	Analyse source based on quality and quantity and Estimate design population and water demand
CE2204.2	Design a water treatment plant for a village/city
CE2204.3	Estimation of the Sewage Treatment Plant for a town/city
CE2204.4	Classify the sewers and plumbing systems for building
CE2204.5	Apply the various methods to treatment the water
CE2204.6	Able to know the distribution systems of the water

Course Name: Managerial Economics & Financial Analysis	
Course Code: CE2205	
CE2205.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
CE2205.2	The knowledge of understanding of the Input-Output-Cost relationships
CE2205.3	Estimation of the least cost combination of inputs
CE2205.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CE2205.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
CE2205.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Course Name: Environmental Engineering lab	
Course Code: CE2206	
CE2206.1	Estimate some important characteristics of water, wastewater and soil
CE2206.2	Draw some conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE2206.3	Determination of Chloride, EC and Salinity of Soil and suggest their suitability for Construction/Agriculture
CE2206.4	Understand the strength of the sewage in terms of BOD and COD
CE2206.5	Able to classify the various properties water
CE2206.6	Demonstration of WHO guidelines, Effluent standards and standards for Construction/ Agriculture/Industry

Course Name: Strength of materials Lab	
Course Code: CE2207	
CE2207.1	Determination of Tension test on Mild steel bar by UTM
CE2207.2	Understand the Bending test on cantilever beam of steel / wood
CE2207.3	Analyse the torsion test on specimen sample
CE2207.4	Able to know the Compression test on wood or concrete
CE2207.5	Apply the Brinnell's / Rock well's hardness testing machine for hardness of specimen
CE2207.6	Define the Verification of Maxwell's Reciprocal theorem on beams

Course Name: Fluid Mechanics & Hydraulics Machinery Lab	
Course Code: CE2208	
CE2208.1	Understand the Calibration of Venturi meter & Orifice meter
CE2208.2	Determination of Coefficient of discharge for a small orifice and mouth piece by a constant head and variable head method
CE2208.3	Able to know the Verification of Bernoulli's equation
CE2208.4	Define the Performance test on Pelton wheel turbine
CE2208.5	Analyse the Calibration of contracted Rectangular Notch and /or Triangular Notch
CE2208.6	Apply the Hydraulic jump test setup to study of Study of Hydraulic jump

Year/Sem: III B.Tech I SEM

Course Name: Structural Analysis	
Course Code: CE3101	
CE3101.1	Differentiate the between the determinate and indeterminate structures
CE3101.2	Analyse behaviour of structures due to the expected loads, including the moving loads, acting on the structure
CE3101.3	Classify the bending moment and shear forces in beams for different fixity conditions
CE3101.4	Understand the continuous beams using various methods
CE3101.5	Determination of three moment method, slope deflection method, energy theorems
CE3101.6	Able to know the influence line diagrams for various types of moving loads on beams/bridges

Course Name: Design and Drawing of Reinforced Concrete Structures	
Course Code: CE3102	
CE3102.1	Able to understand the various design methods in RCC
CE3102.2	Differentiate the over and under reinforced structures with loading
CE3102.3	Analysis and design of flexural members and detailing
CE3102.4	Classification of various types slabs in RCC
CE3102.5	Design different type of compression members and footings
CE3102.6	Understand different types of footings and design

Course Name: Geotechnical engineering -I	
Course Code: CE3103	
CE3103.1	Able to know the definition of the various quantities related to soil mechanics and Establish their inter-relationships.
CE3103.2	Determination of the various index properties of the soils and classify the soils
CE3103.3	Understand the importance of the different engineering properties of the soil
CE3103.4	Classify the properties of compaction, permeability, consolidation and shear strength and determine them in the laboratory
CE3103.5	understand the concept of shear strength of soils
CE3103.6	Differentiate the shear parameters of sands and clays and the areas of their application

Course Name: Environmental Management	
Course Code: CE3104	
CE3104.1	Understand the Plan and design the water and wastewater systems
CE3104.2	Analyse the he source of emissions and select proper control systems
CE3104.3	Able to know the Design & estimation of water supply system for a city
CE3104.4	knowledge about various environmental aspects
CE3104.5	Apply the suitable treatment flow for raw water treatments
CE3104.6	Differentiate the importance of Water and Wastewater Treatment Plant and supply system

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Course Name: Construction Technology & Management	
Course Code: CE3105	
CE3105.1	Analyse the importance of construction planning
CE3105.2	Define the functioning of various earth moving equipment
CE3105.3	Able to know the methods of production of aggregate products and concreting
CE3105.4	Apply the gained knowledge to project management and construction techniques
CE3105.5	Classify the importance of safety in construction projects
CE3105.6	Understand the concept of project management including network drawing and monitoring

Course Name: Survey Camp lab (Field Work-II)	
Course Code: CE3106	
CE3106.1	Determination Horizontal and Vertical Angles by the method of repetition method by theodolite
CE3106.2	Define the distance between two inaccessible points
CE3106.3	Able to know the curve setting method
CE3106.4	Apply the total station method to know the distance between two inaccessible points
CE3106.5	Analyse the Contouring maps
CE3106.6	Understand the Heights and distance problems using tachometric principles

Course Name: Geotechnical Engineering Lab	
Course Code: CE3107	
CE3107.1	Able to know the permeability of soils
CE3107.2	Understand the Compaction, Consolidation and shear strength characteristics
CE3107.3	Analyse the index properties of the soils
CE3107.4	Differentiate the various types and classifications of the soils
CE3107.5	Apply Atterberg's Limits to know plasticity of soils
CE3107.6	Differentiate the Permeability, Compaction, consolidation, shear strength parameters & CBR value

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Year/Sem: III B.Tech II SEM

Course Name: Design And Drawing of Steel Structures	
Course Code: CE3201	
CE3201.1	Understand the various Work relevant IS codes
CE3201.2	Analysis and design of flexural members and detailing
CE3201.3	Able to Design compression members of different types with connection detailing
CE3201.4	Understand Design of tension and compression members in trusses
CE3201.5	Differentiate the Plate girder and Gantry Girder and their Design
CE3201.6	Apply the drawings pertaining to different components of steel structures

Course Name: Water Resource Engineering	
Course Code: CE3202	
CE3202.1	Able to understanding of the theories and principles governing the hydrologic processes
CE3202.2	Analyse the quantify hydrological components
CE3202.3	Apply concepts in hydrologic design of water resources projects
CE3202.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE3202.5	Differentiate flow mass curve and flow duration curve
CE3202.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Geotechnical Engineering-II	
Course Code: CE3203	
CE3203.1	Able to understand the various types of shallow foundations
CE3203.2	Analyse and compute the magnitude of foundation settlement and decide on the size of the foundation accordingly
CE3203.3	Define the field test data and arrive at the bearing capacity
CE3203.4	Design the principles of bearing capacity of piles
CE3203.5	Differentiate the principles of important field tests such as SPT and Plate bearing test
CE3203.6	Able to know the concepts of pile foundations and determine their load carrying capacity

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Course Name: Advanced Structural Analysis	
Course Code: CE3204	
CE3204.1	Differentiate Determinate and Indeterminate Structures
CE3204.2	Able to understand the Carryout lateral Load analysis of structures
CE3204.3	Analyse Cable and Suspension Bridge structures
CE3204.4	Apply Moment Distribution, Kani's Method and Matrix methods
CE3204.5	Define the elastic curves on the structures
CE3204.6	Classify the shear force and bending moment diagrams

Course Name: Elements of Civil Engineering	
Course Code: CE3205	
CE3205.1	Able to understand the basics of Civil Engineering concepts
CE3205.2	Analyse the surveying the elevations and mapping
CE3205.3	Classify the construction materials and elements
CE3205.4	Able to know overall infrastructure development
CE3205.5	Applying various methods to water resources development and grid system
CE3205.6	Differentiate the watershed methods and sources of water

Course Name: Estimation , Costing and Contracts Lab	
Course Code: CE3206	
CE3206.1	Able to determine the quantities of different components of buildings
CE3206.2	Understand the quantity calculations of different components of the buildings
CE3206.3	Define the position to find the cost of various building components
CE3206.4	Applying the Conditions of contract, Valuation of buildings
CE3206.5	Able to know the capable of finalizing the value of structures
CE3206.6	Differentiate single, double and four roomed buildings by Detailed Estimation of Buildings using individual wall method

Course Name: Remote Sensing & GIS Lab	
Course Code: CE3207	
CE3207.1	Able to understand the Work comfortably on GIS software
CE3207.2	Define Digitize and create thematic map and extract important features
CE3207.3	Classifying the Develop digital elevation model
CE3207.4	Differentiate the Interpretation and Estimation of features from satellite
CE3207.5	Analyse and Modelling using GIS software
CE3207.6	Apply GIS software to simple problems in water resources, transportation engineering and Agriculture

Course Name: Civil Engineering Practice Lab	
Course Code: CE3208	
CE3208.1	Able to know practical aspects of Civil Engineering profession to the students
CE3208.2	Define various design and construction procedures of Civil Engineering projects
CE3208.3	Applying important codes and by-laws that will benefit young professionals
CE3208.4	Classify Important case studies of Civil Engineering including buildings, bridges
CE3208.5	Analyse Environmental impacts, Safety rules for construction, Energy consumption, Sustainability and recycling practices, Optimization and costing
CE3208.6	Differentiate the retrofitting buildings and models

Year/Sem: IV B.Tech I SEM

Course Name: Design And Drawing of Steel Structures	
Course Code: CE4101	
CE4101.1	Understand the various Work relevant IS codes
CE4101.2	Analysis and design of flexural members and detailing
CE4101.3	Able to Design compression members of different types with connection detailing
CE4101.4	Understand Design of tension and compression members in trusses
CE4101.5	Differentiate the Plate girder and Gantry Girder and their Design
CE4101.6	Apply the drawings pertaining to different components of steel structures

Course Name: Geotechnical Engineering-II	
Course Code: CE4102	
CE4102.1	Able to understand the various types of shallow foundations
CE4102.2	Analyse and compute the magnitude of foundation settlement and decide on the size of the foundation accordingly
CE4102.3	Define the field test data and arrive at the bearing capacity
CE4102.4	Design the principles of bearing capacity of piles
CE4102.5	Differentiate the principles of important field tests such as SPT and Plate bearing test
CE4102.6	Able to know the concepts of pile foundations and determine their load carrying capacity

Course Name: Remote Sensing & GIS	
Course Code: CE4103	
CE4103.1	Understand the basic principles of Remote Sensing and GIS techniques
CE4103.2	Able to learn various types of sensors and platforms
CE4103.3	Differentiate the aerial photographs and satellite imageries
CE4103.4	Create and input spatial data for GIS application
CE4103.5	Apply RS and GIS concepts for application in Civil Engineering
CE4103.6	Classify the spatial data structures, raster and vector data formats

Course Name: Elements of Civil Engineering	
Course Code : CE4104	
CE4104.1	Able to understand the basics of Civil Engineering concepts
CE4104.2	Analyse the surveying the elevations and mapping
CE4104.3	Classify the construction materials and elements
CE4104.4	Able to know overall infrastructure development
CE4104.5	Applying various methods to water resources development and grid system
CE4104.6	Differentiate the watershed methods and sources of water

Course Name: Earth & Rock fill Dams	
Course Code: CE4105	
CE4105.1	Able to design earth and rock fill dams
CE4105.2	Understand and get familiarity with slope stability calculations
CE4105.3	Classify the prevention techniques for slope failures
CE4105.4	Differentiate the Failures, Damages and Protection of Earth Dams
CE4105.5	Define total stress analysis versus effective Stress analysis
CE4105.6	Able to know Suitability of materials for earth and rock fill dams

Course Name: Remote Sensing & GIS Lab	
Course Code: CE4106	
CE4106.1	Able to understand the Work comfortably on GIS software
CE4106.2	Define Digitize and create thematic map and extract important features
CE4106.3	Classifying the Develop digital elevation model
CE4106.4	Differentiate the Interpretation and Estimation of features from satellite image
CE4106.5	Analyse and Modelling using GIS software
CE4106.6	Apply GIS software to simple problems in water resources, transportation engineering and Agriculture

Course Name: **Geotechnical Engineering Lab**	
Course Code: CE4107	
CE4107.1	Able to know the permeability of soils
CE4107.2	Understand the Compaction, Consolidation and shear strength characteristics
CE4107.3	Analyse the index properties of the soils
CE4107.4	Differentiate the various types and classifications of the soils
CE4107.5	Apply Atterberg's Limits to know plasticity of soils
CE4107.6	Differentiate the Permeability, Compaction, consolidation, shear strength parameters & CBR value

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Year/Sem: IV B.Tech II SEM

Course Name: Estimation Specifications and Contract	
Course Code: CE4201	
CE4202.1	Able to determine the quantities of different components of buildings
CE4202.2	Analyse position to find the cost of various building components
CE4202.3	Understand the capable of finalizing the value of structures
CE4202.4	Differentiate various specifications and components of the buildings
CE4202.5	Understand the quantity calculations of different components of the buildings
CE4202.6	Classifying the types of contracts & documents

Course Name: Disaster Management & Mitigation	
Course Code: CE4202	
CE4202.1	Application of Disaster Concepts to Management
CE4202.2	To Understand Definitions and Terminologies used in Disaster Management
CE4202.3	Analysing Relationship between Development and Disasters
CE4202.4	Ability to understand Categories of Disasters
CE4202.5	Differentiate the types of disasters
CE4202.6	Able to know the responsibilities of government, community, local institutions, NGOs and other stakeholders

Course Name: Ground Improvement Techniques	
Course Code: CE4203	
CE4203.1	Able to possess the knowledge of various methods of ground improvement and their suitability
CE4203.2	Differentiate to learn the concepts, purpose and effects of grouting
CE4203.3	Understand the position to design a reinforced earth embankment and check its stability
CE4203.4	Classify the various functions of Geosynthetics and their applications in Civil Engineering practice
CE4203.5	Able to know reinforced earth technology and soil nailing can obviate the problems posed by the conventional retaining walls
CE4203.6	Defining the improvement of engineering performance of soils

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DEPARTMENT OF CIVIL ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2021-2022**

Course Name: Mathematics –III(Vector Calculus, Transforms and PDE)	
Course Code: CE2101	
CE2101.1	Determine the physical meaning of different operators such as gradient, curl and divergence
CE2101.2	Estimate the work done against a field, circulation and flux using vector calculus
CE2101.3	Apply the Laplace transform for solving differential equations
CE2101.4	Compute the Fourier series of periodic signals
CE2101.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
CE2101.6	Identify solution methods for partial differential equations that model physical processes

Course Name: Strength of materials-I	
Course Code: CE2102	
CE2102.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
CE2102.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
CE2102.3	Knowledge of bending concepts and calculation of section modulus
CE2102.4	Determination of stresses developed in the beams and deflections due to various loading conditions
CE2102.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
CE2102.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Fluid Mechanics	
Course Code: CE2103	
CE2103.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
CE2103.2	Calculate the forces that act on submerged planes and curves
CE2103.3	Ability to analyse various types of fluid flows
CE2103.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
CE2103.5	Determination of order to predict relevant pressures, velocities and forces

CE2103.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels
Course Name: Surveying and Geometrics	
Course Code: CE2104	
CE2104.1	To Apply the knowledge to calculate angles, distances and levels
CE2104.2	Identify data collection methods and prepare field notes
CE2104.3	Understand the working principles of survey instruments, measurement errors and corrective measures
CE2104.4	Determination of survey data and compute areas and volumes, levels by different type of equipment
CE2104.5	Apply the surveying principles to determine areas and volumes and setting out curves
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Course Name: Highway Engineering	
Course Code: CE2105	
CE2105.1	Able to draw a Plan highway network for a given area
CE2105.2	To Determine Highway alignment
CE2105.3	Design Intersections and prepare traffic management plans
CE2105.4	Judge suitability of pavement materials and design flexible and rigid pavements
CE2105.5	To classify the different concepts in the field of Highway Engineering
CE2105.6	Able to know the types and classification of roads and intersections

Course Name: Concrete Technology Lab	
Course Code: CE2106	
CE2106.1	Able to Determine the consistency and fineness of cement
CE2106.2	To understand the initial and final setting time of cement
CE2106.3	To know the knowledge about the specific gravity and soundness of cement
CE2106.4	To Determine the workability of cement concrete by compaction factor
CE2106.5	Applying the rebound hammer to know the non-destructive test of concrete
CE2106.6	Analyse flakiness and elongation index of aggregates

Course Name: Highway Engineering lab	
Course Code: CE2107	
CE2107.1	Able to Test aggregates and judge the suitability of materials for the road construction
CE2107.2	Analyse the optimum bitumen content for Bituminous Concrete
CE2107.3	To Determine the traffic volume, speed and parking characteristics
CE2107.4	Able to Draw the highway cross sections and intersections
CE2107.5	To differentiate the carry out surveys for traffic volume, speed and parking
CE2107.6	Understand to the stability for the given bituminous mix

Course Name: Surveying field work –I Lab	
Course Code: CE2108	
CE2108.1	To understand the various types of surveying methods
CE2108.2	Determination of the areas by applying the chain surveying
CE2108.3	Analyse the area calculations by triangulations methods
CE2108.4	Finding the area boundaries by plane table survey
CE2108.5	Determination of distance between two inaccessible points by using compass
CE2108.6	To understand the Height of the instrument method

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Year/Sem: II B.Tech II SEM

Course Name: Complex Variables and Statistical Methods	
Course Code: CE2201	
CE2201.1	To apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic
CE2201.2	Able to know the differentiation and integration of complex functions used in engineering problems
CE2201.3	Understand the Cauchy residue theorem to evaluate certain integrals
CE2201.4	Apply discrete and continuous probability distributions
CE2201.5	Knowledge to design the components of a classical hypothesis test
CE2201.6	Differentiate the infer the statistical inferential methods based on small and large sampling tests

Course Name: Strength of materials -II	
Course Code: CE2202	
CE2202.1	Determination of Principal stresses and strains developed in cross section of the beams
CE2202.2	Understand the concepts of torsion and governing torsion equation, and there by calculate the power transmitted by shafts and springs
CE2202.3	To classify columns and calculation of load carrying capacity and to assess stresses due to axial and lateral loads
CE2202.4	Analyse the unsymmetrical bending in beams Location of neutral axis Deflection of beams under unsymmetrical bending
CE2202.5	Knowledge about different engineering applications like shafts, springs, columns and struts subjected to different loading conditions
CE2202.6	Classify the concepts of failures in the material by theories of failures

Course Name: Hydraulics and Hydraulic Machinery	
Course Code: CE2203	
CE2203.1	Differentiate uniform and non-uniform open channel flow problems
CE2203.2	Apply the principals of dimensional analysis and similitude in hydraulic model testing
CE2203.3	Understand the working principles of various hydraulic machineries and pumps
CE2203.4	Analyse the characteristics of hydraulic jump
CE2203.5	Determination of dimensional analysis for fluid flow problems
CE2203.6	Classify the various types of various types of hydraulic machines and Pumps

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Course Name: Environmental Engineering	
Course Code: CE2204	
CE2204.1	Analyse source based on quality and quantity and Estimate design population and water demand
CE2204.2	Design a water treatment plant for a village/city
CE2204.3	Estimation of the Sewage Treatment Plant for a town/city
CE2204.4	Classify the sewers and plumbing systems for building
CE2204.5	Apply the various methods to treatment the water
CE2204.6	Able to know the distribution systems of the water

Course Name: Managerial Economics & Financial Analysis	
Course Code: CE2205	
CE2205.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
CE2205.2	The knowledge of understanding of the Input-Output-Cost relationships
CE2205.3	Estimation of the least cost combination of inputs
CE2205.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CE2205.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
CE2205.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Course Name: Environmental Engineering lab	
Course Code: CE2206	
CE2206.1	Estimate some important characteristics of water, wastewater and soil
CE2206.2	Draw some conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE2206.3	Determination of Chloride, EC and Salinity of Soil and suggest their suitability for Construction/Agriculture
CE2206.4	Understand the strength of the sewage in terms of BOD and COD
CE2206.5	Able to classify the various properties water
CE2206.6	Demonstration of WHO guidelines, Effluent standards and standards for Construction/ Agriculture/Industry

Course Name: Strength of materials Lab	
Course Code: CE2207	
CE2207.1	Determination of Tension test on Mild steel bar by UTM
CE2207.2	Understand the Bending test on cantilever beam of steel / wood
CE2207.3	Analyse the torsion test on specimen sample
CE2207.4	Able to know the Compression test on wood or concrete
CE2207.5	Apply the Brinnell's / Rock well's hardness testing machine for hardness of specimen
CE2207.6	Define the Verification of Maxwell's Reciprocal theorem on beams

Course Name: Fluid Mechanics & Hydraulics Machinery Lab	
Course Code: CE2208	
CE2208.1	Understand the Calibration of Venturi meter & Orifice meter
CE2208.2	Determination of Coefficient of discharge for a small orifice and mouth piece by a constant head and variable head method
CE2208.3	Able to know the Verification of Bernoulli's equation
CE2208.4	Define the Performance test on Pelton wheel turbine
CE2208.5	Analyse the Calibration of contracted Rectangular Notch and /or Triangular Notch
CE2208.6	Apply the Hydraulic jump test setup to study of Study of Hydraulic jump

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Year/Sem: III B.Tech I SEM

Course Name: Structural Analysis	
Course Code: CE3101	
CE3101.1	Differentiate the between the determinate and indeterminate structures
CE3101.2	Analyse behaviour of structures due to the expected loads, including the moving loads, acting on the structure
CE3101.3	Classify the bending moment and shear forces in beams for different fixity conditions
CE3101.4	Understand the continuous beams using various methods
CE3101.5	Determination of three moment method, slope deflection method, energy theorems
CE3101.6	Able to know the influence line diagrams for various types of moving loads on beams/bridges

Course Name: Concrete Technology	
Course Code: CE3102	
CE3102.1	Understand basic concepts of concrete
CE3102.2	Analyse the basic ingredients of concrete and their role in concrete and their behaviour in the field
CE3102.3	Classify the fresh concrete properties and hardened concrete properties
CE3102.4	Understand the behaviour of concrete in various environments
CE3102.5	Evaluate ingredients of concrete through lab tests. design concrete mix by IS method
CE3102.6	To understand durability properties of concrete

Course Name: Water Resources Engineering - I	
Course Code: CE3103	
CE3103.1	Able to quantify major hydrologic components and apply key concepts
CE3103.2	Classify several practical areas of engineering hydrology and related design aspects
CE3103.3	Develop Intensity-Duration-Frequency and Depth-Area Duration curves to design
CE3103.4	Ability to develop design storms and carry out frequency analysis
CE3103.5	Determine storage capacity and life of reservoirs and develop unit hydrograph and synthetic hydrograph
CE3103.6	Estimate flood magnitude and carry out flood routing
Course Name: Environmental Engineering -II	
Course Code: CE3104	
CE3104.1	Understand Plan and design the sewerage systems by estimating the flow
CE3104.2	Able to Design of Plumbing for an apartment, Gated community or Hotels or Individual houses
CE3104.3	Classify to Select the appropriate appurtenances in the sewerage systems
CE3104.4	Estimation of BOD and COD and Suggest a suitable disposal method with respect to effluent standard
CE3104.5	Define to Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
CE3104.6	Analyse sewage and design suitable treatment system for sewage treatment for a village/City

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Course Name: Construction Technology & Management	
Course Code: CE3105	
CE3105.1	Analyse the importance of construction planning
CE3105.2	Define the functioning of various earth moving equipment
CE3105.3	Able to know the methods of production of aggregate products and concreting
CE3105.4	Apply the gained knowledge to project management and construction techniques
CE3105.5	Classify the importance of safety in construction projects
CE3105.6	Understand the concept of project management including network drawing and monitoring

Course Name: Environmental Pollution &Control	
Course Code: CE3106	
CE3106.1	Able to Identify the air pollutant control devices
CE3106.2	knowledge on the NAAQ standards and air emission standards
CE3106.3	Differentiate the treatment techniques used for sewage and industrial wastewater t
CE3106.4	Understand the fundamentals of solid waste management, practices adopted areas
CE3106.5	Classify methods of environmental sanitation and the management of community
CE3106.6	Define importance of sustainable development while planning a project

Course Name: Concrete Technology Lab	
Course Code: CE3107	
CE3107.1	Determination of normal Consistency and fineness of cement
CE3107.2	Able to know the initial setting time and final setting time of cement
CE3107.3	Determination of specific gravity and soundness of cement
CE3107.4	Understand the properties of concrete
CE3107.5	Define the bulking of sand
CE3107.6	Classify workability of concrete by compaction factor method

Course Name: Surveying Field Work-II Lab	
Course Code: CE3108	
CE3108.1	Determination Horizontal and Vertical Angles by the method of repetition method by theodolite
CE3108.2	Define the distance between two inaccessible points
CE3108.3	Able to know the curve setting method
CE3108.4	Apply the total station method to know the distance between two inaccessible points
CE3108.5	Analyse the Contouring maps
CE3108.6	Understand the Heights and distance problems using tachometric principles

Year/Sem: III B.Tech II SEM

Course Name: Design and Drawing of Reinforced Concrete Structures	
Course Code: CE3101	
CE3201.1	Able to understand the various design methods in RCC
CE3201.2	Differentiate the over and under reinforced structures with loading
CE3201.3	Analysis and design of flexural members and detailing
CE3201.4	Classification of various types slabs in RCC
CE3201.5	Design different type of compression members and footings
CE3201.6	Understand different types of footings and design

Course Name: Water Resource Engineering-II	
Course Code: CE3202	
CE3202.1	Able to understanding of the theories and principles governing the hydrologic processes
CE3202.2	Analyse the quantify hydrological components
CE3202.3	Apply concepts in hydrologic design of water resources projects
CE3202.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE3202.5	Differentiate flow mass curve and flow duration curve
CE3202.6	Develop unit hydrograph and synthetic hydrograph
Course Name: Geotechnical engineering -I	
Course Code: CE3103	
CE3203.1	Able to know the definition of the various quantities related to soil mechanics and Establish their inter-relationships.
CE3203.2	Determination of the various index properties of the soils and classify the soils
CE3203.3	Understand the importance of the different engineering properties of the soil
CE3203.4	Classify the properties of compaction, permeability, consolidation and shear strength and determine them in the laboratory
CE3203.5	understand the concept of shear strength of soils
CE3203.6	Differentiate the shear parameters of sands and clays and the areas of their application

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Course Name: Managerial Economics & Financial Analysis	
Course Code: CE2205	
CE3204.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
CE3204.2	The knowledge of understanding of the Input-Output-Cost relationships
CE3204.3	Estimation of the least cost combination of inputs
CE3204.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CE3204.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
CE3204.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Course Name: Pre stressed Concrete	
Course Code: CE3205	
CE3205.1	Able to know the concepts of pre stressing
CE3205.2	Understand different pre stressing systems and devices
CE3205.3	Analyse the losses of pre stress including short and long term losses
CE3205.4	Analysis and design of pre stressed concrete members under flexure, shear and torsion
CE3205.5	Analyse and design pre stressed concrete beams under flexure and shear
CE3205.6	Understand the relevant IS Code provisions for pre stressed concrete

Course Name: Waste Water Treatment	
Course Code: CE3206	
CE3206.1	Know the quality and quantity of water for various industries and Advanced water treatment methods
CE3206.2	Learn the common methods of treatment of wastewaters and Biological treatment methods
CE3206.3	Analyse methods to reduce impacts of disposal of wasters into environment and CETPs
CE3206.4	Classify the treatment of wastewaters from specific industries like steel plants
CE3206.5	Able to know methods of treatment of wastewaters from industries like Aqua, dairy, sugar plants, and distilleries that imply biological treatment methods
CE3206.6	Applying the neutralization methods for water treatment

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Course Name: CAD Lab	
Course Code: CE3207	
CE3207.1	Understand Model the geometry of real-world structure Represent the physical model of structural element/structure
CE3207.2	Analyse the Perform analysis of the frame
CE3207.3	Able to Design and detailing of built up steel beam
CE3207.4	Developing a design programme for foundation
CE3207.5	Differentiate the Interpret from the Post processing results
CE3207.6	Analysis & Design of Roof Trusses

Course Name: Environmental Engineering Lab	
Course Code: CE3208	
CE3208.1	Estimate some important characteristics of water, wastewater and soil
CE3208.2	Classify the conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE3208.3	Estimate Chloride, EC and Salinity of Soil and suggest their suitability
CE3208.4	Able to know the COD & BOD Values in water
CE3208.5	Classifying the various methods to treatment of water
CE3208.6	Demonstration of various instruments used in testing of water and soil and study of Drinking water standard

Year/Sem: IV B.Tech I SEM

Course Name: Environmental Engineering - II	
Course Code: CE4101	
CE4101.1	Plan and design the sewerage systems
CE4101.2	Able to Select the appropriate appurtenances in the sewerage systems
CE4101.3	Analyze sewage and suggest and design suitable treatment system for sewage treatment
CE4101.4	Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
CE4101.5	Able to know suitable disposal method with respect to effluent standards
CE4101.6	Differentiate the one pipe & two pipe metods

Course Name: Water Resource Engineering-II	
Course Code: CE4102	
CE4102.1	Able to understanding of the theories and principles governing the hydrologic processes
CE4102.2	Analyse the quantify hydrological components
CE4102.3	Apply concepts in hydrologic design of water resources projects
CE4102.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE4102.5	Differentiate flow mass curve and flow duration curve
CE4102.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Geotechnical Engineering-II	
Course Code: CE4103	
CE4103.1	Able to understand the various types of shallow foundations
CE4103.2	Analyse and compute the magnitude of foundation settlement and decide on the size of the foundation accordingly
CE4103.3	Define the field test data and arrive at the bearing capacity
CE4103.4	Design the principles of bearing capacity of piles
CE4103.5	Differentiate the principles of important field tests such as SPT and Plate bearing test
CE4103.6	Able to know the concepts of pile foundations and determine their load carrying capacity

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Course Name: Remote Sensing & GIS Applications	
Course Code: CE4104	
CE4104.1	Understand the basic principles of Remote Sensing and GIS techniques
CE4104.2	Able to learn various types of sensors and platforms
CE4104.3	Differentiate the aerial photographs and satellite imageries
CE4104.4	Create and input spatial data for GIS application
CE4104.5	Apply RS and GIS concepts for application in Civil Engineering
CE4104.6	Classify the spatial data structures, raster and vector data formats

Course Name: Ground Improvement Techniques	
Course Code: CE4105	
CE4105.1	Able to possess the knowledge of various methods of ground improvement and their suitability
CE4105.2	Differentiate to learn the concepts, purpose and effects of grouting
CE4105.3	Understand the position to design a reinforced earth embankment and check its stability
CE4105.4	Classify the various functions of Geosynthetics and their applications in Civil Engineering practice
CE4105.5	Able to know reinforced earth technology and soil nailing can obviate the problems posed by the conventional retaining walls
CE4105.6	Defining the improvement of engineering performance of soils

Course Name: Environmental impact assessment and management	
Course Code: CE4106	
CE4106.1	To impart knowledge on different concepts of Environmental Impact Assessment
CE4106.2	Able to Prepare EMP, EIS, and EIA report
CE4106.3	Analyse and Identify the risks and impacts of a project
CE4106.4	Define and Evaluation the EIA report
CE4106.5	Estimate the cost benefit ratio of a project
CE4106.6	Know the role of stakeholder and public hearing in the preparation of EIA

Course Name: GIS & CAD Lab	
Course Code: CE4107	
CE4107.1	Able to understand the Work comfortably on GIS software
CE4107.2	Define Digitize and create thematic map and extract important features
CE4107.3	Classifying the Develop digital elevation model
CE4107.4	Use structural analysis software to analyse and design 2D and 3D frames
CE4107.5	Design and analyse retaining wall and simple towers using CADD software
CE4107.6	learn to apply GIS software to simple problems in water resources and transportation engineering

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Course Name: Irrigation Design and Drawing Lab	
Course Code: CE4108	
CE4108.1	To understand design principle of various irrigation structures
CE4108.2	Design and analyse the surplus weir
CE4108.3	Able to know design and working of Tank sluice with a tower head
CE4108.4	Draw a plan of Canal drop-Notch type and working principles
CE4108.5	Understand the efficiency of Canal regulator
CE4108.6	Classify the design of Syphon aqueduct type III

Year/Sem: IV B.Tech II SEM

Course Name: Estimation Specifications and Contract	
Course Code: CE4201	
CE4201.1	Able to determine the quantities of different components of buildings
CE4201.2	Analyse position to find the cost of various building components
CE4201.3	Understand the capable of finalizing the value of structures
CE4201.4	Differentiate various specifications and components of the buildings
CE4201.5	Understand the quantity calculations of different components of the buildings
CE4201.6	Classifying the types of contracts & documents

Course Name: Construction Technology & Management	
Course Code: CE4202	
CE4202.1	Analyse the importance of construction planning
CE4202.2	Define the functioning of various earth moving equipment
CE4202.3	Able to know the methods of production of aggregate products and concreting
CE4202.4	Apply the gained knowledge to project management and construction techniques
CE4202.5	Classify the importance of safety in construction projects
CE4202.6	Understand the concept of project management including network drawing and monitoring

Course Name: Pre stressed Concrete	
Course Code: CE4203	
CE4203.1	Able to know the concepts of pre stressing
CE4203.2	Understand different pre stressing systems and devices
CE4203.3	Analyse the losses of pre stress including short and long term losses
CE4203.4	Analysis and design of pre stressed concrete members under flexure, shear and torsion
CE4203.5	Analyse and design pre stressed concrete beams under flexure and shear
CE4203.6	Understand the relevant IS Code provisions for pre stressed concrete

Course Name: Solid and Hazardous Waste Management	
Course Code: CE4204	
CE4204.1	Able to Design the collection systems of solid waste of a town
CE4204.2	Understand the Design treatment of municipal solid waste and landfill
CE4204.3	Analyse to Know the criteria for selection of landfill
CE4204.4	Define the Characterise the solid waste and design a composting facility
CE4204.5	Differentiate the Method of treatment and disposal of Hazardous wastes
CE4204.6	Classifying the methods of solid disposal methods

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DEPARTMENT OF CIVIL ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2020-2021**

Course Name: Complex Variables and Statistical Methods	
Course Code: CE2101	
CE2101.1	To apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic
CE2101.2	Able to know the differentiation and integration of complex functions used in engineering problems
CE2101.3	Understand the Cauchy residue theorem to evaluate certain integrals
CE2101.4	Apply discrete and continuous probability distributions
CE2101.5	Knowledge to design the components of a classical hypothesis test
CE2101.6	Differentiate the infer the statistical inferential methods based on small and large sampling tests

Course Name: Strength of materials-I	
Course Code: CE2102	
CE2102.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
CE2102.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
CE2102.3	Knowledge of bending concepts and calculation of section modulus
CE2102.4	Determination of stresses developed in the beams and deflections due to various loading conditions
CE2102.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
CE2102.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Fluid Mechanics	
Course Code: CE2103	
CE2103.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
CE2103.2	Calculate the forces that act on submerged planes and curves
CE2103.3	Ability to analyse various types of fluid flows
CE2103.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
CE2103.5	Determination of order to predict relevant pressures, velocities and forces
CE2103.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels

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Course Name: Surveying and Geometrics	
Course Code: CE2104	
CE2104.1	To Apply the knowledge to calculate angles, distances and levels
CE2104.2	Identify data collection methods and prepare field notes
CE2104.3	Understand the working principles of survey instruments, measurement errors and corrective measures
CE2104.4	Determination of survey data and compute areas and volumes, levels by different type of equipment
CE2104.5	Apply the surveying principles to determine areas and volumes and setting out curves
CE2104.6	Able to Identification of source of errors and rectification methods

Course Name: Building Materials, Construction and Planning	
Course Code: CE2105	
CE2105.1	Able to identify different building materials and their importance in Building construction
CE2105.2	differentiate brick and stone masonry
CE2105.3	Understand the importance of building components and finishing's
CE2105.4	Classification of aggregates, sieve analysis
CE2105.5	Define moisture content usually required in building construction
CE2105.6	Imparting the students with the techniques of formwork and scaffolding

Course Name: Transportation Engineering-I	
Course Code: CE2106	
CE2106.1	Able to draw a Plan highway network for a given area
CE2106.2	To Determine Highway alignment
CE2106.3	Design Intersections and prepare traffic management plans
CE2106.4	Judge suitability of pavement materials and design flexible and rigid pavements
CE2106.5	To classify the different concepts in the field of Highway Engineering
CE2106.6	Able to know the types and classification of roads and intersections

Course Name: Strength of materials Lab	
Course Code: CE2107	
CE2107.1	Determination of Tension test on Mild steel bar by UTM
CE2107.2	Understand the Bending test on cantilever beam of steel / wood
CE2107.3	Analyse the torsion test on specimen sample
CE2107.4	Able to know the Compression test on wood or concrete
CE2107.5	Apply the Brinnell's / Rock well's hardness testing machine for hardness of specimen
CE2107.6	Define the Verification of Maxwell's Reciprocal theorem on beams

Course Name: Surveying field work –I Lab	
Course Code: CE2108	
CE2108.1	To understand the various types of surveying methods
CE2108.2	Determination of the areas by applying the chain surveying
CE2108.3	Analyse the area calculations by triangulations methods
CE2108.4	Finding the area boundaries by plane table survey
CE2108.5	Determination of distance between two inaccessible points by using compass
CE2108.6	To understand the Height of the instrument method

Year/Sem: II B.Tech II SEM

Course Name: Strength of materials -II	
Course Code: CE2201	
CE2201.1	Determination of Principal stresses and strains developed in cross section of the beams
CE2201.2	Understand the concepts of torsion and governing torsion equation, and there by calculate the power transmitted by shafts and springs
CE2201.3	To classify columns and calculation of load carrying capacity and to assess stresses due to axial and lateral loads
CE2201.4	Analyse the unsymmetrical bending in beams Location of neutral axis Deflection of beams under unsymmetrical bending
CE2201.5	Knowledge about different engineering applications like shafts, springs, columns and struts subjected to different loading conditions
CE2201.6	Classify the concepts of failures in the material by theories of failures

Course Name: Hydraulics and Hydraulic Machinery	
Course Code: CE2202	
CE2202.1	Differentiate uniform and non-uniform open channel flow problems
CE2202.2	Apply the principals of dimensional analysis and similitude in hydraulic model testing
CE2202.3	Understand the working principles of various hydraulic machineries and pumps
CE2202.4	Analyse the characteristics of hydraulic jump
CE2202.5	Determination of dimensional analysis for fluid flow problems
CE2202.6	Classify the various types of various types of hydraulic machines and Pumps

Course Name: Engineering Geology	
Course Code: CE2203	
CE2203.1	Able to Identify and classify the geological minerals
CE2203.2	Understand and Measure the rock strengths of various rocks
CE2203.3	Classify and measure the earthquake prone areas to practice the hazard zonation
CE2203.4	Prepares, analyses and interpret the Engineering Geologic maps
CE2203.5	Investigate the project site for mega/mini civil engineering projects
CE2203.6	Site selection for mega engineering projects like Dams, Tunnels, disposals

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Course Name: Transportation Engineering-II	
Course Code: CE2204	
CE2204.1	Understand the various components and their functions in a railway track
CE2204.2	Able to know design principles of geometrics in a railway track
CE2204.3	Apply the Plan track layouts and control movement of trains
CE2204.4	Classify the Functions of various Components like Rails, Sleepers and Ballast
CE2204.5	Design airport geometrics and airfield pavements
CE2204.6	Plan, construct and maintain Docks and Harbours

Course Name: Environmental Engineering-I	
Course Code: CE2205	
CE2205.1	Analyse source based on quality and quantity and Estimate design population and water demand
CE2205.2	Design a water treatment plant for a village/city
CE2205.3	Estimation of the Sewage Treatment Plant for a town/city
CE2205.4	Classify the sewers and plumbing systems for building
CE2205.5	Apply the various methods to treatment the water
CE2205.6	Able to know the distribution systems of the water

Course Name: Engineering Geology Lab	
Course Code: CE2206	
CE2206.1	Able to dentify the Megascopic types of Ore minerals & Rock forming minerals
CE2206.2	Classify the types of Igneous, Sedimentary, Metamorphic rocks
CE2206.3	To identify the topography of the site & material selection
CE2206.4	Able to Know the occurrence of materials using the strike & dip problems
CE2206.5	Define the site parameters such as contour, slope & aspect for topography
CE2206.6	Differentiate the physical and chemical properties of specimens

Course Name: Transportation Engineering lab	
Course Code: CE2207	
CE2207.1	Able to know penetration value, ductility value, softening point
CE2207.2	To understand the test the stability for the given bituminous mix
CE2207.3	Define the carry out surveys for traffic volume, speed and parking
CE2207.4	Obtain the optimum bitumen content for Bituminous Concrete
CE2207.5	Determine the traffic volume, speed and parking characteristics
CE2207.6	Draw highway cross sections and intersections

Course Name: Fluid Mechanics & Hydraulics Machinery Lab	
Course Code: CE2208	
CE2208.1	Understand the Calibration of Venturi meter & Orifice meter
CE2208.2	Determination of Coefficient of discharge for a small orifice and mouth piece by a constant head and variable head method
CE2208.3	Able to know the Verification of Bernoulli's equation
CE2208.4	Define the Performance test on Pelton wheel turbine
CE2208.5	Analyse the Calibration of contracted Rectangular Notch and /or Triangular Notch
CE2208.6	Apply the Hydraulic jump test setup to study of Study of Hydraulic jump

Year/Sem: III B.Tech I SEM

Course Name: Management Science	
Course Code: CE3101	
CE3101.1	Analyse process of management and to provide basic insight into select contemporary management practices
CE3101.2	Able to know conceptual knowledge on functional management and strategic management
CE3101.3	Define the Evaluation of Management thought
CE3101.4	Understand Global Leadership and Organizational behaviour Effectiveness(GLOBE) structure
CE3101.5	Classify the Principles and Types of Management
CE3101.6	Development of Network by CPM/PERT

Course Name: Engineering Geology	
Course Code: CE3102	
CE3102.1	Able to Identify and classify the geological minerals
CE3102.2	Understand and Measure the rock strengths of various rocks
CE3102.3	Classify and measure the earthquake prone areas to practice the hazard zonation
CE3102.4	Prepares, analyses and interpret the Engineering Geologic maps
CE3102.5	Investigate the project site for mega/mini civil engineering projects
CE3102.6	Site selection for mega engineering projects like Dams, Tunnels, disposals

Course Name: Structural Analysis-II	
Course Code: CE3103	
CE3103.1	Differentiate the between the determinate and indeterminate structures
CE3103.2	Analyse behaviour of structures due to the expected loads, including the moving loads, acting on the structure
CE3103.3	Classify the bending moment and shear forces in beams for different fixity conditions
CE3103.4	Understand the continuous beams using various methods
CE3103.5	Determination of three moment method, slope deflection method, energy theorems
CE3103.6	Able to know the influence line diagrams for various types of moving loads on beams/bridges

Course Name: Design and Drawing of Reinforced Concrete Structures	
Course Code: CE3104	
CE3104.1	Able to understand the various design methods in RCC
CE3104.2	Differentiate the over and under reinforced structures with loading
CE3104.3	Analysis and design of flexural members and detailing
CE3104.4	Classification of various types slabs in RCC
CE3104.5	Design different type of compression members and footings
CE3104.6	Understand different types of footings and design

Course Name: Transportation Engineering-II	
Course Code: CE3105	
CE3105.1	Understand the various components and their functions in a railway track
CE3105.2	Able to know design principles of geometrics in a railway track
CE3105.3	Apply the Plan track layouts and control movement of trains
CE3105.4	Classify the Functions of various Components like Rails, Sleepers and Ballast
CE3105.5	Design airport geometrics and airfield pavements
CE3105.6	Plan, construct and maintain Docks and Harbours

Course Name: Concrete Technology Lab	
Course Code: CE3106	
CE3106.1	Determination of normal Consistency and fineness of cement
CE3106.2	Able to know the initial setting time and final setting time of cement
CE3106.3	Determination of specific gravity and soundness of cement
CE3106.4	Understand the properties of concrete
CE3106.5	Define the bulking of sand
CE3106.6	Classify workability of concrete by compaction factor method

Course Name: Engineering Geology Lab	
Course Code: CE3107	
CE3107.1	Able to identify the Megascopic types of Ore minerals & Rock forming minerals
CE3107.2	Classify the types of Igneous, Sedimentary, Metamorphic rocks
CE3107.3	To identify the topography of the site & material selection
CE3107.4	Able to Know the occurrence of materials using the strike & dip problems
CE3107.5	Define the site parameters such as contour, slope & aspect for topography
CE3107.6	Differentiate the physical and chemical properties of specimens

Course Name: Transportation Engineering lab	
Course Code: CE3108	
CE3108.1	Able to know penetration value, ductility value, softening point
CE3108.2	To understand the test the stability for the given bituminous mix
CE3108.3	Define the carry out surveys for traffic volume, speed and parking
CE3108.4	Obtain the optimum bitumen content for Bituminous Concrete
CE3108.5	Determine the traffic volume, speed and parking characteristics
CE3108.6	Draw highway cross sections and intersections

Year/Sem: III B.Tech II SEM

Course Name: Design And Drawing of Steel Structures	
Course Code: CE3201	
CE3201.1	Understand the various Work relevant IS codes
CE3201.2	Analysis and design of flexural members and detailing
CE3201.3	Able to Design compression members of different types with connection detailing
CE3201.4	Understand Design of tension and compression members in trusses
CE3201.5	Differentiate the Plate girder and Gantry Girder and their Design
CE3201.6	Apply the drawings pertaining to different components of steel structures

Course Name: Geotechnical engineering -I	
Course Code: CE3103	
CE3203.1	Able to know the definition of the various quantities related to soil mechanics and Establish their inter-relationships.
CE3203.2	Determination of the various index properties of the soils and classify the soils
CE3203.3	Understand the importance of the different engineering properties of the soil
CE3203.4	Classify the properties of compaction, permeability, consolidation and shear strength and determine them in the laboratory
CE3203.5	understand the concept of shear strength of soils
CE3203.6	Differentiate the shear parameters of sands and clays and the areas of their application

Course Name: Environmental Engineering-I	
Course Code: CE3203	
CE3203.1	Analyse source based on quality and quantity and Estimate design population and water demand
CE3203.2	Design a water treatment plant for a village/city
CE3203.3	Estimation of the Sewage Treatment Plant for a town/city
CE3203.4	Classify the sewers and plumbing systems for building
CE3203.5	Apply the various methods to treatment the water
CE3203.6	Able to know the distribution systems of the water

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Course Name: Water Resource Engineering-I	
Course Code: CE3204	
CE3204.1	Able to understanding of the theories and principles governing the hydrologic processes
CE3204.2	Analyse the quantify hydrological components
CE3204.3	Apply concepts in hydrologic design of water resources projects
CE3204.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE3204.5	Differentiate flow mass curve and flow duration curve
CE3204.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Waste Water Management	
Course Code: CE3205	
CE3205.1	Know the quality and quantity of water for various industries and Advanced water treatment methods
CE3205.2	Learn the common methods of treatment of wastewaters and Biological treatment methods
CE3205.3	Analyse methods to reduce impacts of disposal of wasters into environment and CETPs
CE3205.4	Classify the treatment of wastewaters from specific industries like steel plants
CE3205.5	Able to know methods of treatment of wastewaters from industries like Aqua, dairy, sugar plants, and distilleries that imply biological treatment methods
CE3205.6	Applying the neutralization methods for water treatment

Course Name: Geotechnical Engineering Lab	
Course Code: CE3206	
CE3206.1	Able to know the permeability of soils
CE3206.2	Understand the Compaction, Consolidation and shear strength characteristics
CE3206.3	Analyse the index properties of the soils
CE3206.4	Differentiate the various types and classifications of the soils
CE3206.5	Apply Atterberg's Limits to know plasticity of soils
CE3206.6	Differentiate the Permeability, Compaction, consolidation, shear strength parameters & CBR value

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Course Name: Environmental Engineering Lab	
Course Code: CE3207	
CE3207.1	Estimate some important characteristics of water, wastewater and soil
CE3207.2	Classify the conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE3207.3	Estimate Chloride, EC and Salinity of Soil and suggest their suitability
CE3207.4	Able to know the COD & BOD Values in water
CE3207.5	Classifying the various methods to treatment of water
CE3207.6	Demonstration of various instruments used in testing of water and soil and study of Drinking water standard

Course Name: Computer Aided Engineering Lab	
Course Code: CE3208	
CE3208.1	Understand Model the geometry of real-world structure Represent the physical model of structural element/structure
CE3208.2	Analyse the Perform analysis of the frame
CE3208.3	Able to Design and detailing of built up steel beam
CE3208.4	Developing a design programme for foundation
CE3208.5	Differentiate the Interpret from the Post processing results
CE3208.6	Analysis & Design of Roof Trusses

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Year/Sem: IV B.Tech I SEM

Course Name: Environmental Engineering - II	
Course Code: CE4101	
CE4101.1	Plan and design the sewerage systems
CE4101.2	Able to Select the appropriate appurtenances in the sewerage systems
CE4101.3	Analyze sewage and suggest and design suitable treatment system for sewage treatment
CE4101.4	Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
CE4101.5	Able to know suitable disposal method with respect to effluent standards
CE4101.6	Differentiate the one pipe & two pipe metods

Course Name: Water Resource Engineering-II	
Course Code: CE4102	
CE4102.1	Able to understanding of the theories and principles governing the hydrologic processes
CE4102.2	Analyse the quantify hydrological components
CE4102.3	Apply concepts in hydrologic design of water resources projects
CE4102.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE4102.5	Differentiate flow mass curve and flow duration curve
CE4102.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Geotechnical Engineering-II	
Course Code: CE4103	
CE4103.1	Able to understand the various types of shallow foundations
CE4103.2	Analyse and compute the magnitude of foundation settlement and decide on the size of the foundation accordingly
CE4103.3	Define the field test data and arrive at the bearing capacity
CE4103.4	Design the principles of bearing capacity of piles
CE4103.5	Differentiate the principles of important field tests such as SPT and Plate bearing test
CE4103.6	Able to know the concepts of pile foundations and determine their load carrying capacity

Course Name: Remote Sensing & GIS Applications	
Course Code: CE4104	
CE4104.1	Understand the basic principles of Remote Sensing and GIS techniques
CE4104.2	Able to learn various types of sensors and platforms
CE4104.3	Differentiate the aerial photographs and satellite imageries
CE4104.4	Create and input spatial data for GIS application
CE4104.5	Apply RS and GIS concepts for application in Civil Engineering
CE4104.6	Classify the spatial data structures, raster and vector data formats

Course Name: Ground Improvement Techniques	
Course Code: CE4105	
CE4105.1	Able to possess the knowledge of various methods of ground improvement and their suitability
CE4105.2	Differentiate to learn the concepts, purpose and effects of grouting
CE4105.3	Understand the position to design a reinforced earth embankment and check its stability
CE4105.4	Classify the various functions of Geosynthetics and their applications in Civil Engineering practice
CE4105.5	Able to know reinforced earth technology and soil nailing can obviate the problems posed by the conventional retaining walls
CE4105.6	Defining the improvement of engineering performance of soils

Course Name: Environmental impact assessment and management	
Course Code: CE4106	
CE4106.1	To impart knowledge on different concepts of Environmental Impact Assessment
CE4106.2	Able to Prepare EMP, EIS, and EIA report
CE4106.3	Analyse and Identify the risks and impacts of a project
CE4106.4	Define and Evaluation the EIA report
CE4106.5	Estimate the cost benefit ratio of a project
CE4106.6	Know the role of stakeholder and public hearing in the preparation of EIA

Course Name: GIS & CAD Lab	
Course Code: CE4107	
CE4107.1	Able to understand the Work comfortably on GIS software
CE4107.2	Define Digitize and create thematic map and extract important features
CE4107.3	Classifying the Develop digital elevation model
CE4107.4	Use structural analysis software to analyse and design 2D and 3D frames
CE4107.5	Design and analyse retaining wall and simple towers using CADD software
CE4107.6	learn to apply GIS software to simple problems in water resources and transportation engineering

Course Name: Irrigation Design and Drawing Lab	
Course Code: CE4108	
CE4108.1	To understand design principle of various irrigation structures
CE4108.2	Design and analyse the surplus weir
CE4108.3	Able to know design and working of Tank sluice with a tower head
CE4108.4	Draw a plan of Canal drop-Notch type and working principles
CE4108.5	Understand the efficiency of Canal regulator
CE4108.6	Classify the design of Syphon aqueduct type III

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Year/Sem: IV B.Tech II SEM

Course Name: Estimation Specifications and Contract	
Course Code: CE4201	
CE4201.1	Able to determine the quantities of different components of buildings
CE4201.2	Analyse position to find the cost of various building components
CE4201.3	Understand the capable of finalizing the value of structures
CE4201.4	Differentiate various specifications and components of the buildings
CE4201.5	Understand the quantity calculations of different components of the buildings
CE4201.6	Classifying the types of contracts & documents

Course Name: Construction Technology & Management	
Course Code: CE4202	
CE4202.1	Analyse the importance of construction planning
CE4202.2	Define the functioning of various earth moving equipment
CE4202.3	Able to know the methods of production of aggregate products and concreting
CE4202.4	Apply the gained knowledge to project management and construction techniques
CE4202.5	Classify the importance of safety in construction projects
CE4202.6	Understand the concept of project management including network drawing and monitoring

Course Name: Pre stressed Concrete	
Course Code: CE4203	
CE4203.1	Able to know the concepts of pre stressing
CE4203.2	Understand different pre stressing systems and devices
CE4203.3	Analyse the losses of pre stress including short and long term losses
CE4203.4	Analysis and design of pre stressed concrete members under flexure, shear and torsion
CE4203.5	Analyse and design pre stressed concrete beams under flexure and shear
CE4203.6	Understand the relevant IS Code provisions for pre stressed concrete

Course Name: Solid and Hazardous Waste Management	
Course Code: CE4204	
CE4204.1	Able to Design the collection systems of solid waste of a town
CE4204.2	Understand the Design treatment of municipal solid waste and landfill
CE4204.3	Analyse to Know the criteria for selection of landfill
CE4204.4	Define the Characterise the solid waste and design a composting facility
CE4204.5	Differentiate the Method of treatment and disposal of Hazardous wastes
CE4204.6	Classifying the methods of solid disposal methods

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DEPARTMENT OF CIVIL ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2019-2020**

Course Name: Probability & Statistics	
Course Code: CE2101	
CE2101.1	Analyse and compare various Probability distributions for both discrete and continuous random variables
CE2101.2	Describe and compute confidence intervals for the mean of a population
CE2101.3	Compute confidence intervals for the proportion and the variance
CE2101.4	Understand population and test the hypothesis concerning mean, proportion
CE2101.5	Able to know the variance and perform ANOVA test
CE2101.6	Differentiate a curve to the numerical data

Course Name: Basic Electrical and Electronics Engineering	
Course Code: CE2102	
CE2102.1	Understand the basic principles of electrical law's and analysis of networks
CE2102.2	Able to know principle of operation and construction details of DC machines.
CE2102.3	Classify the principles of operation and construction details of transformer
CE2102.4	Analyse the operation and construction details of alternator and 3-Phase induction motor
CE2102.5	Define the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs
CE2102.6	To learn the operation of PNP and NPN transistors and various amplifiers

Course Name: Strength of materials-I	
Course Code: CE2103	
CE2103.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
CE2103.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
CE2103.3	Knowledge of bending concepts and calculation of section modulus
CE2103.4	Determination of stresses developed in the beams and deflections due to various loading conditions
CE2103.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
CE2103.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Building Materials & Construction	
Course Code: CE2104	
CE2104.1	Able to identify different building materials and their importance in building construction
CE2104.2	Differentiate brick masonry, stone masonry in building construction
CE2104.3	Understand to use of lime and cement in various constructions
CE2104.4	Analyse the importance of building components and finishing's
CE2104.5	Able to know the classification of aggregates, sieve analysis and moisture content
CE2104.6	Knowledge of basic building materials and their properties

Course Name: Surveying	
Course Code: CE2105	
CE2105.1	To Apply the knowledge to calculate angles, distances and levels
CE2105.2	Identify data collection methods and prepare field notes
CE2105.3	Understand the working principles of survey instruments, measurement errors and corrective measures
CE2105.4	Determination of survey data and compute areas and volumes, levels by different type of equipment
CE2105.5	Apply the surveying principles to determine areas and volumes and setting out curves
CE2105.6	Able to Identification of source of errors and rectification methods

Course Name: Fluid Mechanics	
Course Code: CE2106	
CE2106.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
CE2106.2	Calculate the forces that act on submerged planes and curves
CE2106.3	Ability to analyse various types of fluid flows
CE2106.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
CE2106.5	Determination of order to predict relevant pressures, velocities and forces
CE2106.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels

Course Name: Survey field work –I Lab	
Course Code: CE2107	
CE2107.1	To understand the various types of surveying methods
CE2107.2	Determination of the areas by applying the chain surveying
CE2107.3	Analyse the area calculations by triangulations methods
CE2107.4	Finding the area boundaries by plane table survey
CE2107.5	Determination of distance between two inaccessible points by using compass
CE2107.6	To understand the Height of the instrument method

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Course Name: Strength of materials Lab	
Course Code: CE2108	
CE2108.1	Determination of Tension test on Mild steel bar by UTM
CE2108.2	Understand the Bending test on cantilever beam of steel / wood
CE2108.3	Analyse the torsion test on specimen sample
CE2108.4	Able to know the Compression test on wood or concrete
CE2108.5	Apply the Brinnell's / Rock well's hardness testing machine for hardness of specimen
CE2108.6	Define the Verification of Maxwell's Reciprocal theorem on beams

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Year/Sem: II B.Tech II SEM

Course Name: Building planning and Drawing	
Course Code: CE2201	
CE2201.1	Able to plan various buildings as per the building by-laws
CE2201.2	Distinguish the relation between the plan, elevation and cross section
CE2201.3	Able to know the identify the form and functions among the buildings
CE2201.4	Learn the skills of drawing building elements and plan the buildings as per requirements
CE2201.5	Classification of learn the skills of drawing building elements and plan the buildings as per requirements
CE2201.6	Differentiate the sign conventions and symbols of drawings

Course Name: Strength of materials -II	
Course Code: CE2202	
CE2202.1	Determination of Principal stresses and strains developed in cross section of the beams
CE2202.2	Understand the concepts of torsion and governing torsion equation, and there by calculate the power transmitted by shafts and springs
CE2202.3	To classify columns and calculation of load carrying capacity and to assess stresses due to axial and lateral loads
CE2202.4	Analyse the unsymmetrical bending in beams Location of neutral axis Deflection of beams under unsymmetrical bending
CE2202.5	Knowledge about different engineering applications like shafts, springs, columns and struts subjected to different loading conditions
CE2202.6	Classify the concepts of failures in the material by theories of failures

Course Name: Hydraulics and Hydraulic Machinery	
Course Code: CE2203	
CE2203.1	Differentiate uniform and non-uniform open channel flow problems
CE2203.2	Apply the principals of dimensional analysis and similitude in hydraulic model testing
CE2203.3	Understand the working principles of various hydraulic machineries and pumps
CE2203.4	Analyse the characteristics of hydraulic jump
CE2203.5	Determination of dimensional analysis for fluid flow problems
CE2203.6	Classify the various types of various types of hydraulic machines and Pumps

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Course Name: Concrete Technology	
Course Code: CE2104	
CE2104.1	Understand basic concepts of concrete
CE2104.2	Analyse the basic ingredients of concrete and their role in concrete and their behaviour in the field
CE2104.3	Classify the fresh concrete properties and hardened concrete properties
CE2104.4	Understand the behaviour of concrete in various environments
CE2104.5	Evaluate ingredients of concrete through lab tests. design concrete mix by IS method
CE2104.6	To understand durability properties of concrete

Course Name: Structural Analysis-I	
Course Code: CE2105	
CE2105.1	Differentiate the between the determinate and indeterminate structures
CE2105.2	Analyse behaviour of structures due to the expected loads, including the moving loads, acting on the structure
CE2105.3	Classify the bending moment and shear forces in beams for different fixity conditions
CE2105.4	Understand the continuous beams using various methods
CE2105.5	Determination of three moment method, slope deflection method, energy theorems
CE2105.6	Able to know the influence line diagrams for various types of moving loads on beams/bridges

Course Name: Transportation Engineering-I	
Course Code: CE2106	
CE2106.1	Able to draw a Plan highway network for a given area
CE2106.2	To Determine Highway alignment
CE2106.3	Design Intersections and prepare traffic management plans
CE2106.4	Judge suitability of pavement materials and design flexible and rigid pavements
CE2106.5	To classify the different concepts in the field of Highway Engineering
CE2106.6	Able to know the types and classification of roads and intersections

Course Name: Fluid Mechanics & Hydraulics Machinery Lab	
Course Code: CE2207	
CE2207.1	Understand the Calibration of Venturi meter & Orifice meter
CE2207.2	Determination of Coefficient of discharge for a small orifice and mouth piece by a constant head and variable head method
CE2207.3	Able to know the Verification of Bernoulli's equation
CE2207.4	Define the Performance test on Pelton wheel turbine
CE2207.5	Analyse the Calibration of contracted Rectangular Notch and /or Triangular Notch
CE2208.6	Apply the Hydraulic jump test setup to study of Study of Hydraulic jump

Course Name: Surveying Field Work-II Lab

Course Code: CE2108

CE2108.1	Determination Horizontal and Vertical Angles by the method of repetition method by theodolite
CE2108.2	Define the distance between two inaccessible points
CE2108.3	Able to know the curve setting method
CE2108.4	Apply the total station method to know the distance between two inaccessible points
CE2108.5	Analyse the Contouring maps
CE2108.6	Understand the Heights and distance problems using tachometric principles

Course Name: Managerial Economics & Financial Analysis

Course Code: CE2209

CE3209.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
CE3209.2	The knowledge of understanding of the Input-Output-Cost relationships
CE3209.3	Estimation of the least cost combination of inputs
CE3209.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CE3209.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
CE3209.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Year/Sem: III B.Tech I SEM

Course Name: Management Science	
Course Code: CE3101	
CE3101.1	Analyse process of management and to provide basic insight into select contemporary management practices
CE3101.2	Able to know conceptual knowledge on functional management and strategic management
CE3101.3	Define the Evaluation of Management thought
CE3101.4	Understand Global Leadership and Organizational behaviour Effectiveness(GLOBE) structure
CE3101.5	Classify the Principles and Types of Management
CE3101.6	Development of Network by CPM/PERT

Course Name: Engineering Geology	
Course Code: CE3102	
CE3102.1	Able to Identify and classify the geological minerals
CE3102.2	Understand and Measure the rock strengths of various rocks
CE3102.3	Classify and measure the earthquake prone areas to practice the hazard zonation
CE3102.4	Prepares, analyses and interpret the Engineering Geologic maps
CE3102.5	Investigate the project site for mega/mini civil engineering projects
CE3102.6	Site selection for mega engineering projects like Dams, Tunnels, disposals

Course Name: Structural Analysis-II	
Course Code: CE3103	
CE3103.1	Differentiate Determinate and Indeterminate Structures
CE3103.2	Analyse the Carryout lateral Load analysis of structures
CE3103.3	Understand the Cable and Suspension Bridge structures
CE3103.4	Define structures using Moment Distribution method
CE3103.5	Classify the structures by kani's method
CE3103.6	Able to know the characteristics cables and portal frames

Course Name: Design and Drawing of Reinforced Concrete Structures	
Course Code: CE3104	
CE3104.1	Able to understand the various design methods in RCC
CE3104.2	Differentiate the over and under reinforced structures with loading
CE3104.3	Analysis and design of flexural members and detailing
CE3104.4	Classification of various types slabs in RCC
CE3104.5	Design different type of compression members and footings
CE3104.6	Understand different types of footings and design

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Course Name: Transportation Engineering-II	
Course Code: CE3105	
CE3105.1	Understand the various components and their functions in a railway track
CE3105.2	Able to know design principles of geometrics in a railway track
CE3105.3	Apply the Plan track layouts and control movement of trains
CE3105.4	Classify the Functions of various Components like Rails, Sleepers and Ballast
CE3105.5	Design airport geometrics and airfield pavements
CE3105.6	Plan, construct and maintain Docks and Harbours

Course Name: Concrete Technology Lab	
Course Code: CE3106	
CE3106.1	Determination of normal Consistency and fineness of cement
CE3106.2	Able to know the initial setting time and final setting time of cement
CE3106.3	Determination of specific gravity and soundness of cement
CE3106.4	Understand the properties of concrete
CE3106.5	Define the bulking of sand
CE3106.6	Classify workability of concrete by compaction factor method

Course Name: Engineering Geology Lab	
Course Code: CE3107	
CE3107.1	Able to identify the Megascopic types of Ore minerals & Rock forming minerals
CE3107.2	Classify the types of Igneous, Sedimentary, Metamorphic rocks
CE3107.3	To identify the topography of the site & material selection
CE3107.4	Able to Know the occurrence of materials using the strike & dip problems
CE3107.5	Define the site parameters such as contour, slope & aspect for topography
CE3107.6	Differentiate the physical and chemical properties of specimens

Course Name: Transportation Engineering lab	
Course Code: CE3108	
CE3108.1	Able to know penetration value, ductility value, softening point
CE3108.2	To understand the test the stability for the given bituminous mix
CE3108.3	Define the carry out surveys for traffic volume, speed and parking
CE3108.4	Obtain the optimum bitumen content for Bituminous Concrete
CE3108.5	Determine the traffic volume, speed and parking characteristics
CE3108.6	Draw highway cross sections and intersections

Year/Sem: III B.Tech II SEM

Course Name: Design And Drawing of Steel Structures	
Course Code: CE3201	
CE3201.1	Understand the various Work relevant IS codes
CE3201.2	Analysis and design of flexural members and detailing
CE3201.3	Able to Design compression members of different types with connection detailing
CE3201.4	Understand Design of tension and compression members in trusses
CE3201.5	Differentiate the Plate girder and Gantry Girder and their Design
CE3201.6	Apply the drawings pertaining to different components of steel structures

Course Name: Geotechnical engineering -I	
Course Code: CE3202	
CE3202.1	Able to know the definition of the various quantities related to soil mechanics and Establish their inter-relationships.
CE3202.2	Determination of the various index properties of the soils and classify the soils
CE3202.3	Understand the importance of the different engineering properties of the soil
CE3202.4	Classify the properties of compaction, permeability, consolidation and shear strength and determine them in the laboratory
CE3202.5	understand the concept of shear strength of soils
CE3202.6	Differentiate the shear parameters of sands and clays and the areas of their application

Course Name: Environmental Engineering-I	
Course Code: CE3203	
CE3203.1	Analyse source based on quality and quantity and Estimate design population and water demand
CE3203.2	Design a water treatment plant for a village/city
CE3203.3	Estimation of the Sewage Treatment Plant for a town/city
CE3203.4	Classify the sewers and plumbing systems for building
CE3203.5	Apply the various methods to treatment the water
CE3203.6	Able to know the distribution systems of the water

Course Name: Water Resource Engineering-I	
Course Code: CE3204	
CE3204.1	Able to understanding of the theories and principles governing the hydrologic processes
CE3204.2	Analyse the quantify hydrological components
CE3204.3	Apply concepts in hydrologic design of water resources projects
CE3204.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE3204.5	Differentiate flow mass curve and flow duration curve
CE3204.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Waste Water Management	
Course Code: CE3205	
CE3205.1	Know the quality and quantity of water for various industries and Advanced water treatment methods
CE3205.2	Learn the common methods of treatment of wastewaters and Biological treatment methods
CE3205.3	Analyse methods to reduce impacts of disposal of wasters into environment and CETPs
CE3205.4	Classify the treatment of wastewaters from specific industries like steel plants
CE3205.5	Able to know methods of treatment of wastewaters from industries like Aqua, dairy, sugar plants, and distilleries that imply biological treatment methods
CE3205.6	Applying the neutralization methods for water treatment

Course Name: Geotechnical Engineering Lab	
Course Code: CE3206	
CE3206.1	Able to know the permeability of soils
CE3206.2	Understand the Compaction, Consolidation and shear strength characteristics
CE3206.3	Analyse the index properties of the soils
CE3206.4	Differentiate the various types and classifications of the soils
CE3206.5	Apply Atterberg's Limits to know plasticity of soils
CE3206.6	Differentiate the Permeability, Compaction, consolidation, shear strength parameters & CBR value

Course Name: Environmental Engineering Lab	
Course Code: CE3207	
CE3207.1	Estimate some important characteristics of water, wastewater and soil
CE3207.2	Classify the conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE3207.3	Estimate Chloride, EC and Salinity of Soil and suggest their suitability
CE3207.4	Able to know the COD & BOD Values in water
CE3207.5	Classifying the various methods to treatment of water
CE3207.6	Demonstration of various instruments used in testing of water and soil and study of Drinking water standard

Course Name: Computer Aided Engineering Lab	
Course Code: CE3208	
CE3208.1	Understand Model the geometry of real-world structure Represent the physical model of structural element/structure
CE3208.2	Analyse the Perform analysis of the frame
CE3208.3	Able to Design and detailing of built up steel beam
CE3208.4	Developing a design programme for foundation
CE3208.5	Differentiate the Interpret from the Post processing results
CE3208.6	Analysis & Design of Roof Trusses

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Year/Sem: IV B.Tech I SEM

Course Name: Environmental Engineering - II	
Course Code: CE4101	
CE4101.1	Plan and design the sewerage systems
CE4101.2	Able to Select the appropriate appurtenances in the sewerage systems
CE4101.3	Analyze sewage and suggest and design suitable treatment system for sewage treatment
CE4101.4	Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
CE4101.5	Able to know suitable disposal method with respect to effluent standards
CE4101.6	Differentiate the one pipe & two pipe methods

Course Name: Water Resource Engineering-II	
Course Code: CE4102	
CE4102.1	Able to understanding of the theories and principles governing the hydrologic processes
CE4102.2	Analyse the quantify hydrological components
CE4102.3	Apply concepts in hydrologic design of water resources projects
CE4102.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE4102.5	Differentiate flow mass curve and flow duration curve
CE4102.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Geotechnical Engineering-II	
Course Code: CE4103	
CE4103.1	Able to understand the various types of shallow foundations
CE4103.2	Analyse and compute the magnitude of foundation settlement and decide on the size of the foundation accordingly
CE4103.3	Define the field test data and arrive at the bearing capacity
CE4103.4	Design the principles of bearing capacity of piles
CE4103.5	Differentiate the principles of important field tests such as SPT and Plate bearing test
CE4103.6	Able to know the concepts of pile foundations and determine their load carrying capacity

Course Name: Remote Sensing & GIS Applications	
Course Code: CE4104	
CE4104.1	Understand the basic principles of Remote Sensing and GIS techniques
CE4104.2	Able to learn various types of sensors and platforms
CE4104.3	Differentiate the aerial photographs and satellite imageries
CE4104.4	Create and input spatial data for GIS application
CE4104.5	Apply RS and GIS concepts for application in Civil Engineering
CE4104.6	Classify the spatial data structures, raster and vector data formats

Course Name: Ground Improvement Techniques	
Course Code: CE4105	
CE4105.1	Able to possess the knowledge of various methods of ground improvement and their suitability
CE4105.2	Differentiate to learn the concepts, purpose and effects of grouting
CE4105.3	Understand the position to design a reinforced earth embankment and check its stability
CE4105.4	Classify the various functions of Geosynthetics and their applications in Civil Engineering practice
CE4105.5	Able to know reinforced earth technology and soil nailing can obviate the problems posed by the conventional retaining walls
CE4105.6	Defining the improvement of engineering performance of soils

Course Name: Environmental impact assessment and management	
Course Code: CE4106	
CE4106.1	To impart knowledge on different concepts of Environmental Impact Assessment
CE4106.2	Able to Prepare EMP, EIS, and EIA report
CE4106.3	Analyse and Identify the risks and impacts of a project
CE4106.4	Define and Evaluation the EIA report
CE4106.5	Estimate the cost benefit ratio of a project
CE4106.6	Know the role of stakeholder and public hearing in the preparation of EIA

Course Name: GIS & CAD Lab	
Course Code: CE4107	
CE4107.1	Able to understand the Work comfortably on GIS software
CE4107.2	Define Digitize and create thematic map and extract important features
CE4107.3	Classifying the Develop digital elevation model
CE4107.4	Use structural analysis software to analyse and design 2D and 3D frames
CE4107.5	Design and analyse retaining wall and simple towers using CADD software
CE4107.6	learn to apply GIS software to simple problems in water resources and transportation engineering

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Course Name: Irrigation Design and Drawing Lab	
Course Code: CE4108	
CE4108.1	To understand design principle of various irrigation structures
CE4108.2	Design and analyse the surplus weir
CE4108.3	Able to know design and working of Tank sluice with a tower head
CE4108.4	Draw a plan of Canal drop-Notch type and working principles
CE4108.5	Understand the efficiency of Canal regulator
CE4108.6	Classify the design of Syphon aqueduct type III

Year/Sem: IV B.Tech II SEM

Course Name: Estimation Specifications and Contracts	
Course Code: CE4201	
CE4201.1	Able to determine the quantities of different components of buildings
CE4201.2	Analyse position to find the cost of various building components
CE4201.3	Understand the capable of finalizing the value of structures
CE4201.4	Differentiate various specifications and components of the buildings
CE4201.5	Understand the quantity calculations of different components of the buildings
CE4201.6	Classifying the types of contracts & documents

Course Name: Construction Technology & Management	
Course Code: CE4202	
CE4202.1	Analyse the importance of construction planning
CE4202.2	Define the functioning of various earth moving equipment
CE4202.3	Able to know the methods of production of aggregate products and concreting
CE4202.4	Apply the gained knowledge to project management and construction techniques
CE4202.5	Classify the importance of safety in construction projects
CE4202.6	Understand the concept of project management including network drawing and monitoring

Course Name: Pre stressed Concrete	
Course Code: CE4203	
CE4203.1	Able to know the concepts of pre stressing
CE4203.2	Understand different pre stressing systems and devices
CE4203.3	Analyse the losses of pre stress including short and long term losses
CE4203.4	Analysis and design of pre stressed concrete members under flexure, shear and torsion
CE4203.5	Analyse and design pre stressed concrete beams under flexure and shear
CE4203.6	Understand the relevant IS Code provisions for pre stressed concrete

Course Name: Solid and Hazardous Waste Management	
Course Code: CE4204	
CE4204.1	Able to Design the collection systems of solid waste of a town
CE4204.2	Understand the Design treatment of municipal solid waste and landfill
CE4204.3	Analyse to Know the criteria for selection of landfill
CE4204.4	Define the Characterise the solid waste and design a composting facility
CE4204.5	Differentiate the Method of treatment and disposal of Hazardous wastes
CE4204.6	Classifying the methods of solid disposal methods

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DEPARTMENT OF CIVIL ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2018-2019**

Course Name: Probability & Statistics	
Course Code: CE2101	
CE2101.1	Analyse and compare various Probability distributions for both discrete and continuous random variables
CE2101.2	Describe and compute confidence intervals for the mean of a population
CE2101.3	Compute confidence intervals for the proportion and the variance
CE2101.4	Understand population and test the hypothesis concerning mean, proportion
CE2101.5	Able to know the variance and perform ANOVA test
CE2101.6	Differentiate a curve to the numerical data

Course Name: Basic Electrical and Electronics Engineering	
Course Code: CE2102	
CE2102.1	Understand the basic principles of electrical law's and analysis of networks
CE2102.2	Able to know principle of operation and construction details of DC machines.
CE2102.3	Classify the principles of operation and construction details of transformer
CE2102.4	Analyse the operation and construction details of alternator and 3-Phase induction motor
CE2102.5	Define the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs
CE2102.6	To learn the operation of PNP and NPN transistors and various amplifiers

Course Name: Strength of materials-I	
Course Code: CE2103	
CE2103.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
CE2103.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
CE2103.3	Knowledge of bending concepts and calculation of section modulus
CE2103.4	Determination of stresses developed in the beams and deflections due to various loading conditions
CE2103.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
CE2103.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Building Materials & Construction	
Course Code: CE2104	
CE2104.1	Able to identify different building materials and their importance in building construction
CE2104.2	Differentiate brick masonry, stone masonry in building construction
CE2104.3	Understand to use of lime and cement in various constructions
CE2104.4	Analyse the importance of building components and finishing's
CE2104.5	Able to know the classification of aggregates, sieve analysis and moisture content
CE2104.6	Knowledge of basic building materials and their properties

Course Name: Surveying	
Course Code: CE2105	
CE2105.1	To Apply the knowledge to calculate angles, distances and levels
CE2105.2	Identify data collection methods and prepare field notes
CE2105.3	Understand the working principles of survey instruments, measurement errors and corrective measures
CE2105.4	Determination of survey data and compute areas and volumes, levels by different type of equipment
CE2105.5	Apply the surveying principles to determine areas and volumes and setting out curves
CE2105.6	Able to Identification of source of errors and rectification methods

Course Name: Fluid Mechanics	
Course Code: CE2106	
CE2106.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
CE2106.2	Calculate the forces that act on submerged planes and curves
CE2106.3	Ability to analyse various types of fluid flows
CE2106.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
CE2106.5	Determination of order to predict relevant pressures, velocities and forces
CE2106.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels

Course Name: Survey field work –I Lab	
Course Code: CE2107	
CE2107.1	To understand the various types of surveying methods
CE2107.2	Determination of the areas by applying the chain surveying
CE2107.3	Analyse the area calculations by triangulations methods
CE2107.4	Finding the area boundaries by plane table survey
CE2107.5	Determination of distance between two inaccessible points by using compass
CE2107.6	To understand the Height of the instrument method

Course Name: Strength of materials Lab	
Course Code: CE2108	
CE2108.1	Determination of Tension test on Mild steel bar by UTM
CE2108.2	Understand the Bending test on cantilever beam of steel / wood
CE2108.3	Analyse the torsion test on specimen sample
CE2108.4	Able to know the Compression test on wood or concrete
CE2108.5	Apply the Brinnell's / Rock well's hardness testing machine for hardness of specimen
CE2108.6	Define the Verification of Maxwell's Reciprocal theorem on beams

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Year/Sem: II B.Tech II SEM

Course Name: Building planning and Drawing	
Course Code: CE2201	
CE2201.1	Able to plan various buildings as per the building by-laws
CE2201.2	Distinguish the relation between the plan, elevation and cross section
CE2201.3	Able to know the identify the form and functions among the buildings
CE2201.4	Learn the skills of drawing building elements and plan the buildings as per requirements
CE2201.5	Classification of learn the skills of drawing building elements and plan the buildings as per requirements
CE2201.6	Differentiate the sign conventions and symbols of drawings

Course Name: Strength of materials -II	
Course Code: CE2202	
CE2202.1	Determination of Principal stresses and strains developed in cross section of the beams
CE2202.2	Understand the concepts of torsion and governing torsion equation, and there by calculate the power transmitted by shafts and springs
CE2202.3	To classify columns and calculation of load carrying capacity and to assess stresses due to axial and lateral loads
CE2202.4	Analyse the unsymmetrical bending in beams Location of neutral axis Deflection of beams under unsymmetrical bending
CE2202.5	Knowledge about different engineering applications like shafts, springs, columns and struts subjected to different loading conditions
CE2202.6	Classify the concepts of failures in the material by theories of failures

Course Name: Hydraulics and Hydraulic Machinery	
Course Code: CE2203	
CE2203.1	Differentiate uniform and non-uniform open channel flow problems
CE2203.2	Apply the principals of dimensional analysis and similitude in hydraulic model testing
CE2203.3	Understand the working principles of various hydraulic machineries and pumps
CE2203.4	Analyse the characteristics of hydraulic jump
CE2203.5	Determination of dimensional analysis for fluid flow problems
CE2203.6	Classify the various types of various types of hydraulic machines and Pumps

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Course Name: Concrete Technology	
Course Code: CE2104	
CE2104.1	Understand basic concepts of concrete
CE2104.2	Analyse the basic ingredients of concrete and their role in concrete and their behaviour in the field
CE2104.3	Classify the fresh concrete properties and hardened concrete properties
CE2104.4	Understand the behaviour of concrete in various environments
CE2104.5	Evaluate ingredients of concrete through lab tests. design concrete mix by IS method
CE2104.6	To understand durability properties of concrete

Course Name: Structural Analysis-I	
Course Code: CE2105	
CE2105.1	Differentiate the between the determinate and indeterminate structures
CE2105.2	Analyse behaviour of structures due to the expected loads, including the moving loads, acting on the structure
CE2105.3	Classify the bending moment and shear forces in beams for different fixity conditions
CE2105.4	Understand the continuous beams using various methods
CE2105.5	Determination of three moment method, slope deflection method, energy theorems
CE2105.6	Able to know the influence line diagrams for various types of moving loads on beams/bridges

Course Name: Transportation Engineering-I	
Course Code: CE2106	
CE2106.1	Able to draw a Plan highway network for a given area
CE2106.2	To Determine Highway alignment
CE2106.3	Design Intersections and prepare traffic management plans
CE2106.4	Judge suitability of pavement materials and design flexible and rigid pavements
CE2106.5	To classify the different concepts in the field of Highway Engineering
CE2106.6	Able to know the types and classification of roads and intersections

Course Name: Fluid Mechanics & Hydraulics Machinery Lab	
Course Code: CE2207	
CE2207.1	Understand the Calibration of Venturi meter & Orifice meter
CE2207.2	Determination of Coefficient of discharge for a small orifice and mouth piece by a constant head and variable head method
CE2207.3	Able to know the Verification of Bernoulli's equation
CE2207.4	Define the Performance test on Pelton wheel turbine
CE2207.5	Analyse the Calibration of contracted Rectangular Notch and /or Triangular Notch
CE2208.6	Apply the Hydraulic jump test setup to study of Study of Hydraulic jump

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Course Name: Surveying Field Work-II Lab	
Course Code: CE2108	
CE2108.1	Determination Horizontal and Vertical Angles by the method of repetition method by theodolite
CE2108.2	Define the distance between two inaccessible points
CE2108.3	Able to know the curve setting method
CE2108.4	Apply the total station method to know the distance between two inaccessible points
CE2108.5	Analyse the Contouring maps
CE2108.6	Understand the Heights and distance problems using tachometric principles

Course Name: Managerial Economics & Financial Analysis	
Course Code: CE2209	
CE3209.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
CE3209.2	The knowledge of understanding of the Input-Output-Cost relationships
CE3209.3	Estimation of the least cost combination of inputs
CE3209.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CE3209.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
CE3209.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

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Year/Sem: III B.Tech I SEM

Course Name: Management Science	
Course Code: CE3101	
CE3101.1	Analyse process of management and to provide basic insight into select contemporary management practices
CE3101.2	Able to know conceptual knowledge on functional management and strategic management
CE3101.3	Define the Evaluation of Management thought
CE3101.4	Understand Global Leadership and Organizational behaviour Effectiveness(GLOBE) structure
CE3101.5	Classify the Principles and Types of Management
CE3101.6	Development of Network by CPM/PERT

Course Name: Engineering Geology	
Course Code: CE3102	
CE3102.1	Able to Identify and classify the geological minerals
CE3102.2	Understand and Measure the rock strengths of various rocks
CE3102.3	Classify and measure the earthquake prone areas to practice the hazard zonation
CE3102.4	Prepares, analyses and interpret the Engineering Geologic maps
CE3102.5	Investigate the project site for mega/mini civil engineering projects
CE3102.6	Site selection for mega engineering projects like Dams, Tunnels, disposals

Course Name: Structural Analysis-II	
Course Code: CE3103	
CE3103.1	Differentiate Determinate and Indeterminate Structures
CE3103.2	Analyse the Carryout lateral Load analysis of structures
CE3103.3	Understand the Cable and Suspension Bridge structures
CE3103.4	Define structures using Moment Distribution method
CE3103.5	Classify the structures by kani's method
CE3103.6	Able to know the characteristics cables and portal frames

Course Name: Design and Drawing of Reinforced Concrete Structures	
Course Code: CE3104	
CE3104.1	Able to understand the various design methods in RCC
CE3104.2	Differentiate the over and under reinforced structures with loading
CE3104.3	Analysis and design of flexural members and detailing
CE3104.4	Classification of various types slabs in RCC
CE3104.5	Design different type of compression members and footings
CE3104.6	Understand different types of footings and design

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Course Name: Transportation Engineering-II	
Course Code: CE3105	
CE3105.1	Understand the various components and their functions in a railway track
CE3105.2	Able to know design principles of geometrics in a railway track
CE3105.3	Apply the Plan track layouts and control movement of trains
CE3105.4	Classify the Functions of various Components like Rails, Sleepers and Ballast
CE3105.5	Design airport geometrics and airfield pavements
CE3105.6	Plan, construct and maintain Docks and Harbours

Course Name: Concrete Technology Lab	
Course Code: CE3106	
CE3106.1	Determination of normal Consistency and fineness of cement
CE3106.2	Able to know the initial setting time and final setting time of cement
CE3106.3	Determination of specific gravity and soundness of cement
CE3106.4	Understand the properties of concrete
CE3106.5	Define the bulking of sand
CE3106.6	Classify workability of concrete by compaction factor method

Course Name: Engineering Geology Lab	
Course Code: CE3107	
CE3107.1	Able to identify the Megascopic types of Ore minerals & Rock forming minerals
CE3107.2	Classify the types of Igneous, Sedimentary, Metamorphic rocks
CE3107.3	To identify the topography of the site & material selection
CE3107.4	Able to Know the occurrence of materials using the strike & dip problems
CE3107.5	Define the site parameters such as contour, slope & aspect for topography
CE3107.6	Differentiate the physical and chemical properties of specimens

Course Name: Transportation Engineering lab	
Course Code: CE3108	
CE3108.1	Able to know penetration value, ductility value, softening point
CE3108.2	To understand the test the stability for the given bituminous mix
CE3108.3	Define the carry out surveys for traffic volume, speed and parking
CE3108.4	Obtain the optimum bitumen content for Bituminous Concrete
CE3108.5	Determine the traffic volume, speed and parking characteristics
CE3108.6	Draw highway cross sections and intersections

Year/Sem: III B.Tech II SEM

Course Name: Design And Drawing of Steel Structures	
Course Code: CE3201	
CE3201.1	Understand the various Work relevant IS codes
CE3201.2	Analysis and design of flexural members and detailing
CE3201.3	Able to Design compression members of different types with connection detailing
CE3201.4	Understand Design of tension and compression members in trusses
CE3201.5	Differentiate the Plate girder and Gantry Girder and their Design
CE3201.6	Apply the drawings pertaining to different components of steel structures

Course Name: Geotechnical engineering -I	
Course Code: CE3202	
CE3202.1	Able to know the definition of the various quantities related to soil mechanics and Establish their inter-relationships.
CE3202.2	Determination of the various index properties of the soils and classify the soils
CE3202.3	Understand the importance of the different engineering properties of the soil
CE3202.4	Classify the properties of compaction, permeability, consolidation and shear strength and determine them in the laboratory
CE3202.5	understand the concept of shear strength of soils
CE3202.6	Differentiate the shear parameters of sands and clays and the areas of their application

Course Name: Environmental Engineering-I	
Course Code: CE3203	
CE3203.1	Analyse source based on quality and quantity and Estimate design population and water demand
CE3203.2	Design a water treatment plant for a village/city
CE3203.3	Estimation of the Sewage Treatment Plant for a town/city
CE3203.4	Classify the sewers and plumbing systems for building
CE3203.5	Apply the various methods to treatment the water
CE3203.6	Able to know the distribution systems of the water

Course Name: Water Resource Engineering-I	
Course Code: CE3204	
CE3204.1	Able to understanding of the theories and principles governing the hydrologic processes
CE3204.2	Analyse the quantify hydrological components
CE3204.3	Apply concepts in hydrologic design of water resources projects
CE3204.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE3204.5	Differentiate flow mass curve and flow duration curve
CE3204.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Waste Water Management	
Course Code: CE3205	
CE3205.1	Know the quality and quantity of water for various industries and Advanced water treatment methods
CE3205.2	Learn the common methods of treatment of wastewaters and Biological treatment methods
CE3205.3	Analyse methods to reduce impacts of disposal of wasters into environment and CETPs
CE3205.4	Classify the treatment of wastewaters from specific industries like steel plants
CE3205.5	Able to know methods of treatment of wastewaters from industries like Aqua, dairy, sugar plants, and distilleries that imply biological treatment methods
CE3205.6	Applying the neutralization methods for water treatment

Course Name: Geotechnical Engineering Lab	
Course Code: CE3206	
CE3206.1	Able to know the permeability of soils
CE3206.2	Understand the Compaction, Consolidation and shear strength characteristics
CE3206.3	Analyse the index properties of the soils
CE3206.4	Differentiate the various types and classifications of the soils
CE3206.5	Apply Atterberg's Limits to know plasticity of soils
CE3206.6	Differentiate the Permeability, Compaction, consolidation, shear strength parameters & CBR value

Course Name: Environmental Engineering Lab	
Course Code: CE3207	
CE3207.1	Estimate some important characteristics of water, wastewater and soil
CE3207.2	Classify the conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE3207.3	Estimate Chloride, EC and Salinity of Soil and suggest their suitability
CE3207.4	Able to know the COD & BOD Values in water
CE3207.5	Classifying the various methods to treatment of water
CE3207.6	Demonstration of various instruments used in testing of water and soil and study of Drinking water standard

Course Name: Computer Aided Engineering Lab	
Course Code: CE3208	
CE3208.1	Understand Model the geometry of real-world structure Represent the physical model of structural element/structure
CE3208.2	Analyse the Perform analysis of the frame
CE3208.3	Able to Design and detailing of built up steel beam
CE3208.4	Developing a design programme for foundation
CE3208.5	Differentiate the Interpret from the Post processing results
CE3208.6	Analysis & Design of Roof Trusses

Year/Sem: IV B.Tech I SEM

Course Name: Environmental Engineering - II	
Course Code: CE4101	
CE4101.1	Plan and design the sewerage systems
CE4101.2	Able to Select the appropriate appurtenances in the sewerage systems
CE4101.3	Analyze sewage and suggest and design suitable treatment system for sewage treatment
CE4101.4	Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
CE4101.5	Able to know suitable disposal method with respect to effluent standards
CE4101.6	Differentiate the one pipe & two pipe methods

Course Name: Pre stressed Concrete	
Course Code: CE4102	
CE4102.1	Able to know the concepts of pre stressing
CE4102.2	Understand different pre stressing systems and devices
CE4102.3	Analyse the losses of pre stress including short and long term losses
CE4102.4	Analysis and design of pre stressed concrete members under flexure, shear and torsion
CE4102.5	Analyse and design pre stressed concrete beams under flexure and shear
CE4102.6	Understand the relevant IS Code provisions for pre stressed concrete

Course Name: Construction Technology & Management	
Course Code: CE4103	
CE4103.1	Analyse the importance of construction planning
CE4103.2	Define the functioning of various earth moving equipment
CE4103.2	Able to know the methods of production of aggregate products and concreting
CE4103.2	Apply the gained knowledge to project management and construction techniques
CE4103.2	Classify the importance of safety in construction projects
CE4103.2	Understand the concept of project management including network drawing and monitoring

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Course Name: Water Resource Engineering-II	
Course Code: CE4104	
CE4104.1	Able to understanding of the theories and principles governing the hydrologic processes
CE4104.2	Analyse the quantify hydrological components
CE4104.3	Apply concepts in hydrologic design of water resources projects
CE4104.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE4104.5	Differentiate flow mass curve and flow duration curve
CE4104.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Remote Sensing & GIS Applications	
Course Code: CE4105	
CE4105.1	Understand the basic principles of Remote Sensing and GIS techniques
CE4105.2	Able to learn various types of sensors and platforms
CE4105.3	Differentiate the aerial photographs and satellite imageries
CE4105.4	Create and input spatial data for GIS application
CE4105.5	Apply RS and GIS concepts for application in Civil Engineering
CE4105.6	Classify the spatial data structures, raster and vector data formats

Course Name: Ground Improvement Techniques	
Course Code: CE4106	
CE4106.1	Able to possess the knowledge of various methods of ground improvement and their suitability
CE4106.2	Differentiate to learn the concepts, purpose and effects of grouting
CE4106.3	Understand the position to design a reinforced earth embankment and check its stability
CE4106.4	Classify the various functions of Geosynthetics and their applications in Civil Engineering practice
CE4106.5	Able to know reinforced earth technology and soil nailing can obviate the problems posed by the conventional retaining walls
CE4106.6	Defining the improvement of engineering performance of soils

Course Name: Environmental Engineering Lab	
Course Code: CE4107	
CE4107.1	Estimate some important characteristics of water, wastewater and soil
CE4107.2	Classify the conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE4107.3	Estimate Chloride, EC and Salinity of Soil and suggest their suitability
CE4107.4	Able to know the COD & BOD Values in water
CE4107.5	Classifying the various methods to treatment of water
CE4107.6	Demonstration of various instruments used in testing of water and soil and study of Drinking water standard

Course Name: GIS & CAD Lab	
Course Code: CE4108	
CE4108.1	Able to understand the Work comfortably on GIS software
CE4108.2	Define Digitize and create thematic map and extract important features
CE4108.3	Classifying the Develop digital elevation model
CE4108.4	Use structural analysis software to analyse and design 2D and 3D frames
CE4108.5	Design and analyse retaining wall and simple towers using CADD software
CE4108.6	learn to apply GIS software to simple problems in water resources and transportation engineering

Year/Sem: IV B.Tech II SEM

Course Name: Estimation Specifications and Contracts	
Course Code: CE4201	
CE4201.1	Able to determine the quantities of different components of buildings
CE4201.2	Analyse position to find the cost of various building components
CE4201.3	Understand the capable of finalizing the value of structures
CE4201.4	Differentiate various specifications and components of the buildings
CE4201.5	Understand the quantity calculations of different components of the buildings
CE4201.6	Classifying the types of contracts & documents

Course Name: Environmental impact assessment and management	
Course Code: CE4202	
CE4202.1	To impart knowledge on different concepts of Environmental Impact Assessment
CE4202.2	Able to Prepare EMP, EIS, and EIA report
CE4202.3	Analyse and Identify the risks and impacts of a project
CE4202.4	Define and Evaluation the EIA report
CE4202.5	Estimate the cost benefit ratio of a project
CE4202.6	Know the role of stakeholder and public hearing in the preparation of EIA

Course Name: Watershed Management	
Course Code: CE4203	
CE4203.1	Able to calculate the parameters of watershed
CE4203.2	Defining the quantity of soil erosion and design measures
CE4203.3	Apply land grading methods for proper land management
CE4203.4	Classifying the suitable harvesting techniques for better watershed management
CE4203.5	Applying the methods for watershed management
CE4203.6	Able to know the rain water harvesting techniques

Course Name: Repair and Rehabilitation of Structures	
Course Code: CE4204	
CE4204.1	Understand the deterioration of the structures
CE4204.2	Applying the NDT tests to evaluate the strength of the structures
CE4204.3	Classify the failures of various frames under the loading
CE4204.4	Differentiate Methods for corrosion measurement and assessment including half-cell potential and resistivity, Mapping of data
CE4204.5	Able to know the application of UPV test for the concrete structures
CE4204.6	Determination of corrosion and erosion in the structures with faliures

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2022-2023**

COURSE NAME: MATHEMATICS– IV	
COURSE CODE: EE2101	
EE2101.1	Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic (l3).
EE2101.2	Find the differentiation and integration of complex functions used in engineering problems (l5).
EE2101.3	Make use of the cauchy residue theorem to evaluate certain integrals (l3).
EE2101.4	Apply discrete and continuous probability distributions (l3).
EE2101.5	Design the components of a classical hypothesis test (l6).
EE2101.6	Infer the statistical inferential methods based on small and large sampling tests (l4).

COURSE NAME: ELECTRONIC DEVICES AND CIRCUITS	
COURSE CODE: EE2102	
EE2102.1	Understand the basic concepts of semiconductor physics.
EE2102.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EE2102.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons.
EE2102.4	Understand the construction, principle of operation of transistors, bjt and fet with their v-i characteristics in different configurations.
EE2102.5	Know the need of transistor biasing, various biasing techniques for bjt and fet and stabilization concepts with necessary expressions.
EE2102.6	Perform the analysis of small signal low frequency transistor amplifier circuits using bjt and fet in different configurations.

COURSE NAME: ELECTRICAL CIRCUIT ANALYSIS - II	
COURSE CODE: EE2103	
EE2103.1	Understand the concepts of balanced and three-phase circuits.
EE2103.2	Know the transient behavior of electrical networks with dc excitations.
EE2103.3	Learn the transient behavior of electrical networks with ac excitations.
EE2103.4	Estimate various parameters of a two port network.
EE2103.5	Understand the significance of filters in electrical networks.
EE2103.6	Understand the concepts of unbalanced three-phase circuits.

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COURSE NAME: DC MACHINES AND TRANSFORMERS	
COURSE CODE: EE2104	
EE2104.1	Assimilate the concepts of electromechanical energy conversion.
EE2104.2	Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
EE2104.3	Understand the torque production mechanism and control the speed of dc motors.
EE2104.4	Analyze the performance of single phase transformers.
EE2104.5	Predetermine regulation, losses and efficiency of single phase transformers.
EE2104.6	Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.

COURSE NAME: ELECTRO MAGNETIC FIELDS	
COURSE CODE: EE2105	
EE2105.1	Compute electric fields and potentials using gauss law.
EE2105.2	Calculate the capacitance and energy stored in dielectrics.
EE2105.3	Calculate the magnetic field intensity due to current carrying conductor and understanding the application of ampere's law, maxwell's second and third law.
EE2105.4	Estimate self and mutual inductances and the energy stored in the magnetic field.
EE2105.5	Understand the concepts of displacement current and poynting theorem and poynting vector.
EE2105.6	Solve Laplace's or Poisson's equations for various electric charge distributions.

COURSE NAME: ELECTRICAL CIRCUITS LAB	
COURSE CODE: EE21L1	
EE21L1.1	Apply various theorems.
EE21L1.2	Determination of self and mutual inductances.
EE21L1.3	Two port parameters of a given electric circuits.
EE21L1.4	Draw locus diagrams.
EE21L1.5	Draw waveforms and phasor diagrams for leading networks.
EE21L1.6	Draw waveforms and phasor diagrams for lagging.

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COURSE NAME: DC MACHINES AND TRANSFORMERS LAB	
COURSE CODE: EE21L2	
EE21L2.1	Determine and predetermine the performance of dc machines.
EE21L2.2	Determine and predetermine the performance of transformers.
EE21L2.3	Control the speed of dc motor.
EE21L2.4	Obtain three phase to two phase transformation
EE21L2.5	To predetermine the efficiency and regulation of transformers and assess their performance.
EE21L2.6	To plot the magnetizing characteristics of dc shunt generator and understand the mechanism of self-excitation.

COURSE NAME: ELECTRONIC DEVICES AND CIRCUITS LAB	
COURSE CODE: EE21L3	
EE21L3.1	Analyze the characteristics of diodes, transistors and other devices.
EE21L3.2	Design and implement the rectifier circuits, scr and ujt in the hardware circuits.
EE21L3.3	Design and implement the scr.
EE21L3.4	Design and implement the ujt in the hardware.
EE21L3.5	Design the biasing and amplifiers of bjt and fet amplifiers.
EE21L3.6	Measure electrical quantities using cro in the experimentation.

COURSE NAME: PYTHON PROGRAMMING	
COURSE CODE: EE2201	
EE2201.1	Develop essential programming skills in computer programming concepts like data types.
EE2201.2	Apply the basics of programming in the python language.
EE2201.3	Solve coding tasks related conditional execution, loops.
EE2201.4	Solve coding tasks related to the fundamental notions used in object- oriented programming.
EE2201.5	Solve coding tasks related to the fundamental techniques used in object-oriented programming.
EE2201.6	Develop essential programming skills in computer programming concepts like containers.

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COURSE NAME: DIGITAL ELECTRONICS	
COURSE CODE: EE2202	
EE2202.1	Classify different number systems and apply to generate various codes.
EE2202.2	Use the concept of boolean algebra in minimization of switching functions.
EE2202.3	Design different types of combinational logic circuits.
EE2202.4	Apply knowledge of flip-flops in designing of registers and counters.
EE2202.5	The operation and design methodology for synchronous.
EE2202.6	Sequential circuits and algorithmic state machines.

COURSE NAME: POWER SYSTEMS - I	
COURSE CODE:EE2203	
EE2203.1	Identify the different components of thermal power plants.
EE2203.2	Identify the different components of nuclear power plants.
EE2203.3	Identify the different components of air insulated substations.
EE2203.4	Identify the different components of gas insulated substations.
EE2203.5	Identify single core and three core cables with different insulating materials.
EE2203.6	Analyse the different economic factors of power generation and tariffs.

COURSE NAME: INDUCTION AND SYNCHRONOUS MACHINES	
COURSE CODE:EE2204	
EE2204.1	Explain the operation and performance of three phase induction motor.
EE2204.2	Analyze the torque-speed relation, performance of induction motor and induction generator.
EE2204.3	Implement the starting of single phase induction motors.
EE2204.4	Develop winding design and predetermine the regulation of synchronous generators.
EE2204.5	Explain hunting phenomenon, implement methods of staring and correction of power factor.
EE2204.6	Explain hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor.

COURSE NAME: MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS	
COURSE CODE: EE2205	
EE2205.1	The learner is equipped with the knowledge of estimating the demand and demand elasticities for a product.
EE2205.2	The knowledge of understanding of the input-output-cost relationships and estimation of the least cost combination of inputs.
EE2205.3	The pupil is also ready to understand the nature of different markets and price output determination under various market conditions.
EE2205.4	The pupil is also ready to understand the nature of different markets and price output determination under to have the knowledge of different business units.

| EE2205.5 | The learner is able to prepare financial statements and the usage of various accounting tools for analysis. |
| EE2205.6 | The learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making. |

COURSE NAME: PYTHON PROGRAMMING LAB	
COURSE CODE: EE22L1	
EE22L1.1	Write, test and debug python programs
EE22L1.2	Use conditionals for python programs
EE22L1.3	Use loops for python programs
EE22L1.4	Use functions and represent compound data using lists.
EE22L1.5	Use functions and represent compound data using tuples.
EE22L1.5	Dictionaries use various applications using python.

COURSE NAME: INDUCTION AND SYNCHRONOUS MACHINES LAB	
COURSE CODE: EE22L2	
E22L2.1	Assess the performance of single phase and three phase induction motors.
E22L2.2	Control the speed of three phase induction motor.
E22L2.3	Predetermine the regulation of three–phase alternator by various methods.
E22L2.4	Find the xd/xq ratio of alternator and asses the performance of three–phase synchronous motor.
E22L2.5	Determine the performance of single phase ac series motor.
E22L2.6	Control the speed of two phase induction motor

COURSE NAME: DIGITAL ELECTRONICS LAB	
COURSE CODE: EE22L3	
EE22L3.1	Learn the basics of gates, filp-flops and counters.
EE22L3.2	Construct basic combinational circuits and verify their functionalities.
EE22L3.3	Apply the design procedures to design basic sequential circuits.
EE22L3.4	To understand the basic digital circuits and to verify their operation.
EE22L3.5	Apply Boolean laws to simplify the digital circuits.
EE22L3.6	Apply the design

III YEAR-1 SEM

COURSE NAME: POWER SYSTEMS–II	
COURSE CODE: EE3101	
EE3101.1	Calculate parameters of transmission lines for different circuit configurations.
EE3101.2	Determine the performance of short, medium and long transmission lines.
EE3101.3	Analyse the effect of travelling waves .
EE3101.4	Analyse the effect of transmission lines.
EE3101.5	Analyse the various voltage control methods and effect of corona.
EE3101.6	Calculate sag/tension of transmission lines and performance of line insulators.

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COURSE NAME: POWER ELECTRONICS	
COURSE CODE: EE3102	
EE3102.1	Illustrate the static and dynamic characteristics of scr, power-mosfet and power-igbt.
EE3102.2	Analyse the operation of phase-controlled rectifiers.
EE3102.3	Analyse the operation of three-phase full–wave converters.
EE3102.4	Analyse the operation of ac voltage controllers and cycloconverters.
EE3102.5	Examine the operation and design of different types of dc-dc converters.
EE3102.6	Analyse the operation of pwm inverters for voltage control and harmonic mitigation.

COURSE NAME: CONTROL SYSTEMS	
COURSE CODE: EE3103	
EE3103.1	Derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
EE3103.2	Determine time response specifications of second order systems and absolute and relative stability of lti systems using root locus method.
EE3103.3	Determine time response specifications of second order systems and absolute and relative stability of lti systems using routh's stability criterion.
EE3103.4	Analyze the stability of lti systems using frequency response methods.
EE3103.5	Design lag, lead, lag-lead compensators to improve system performance using bode diagrams.
EE3103.6	Represent physical systems as state models and determine the response. Understand the concepts of controllability and observability.

COURSE NAME: RENEWABLE ENERGY SOURCES	
COURSE CODE: EE3104	
EE3104.1	Analyze solar radiation data, extra-terrestrial radiation, radiation on earth's surface and solar energy storage.
EE3104.2	Illustrate the components of wind energy systems.
EE3104.3	Illustrate the working of biomass, digesters.
EE3104.4	Illustrate the working of geothermal plants.
EE3104.5	Demonstrate the principle of energy production from otec, tidal and waves.
EE3104.6	Evaluate the concept and working of fuel cells & mhd power generation.

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COURSE NAME: CONCEPTS OF CONTROL SYSTEMS (ELACTIVE)	
COURSE CODE: EE3105	
EE3105.1	Draw impedance diagram for a power system network and calculate per unit quantities.
EE3105.2	Apply the load flow solution to a power system using different methods.
EE3105.3	Form zbus for a power system networks and analyse the effect of symmetrical faults.
EE3105.4	Find the sequence components.
EE3105.5	Power system components and analyse its effects of unsymmetrical faults.
EE3105.6	Analyse the stability concepts of a power system.

COURSE NAME: CONTROL SYSTEMS LABORATORY	
COURSE CODE: EE31L1	
EE31L1.1	Analyze the performance and working magnetic amplifier, d.c and a.c. servo motors and synchros.
EE31L1.2	Design P,Pi,Pd And Pid Controllers.
EE31L1.3	Design lag, lead and lag–lead compensators.
EE31L1.4	Evaluate temperature control of an oven using pid controller.
EE31L1.5	Determine the transfer function of d.c motor.
EE31L1.6	Analyze the performance of d.c and a.c servo motor.

COURSE NAME: POWER ELECTRONICS LABORATORY	
COURSE CODE: EE31L2	
EE31L2.1	Analyse characteristics of various power electronic devices and design firing circuits for scr.
EE31L2.2	Analyse the performance of single–phase dual, three–phase full–wave bridge converters and dual converter with both resistive and inductive loads.
EE31L2.3	Examine the operation of single-phase ac voltage regulator.
EE31L2.4	Cycloconverter with resistive and inductive loads.
EE31L2.5	Differentiate the working and control of buck converter and boost converter.
EE31L2.6	Differentiate the working & control of square wave inverter and pwm inverter.

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COURSE NAME: SOFT SKILL COURSE EMPLOYABILITY	
COURSE CODE: EE31L3	
EE31L3.1	Follow strategies in minimizing time consumption in problem solving Apply shortcut methods to solve proublems.
EE31L3.2	Confidently solve any mathematical problems and utilize these mathematical skills both in their professional as well as personal life.
EE31L3.3	Analyze, summarize and present information in quantitative forms including graphs and formulas.
EE31L3.4	Analyze, summarize and present information in quantitative tables.
EE31L3.5	Understand the core competencies to succeed in professional and personal life.
EE31L3.6	☐ Learn and demonstrate a set of practical skills such as time management, self-management, handling conflicts, team leadership, etc.

III YEAR-II SEM

COURSE NAME: MICROPROCESSORS AND MICROCONTROLLERS	
COURSE CODE: EE3201	
EE3201.1	Know the concepts of the microprocessor capability in general and explore the evaluation of microprocessors.
EE3201.2	Analyse the instruction sets - addressing modes - minimum and maximum modes operations of 8086 microprocessors.
EE3201.3	Analyse the microcontroller and interfacing capability.
EE3201.4	Describe the architecture and interfacing of 8051 controller.
EE3201.5	Know the concepts of pic micro controller and its programming.
EE3201.6	Analyse the addressing modes.

COURSE NAME: ELECTRICAL MEASUREMENTS AND INSTRUMENTATION	
COURSE CODE: EE3202	
EE3202.1	Know the construction and working of various types of analog instruments.
EE3202.2	Describe the construction and working of wattmeter and power factor meters.
EE3202.3	Know the construction various bridges for the measurement resistance - inductance and capacitance .
EE3202.4	Know the construction and working various bridges for the measurement resistance - inductance and capacitance .
EE3202.5	Know the operational concepts of various transducers.
EE3202.6	Know the construction and operation digital meters.

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COURSE NAME: POWER SYSTEM ANALYSIS	
COURSE CODE: EE3203	
EE3203.1	Draw impedance diagram for a power system network and calculate per unit quantities.
EE3203.2	Apply the load flow solution to a power system using different methods.
EE3203.3	Form zbus for a power system networks and analyse the effect of symmetrical faults.
EE3203.4	Find the sequence components.
EE3203.5	Power system components and analyse its effects of unsymmetrical faults.
EE3203.6	Analyse the stability concepts of a power system.

COURSE NAME: SIGNALS AND SYSTEMS	
COURSE CODE: EE3204	
EE3204.1	Apply the knowledge of various signals and operations.
EE3204.2	Analyze the spectral characteristics of periodic signals using fourier analysis.
EE3204.3	Classify the systems based on their properties.
EE3204.4	Determine the response of lsi system using convolution.
EE3204.5	Understand the process of sampling and the effects of under sampling.
EE3204.6	Apply Laplace and z-transforms to analyze signals and systems (continuous & discrete).

COURSE NAME: SWITCHGEAR AND PROTECTION	
COURSE CODE: EE3205	
EE3205.1	Illustrate the principles of arc interruption for application to high voltage circuit breakers of air - oil - vacuum - sf6 gas type.
EE3205.2	Analyse the working principle and operation of different types of electromagnetic protective relays.
EE3205.3	Acquire knowledge of protective schemes for generator and transformers for different fault conditions.
EE3205.4	Classify various types of protective schemes used for feeders.
EE3205.5	Bus bar protection and types of static relays.
EE3205.6	Analyse the operation of different types of over voltages protective schemes required for insulation co–ordination and types of neutral grounding.

COURSE NAME: ELECTRICAL MEASUREMENTS AND INSRUMENTATION LABORATORY	
COURSE CODE: EE32L1	
EE32L1.1	Know about the phantom loading.
EE32L1.2	Learn the calibration process.
EE32L1.3	Measure the electrical parameters voltage - current - power - energy and electrical characteristics of resistance - inductance and capacitance.
EE32L1.4	Gain the skill knowledge of various brides and their applications.
EE32L1.5	Learn the usage of ct's - pt's for measurement purpose.
EE32L1.6	Know the characteristics of transducers.

COURSE NAME: MICRO PROCESSORS AND MICRO CONTROLLERS LAB	
COURSE CODE: EE32L2	
EE32L2.1	Write assembly language program using 8086 microprocessor based on arithmetic - logical - number systems and shift operations.
EE32L2.2	Write assembly language programs for numeric operations and array handling problems.
EE32L2.3	Write a assembly program on string operations.
EE32L2.4	Interface 8086 with i/o and other devices.
EE32L2.5	Do parallel and serial communication using 8051 & pic 18 micro controllers.
EE32L2.6	Program microprocessors and microcontrollers for real world applications.

COURSE NAME: POWER SYSTEMS AND SIMULATION LAB	
COURSE CODE: EE32L3	
EE32L3.1	Estimate the sequence impedances of 3-phase transformer and alternators.
EE32L3.2	Evaluate the performance of transmission lines.
EE32L3.3	Analyse and simulate power flow methods in power systems.
EE32L3.4	Analyse and simulate the performance of pi controller for load frequency control.
EE32L3.5	Analyse and simulate stability studies of power systems.
EE32L3.6	Simulate the performance of pi controller.

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IV YEAR-I SEM

COURSE NAME: SWITCHGEAR AND PROTECTION	
COURSE CODE:EE4101	
EE4101.1	Understand the principles of arc interruption for application to high voltage circuit breakers of air, oil, vacuum, sf6 gas type.
EE4101.2	Understand the working principle and operation of different types of electromagnetic protective relays.
EE4101.3	Students acquire knowledge of faults and protective schemes for high power generator and transformers.
EE4101.4	Improves the ability to understand various types of protective schemes used for feeders and bus bar protection.
EE4101.5	Understand different types of static relays and their applications.
EE4101.6	Understand different types of over voltages and protective schemes required for insulation co–ordination.

COURSE NAME: OOPS THROUGH JAVA	
COURSE CODE: EE4102	
EE4102.1	Understand java programming concepts and utilize java graphical user interface in program writing.
EE4102.2	Write, compile, execute and troubleshoot java programming for networking concepts.
EE4102.3	Build java application for distributed environment.
EE4102.4	Design and develop multi-tier applications.
EE4102.5	Identify and analyze enterprise applications.
EE4102.6	Java concepts use in graphical user interface.

COURSE NAME: RENEWABLE ENERGY SYSTEMS	
COURSE CODE: EE4103	
EE4103.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface.
EE4103.2	Design solar thermal collectors, solar thermal plants.
EE4103.3	Design solar photo voltaic systems.
EE4103.4	Develop maximum power point techniques in solar pv and wind energy systems.
EE4103.5	Explain wind energy conversion systems, wind generators, power generation.
EE4103.6	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems.

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COURSE NAME:UTILIZATION OF ELECTRICAL ENERGY	
COURSE CODE: EE4104	
EE4104.1	Know the various sources of electrical energy and its generation technologies for conventional and non-conventional energy sources.
EE4104.2	Know various types of illumination equipment.
EE4104.3	Illumination measurement and illumination techniques.
EE4104.4	Learn about various methods used for electrical energy based heating and welding applications.
EE4104.5	Know about the mechanisms, equipment and technology used in the electric traction.
EE4104.6	Understand the importance of electrical earthing, earthing equipment and electrical earthing measurement methods

COURSE NAME: HIGH VOLTAGE ENGINEERING	
COURSE CODE: EE4105	
EE4105.1	Acquire knowledge of principle of operation, working of differentelectronic
EE4105.2	Select the instrument to be used based on the requirements.
EE4105.3	Understand and analyze different signal generators and analyzers.
EE4105.4	Understand the design of oscilloscopes for different applications.
EE4105.5	Design different transducers for measurement of differentparameters
EE4105.6	Learn and understand the use of various measuring techniques for measurement of different physical parameters using different classes of transducers

COURSE NAME: Linear & Digital IC Applications Laboratory	
COURSE CODE: EE41L1	
EE41L1.1	Understand the characteristics of ics-741, 555, 565, 566.
EE41L1.2	Apply the concepts of IC 741 for different applications.
EE41L1.3	Analyse the data connection circuits.
EE41L1.4	Develop the digital circuits.
EE41L1.5	Model the counters & Registers using IC's.
EE41L1.6	To model the digital circuits for different applications.

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COURSE NAME: Power Systems& Simulation Laboratory	
COURSE CODE: EE41L2	
EE41L2.1	Determine the parameters of various power system components which are frequently occur in power system studies.
EE41L2.2	He can execute energy management systems functions at load dispatch center.
EE41L2.3	To impart the practical knowledge of functioning of various power system components
EE41L2.4	Determination of various parameters .
EE41L2.5	LFC and Economic dispatch.
EE41L2.6	Simulation of load flows, transient stability.

IV YEAR-II SEM

COURSE NAME: EMBEDDED SYSTEM	
COURSE CODE: EE4201	
EE4201.1	Understand the basic concepts of an embedded system.
EE4201.2	Able to know an embedded system design approach to perform a specific function.
EE4201.3	The hardware components required for an embedded system.
EE4201.4	The design approach of an embedded hardware.
EE4201.5	The various embedded firmware design approaches on embedded environment.
EE4201.6	Understand how to integrate hardware and firmware of an embedded system using real time operating system.

COURSE NAME: SPECIAL ELECTRICAL MACHINES	
COURSE CODE: EE4202	
EE4202.1	distinguish between brush dc motor and brush less dc motor.□
EE4202.2	explain the performance and control of stepper motors, and their applications.
EE4202.3	explain theory of operation and control of switched motor.□
EE4202.4	explain theory of operation and control of reluctance motor.
EE4202.5	explain the theory of travelling magnetic field and applications of linear motors.
EE4202.6	understand the significance of electrical motors for traction drives.

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COURSE NAME: EMBEDDED SYSTEMS	
COURSE CODE: EE4203	
EE4203.1	distinguish between brush dc motor and brush less dc motor.□
EE4203.2	explain the performance and control of stepper motors, and their applications.
EE4203.3	explain theory of operation and control of switched motor.□
EE4203.4	explain theory of operation and control of reluctance motor.
EE4203.5	explain the theory of travelling magnetic field and applications of linear motors.
EE4203.6	understand the significance of electrical motors for traction drives.

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2021-2022**

II YEAR- I SEM

COURSE NAME: MATHEMATICS– IV	
COURSE CODE: : EE2101	
EE2101.1	Apply cauchy-riemann equations to complex functions in order to determine whether a given continuous function is analytic (l3).
EE2101.2	Find the differentiation and integration of complex functions used in engineering problems (l5).
EE2101.3	Make use of the cauchy residue theorem to evaluate certain integrals (l3).
EE2101.4	Apply discrete and continuous probability distributions (l3).
EE2101.5	Design the components of a classical hypothesis test (l6).
EE2101.6	Infer the statistical inferential methods based on small and large sampling tests (l4) .

COURSE NAME: : ELECTRONIC DEVICES AND CIRCUITS	
COURSE CODE: EE2102	
:EE2102.1	Understand the basic concepts of semiconductor physics.
EE2102.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EE2102.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons.
EE2102.4	Understand the construction, principle of operation of transistors, bjt and fet with their v-i characteristics in different configurations.
EE2102.5	Know the need of transistor biasing, various biasing techniques for bjt and fet and stabilization concepts with necessary expressions.
EE2102.6	Perform the analysis of small signal low frequency transistor amplifier circuits using bjt and fet in different configurations.

COURSE NAME: ELECTRICAL CIRCUIT ANALYSIS – II	
COURSE CODE: EE2103	
EE2103.1	Understand the concepts of balanced and three-phase circuits.
EE2103.2	Know the transient behavior of electrical networks with dc excitations.
EE2103.3	Learn the transient behavior of electrical networks with ac excitations.
EE2103.4	Estimate various parameters of a two port network.
EE2103.5	Understand the significance of filters in electrical networks.
EE2103.6	Understand the concepts of unbalanced three-phase circuits.

COURSE NAME: DC MACHINES AND TRANSFORMERS	
COURSE CODE: EE2104	
EE2104.1	Assimilate the concepts of electromechanical energy conversion.
EE2104.2	Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
EE2104.3	Understand the torque production mechanism and control the speed of dc motors.
EE2104.4	Analyze the performance of single phase transformers.
EE2104.5	Predetermine regulation, losses and efficiency of single phase transformers.
EE2104.6	Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.

COURSE NAME: ELECTRO MAGNETIC FIELDS	
COURSE CODE: EE2105	
EE2105.1	Compute electric fields and potentials using gauss law or solve laplace's or poisson's equations for various electric charge distributions.
EE2105.2	Calculate the capacitance and energy stored in dielectrics.
EE2105.3	Calculate the magnetic field intensity due to current carrying conductor and understanding the application of ampere's law, maxwell's second and third law.
EE2105.4	Estimate self and mutual inductances and the energy stored in the magnetic field.
EE2105.5	Understand the concepts of displacement current and poynting theorem and poynting vector.
EE2105.6	Solve laplace's or poisson's equations for various electric charge distributions.

COURSE NAME: ELECTRICAL CIRCUITS LAB	
COURSE CODE: EE21L1	
EE21L1.1	Apply various theorems.
EE21L1.2	Determination of self and mutual inductances.
EE21L1.3	Two port parameters of a given electric circuits.
EE21L1.4	Draw locus diagrams.
EE21L1.5	Draw waveforms and phasor diagrams for leading networks.
EE21L1.6	Draw waveforms and phasor diagrams for lagging.

COURSE NAME: DC MACHINES AND TRANSFORMERS LAB	
COURSE CODE: EE21L2	
EE21L2.1	Determine and predetermine the performance of dc machines.
EE21L2.2	Determine and predetermine the performance of transformers.
EE21L2.3	Control the speed of dc motor.
EE21L2.4	Obtain three phase to two phase transformation
EE21L2.5	To predetermine the efficiency and regulation of transformers and assess their performance.
EE21L2.6	To plot the magnetizing characteristics of dc shunt generator and understand the mechanism of self-excitation.

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COURSE NAME: ELECTRONIC DEVICES AND CIRCUITS LAB	
COURSE CODE: EE21L3	
EE21L3.1	Analyze the characteristics of diodes, transistors and other devices.
EE21L3.2	Design and implement the rectifier circuits, scr and ujt in the hardware circuits.
EE21L3.3	Design and implement the scr.
EE21L3.4	Design and implement the ujt in the hardware.
EE21L3.5	Design the biasing and amplifiers of bjt and fet amplifiers.
EE21L3.6	Measure electrical quantities using cro in the experimentation.

II YEAR- II SEM

COURSE NAME: PYTHON PROGRAMMING	
COURSE CODE: EE2201	
EE2201.1	Develop essential programming skills in computer programming concepts like data types.
EE2201.2	Apply the basics of programming in the python language.
EE2201.3	Solve coding tasks related conditional execution, loops.
EE2201.4	Solve coding tasks related to the fundamental notions used in object- oriented programming.
EE2201.5	Solve coding tasks related to the fundamental techniques used in object- oriented programming.
EE2201.6	Develop essential programming skills in computer programming concepts like containers.

COURSE NAME: DIGITAL ELECTRONICS	
COURSE CODE: EE2202	
EE2202.1	Classify different number systems and apply to generate various codes.
EE2202.2	Use the concept of boolean algebra in minimization of switching functions.
EE2202.3	Design different types of combinational logic circuits.
EE2202.4	Apply knowledge of flip-flops in designing of registers and counters
EE2202.5	The operation and design methodology for synchronous.
EE2202.6	Sequential circuits and algorithmic state machines.

COURSE NAME: POWER SYSTEMS - I	
COURSE CODE: EE2203	
EE2203.1	Identify the different components of thermal power plants.
EE2203.2	Identify the different components of nuclear power plants.
EE2203.3	Identify the different components of air insulated substations.
EE2203.4	Identify the different components of gas insulated substations.
EE2203.5	Identify single core and three core cables with different insulating materials.
EE2203.6	Analyse the different economic factors of power generation and tariffs.

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COURSE NAME: INDUCTION AND SYNCHRONOUS MACHINES	
COURSE CODE :EE2204	
EE2204.1	Explain the operation and performance of three phase induction motor.
EE2204.2	Analyze the torque-speed relation, performance of induction motor and induction generator.
EE2204.3	Implement the starting of single phase induction motors.
EE2204.4	Develop winding design and predetermine the regulation of synchronous generators.
EE2204.5	Explain hunting phenomenon, implement methods of staring and correction of power factor.
EE2204.6	Explain hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor.

COURSE NAME: MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS	
COURSE CODE: EE2205	
EE2205.1	The learner is equipped with the knowledge of estimating the demand and demand elasticities for a product.
EE2205.2	The knowledge of understanding of the input-output-cost relationships and estimation of the least cost combination of inputs.
EE2205.3	The pupil is also ready to understand the nature of different markets and price output determination under various market conditions.
EE2205.4	The pupil is also ready to understand the nature of different markets and price output determination under to have the knowledge of different business units.
EE2205.5	The learner is able to prepare financial statements and the usage of various accounting tools for analysis.
EE2205.6	The learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.

COURSE NAME: PYTHON PROGRAMMING LAB	
COURSE CODE: EE22L1	
EE22L1.1	Write, test and debug python programs
EE22L1.2	Use conditionals for python programs
EE22L1.3	Use loops for python programs
EE22L1.4	Use functions and represent compound data using lists.
EE22L1.5	Use functions and represent compound data using tuples.
EE22L1.5	Dictionaries use various applications using python.

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COURSE NAME: INDUCTION AND SYNCHRONOUS MACHINES LAB	
COURSE CODE: EE22L2	
EE22L2.1	Assess the performance of single phase and three phase induction motors.
EE22L2.2	Control the speed of three phase induction motor.
EE22L2.3	Predetermine the regulation of three–phase alternator by various methods.
EE22L2.4	Find the xd/xq ratio of alternator and asses the performance of three–phase synchronous motor.
EE22L2.5	Determine the performance of single phase ac series motor.
EE22L2.6	Control the speed of two phase induction motor

COURSE NAME: DIGITAL ELECTRONICS LAB	
COURSE CODE: EE22L3	
EE22L3.1	Learn the basics of gates, filp-flops and counters.
EE22L3.2	Construct basic combinational circuits and verify their functionalities.
EE22L3.3	Apply the design procedures to design basic sequential circuits.
EE22L3.4	To understand the basic digital circuits and to verify their operation.
EE22L3.5	Apply boolean laws to simplify the digital circuits.
EE22L3.6	Apply the design

III YEAR- I SEM

COURSE NAME: POWER SYSTEMS–II	
COURSE CODE: EE3101	
EE3101.1	Understand parameters of various types of transmission lines during different operating conditions.
EE3101.2	Understand the performance of short and medium transmission lines.
EE3101.3	Understand travelling waves on transmission lines.
EE3101.4	Understand various factors related to charged transmission lines.
EE3101.5	Understand sag of transmission lines and performance of line insulators.
EE3101.6	Understand tension of transmission lines and performance of line insulators.

COURSE NAME: POWER ELECTRONICS	
COURSE CODE: EE3102	
EE3102.1	Explain the characteristics of various power semiconductor devices and analyze the static and dynamic characteristics of scr's.
EE3102.2	Design firing circuits for scr.
EE3102.3	Explain the operation of single phase full–wave converters and analyze harmonics in the input current.
EE3102.4	Explain the operation of three phase full–wave converters.
EE3102.5	Analyze the operation of different types of dc-dc converters.
EE3102.6	Explain the operation of inverters and application of pwm techniques for voltage control and harmonic mitigation.
COURSE NAME: LINEAR IC APPLICATIONS	
COURSE CODE: EE3103	
EE3103.1	Design circuits using operational amplifiers for various applications.

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EE3103.2	Analyze and design amplifiers and active filters using op-amp.
EE3103.3	Diagnose and trouble-shoot linear electronic circuits.
EE3103.4	Understand the gain-bandwidth concept and frequency.
EE3103.5	Understand the response of the amplifier configurations.
EE3103.6	Understand thoroughly the operational amplifiers with linear integrated circuits.

COURSE NAME: DIGITAL SIGNAL PROCESSING	
COURSE CODE: EE3104	
EE3104.1	Understand the concept of signal processing.
EE3104.2	Understand the concept of transforms.
EE3104.3	Appraise the fat fourier algorithm.
EE3104.4	Design fir filter.
EE3104.5	Design iir filter.
EE3104.6	Appreciate the concepts of multirate signal processing.

COURSE NAME: MICROPROCESSORS AND MICROCONTROLLERS	
COURSE CODE: EE3105.	
EE3105.1	Understand the microprocessor capability in general and explore the evaluation of microprocessors.
EE3105.2	Understand the addressing modes of microprocessors .
EE3105.3	Understand the microcontroller capability.
EE3105.4	Program microprocessors and microcontrollers.
EE3105.5	Interface microprocessors and microcontrollers with other electronic devices.
EE3105.6	Develop cyber physical systems.

COURSE NAME: ELECTRICAL MACHINES – II LABORATORY	
COURSE CODE: EE31L1	
EE31L1.1	Analyze the performance and working magnetic amplifier, d.c and a.c. servo motors and synchros.
EE31L1.2	Design p,pi,pd and pid controllers .
EE31L1.3	Design lag, lead and lag–lead compensators.
EE31L1.4	Control the temperature using pid controller.
EE31L1.5	Control the performance of d.c and a.c servo motor.
EE31L1.6	Determine the transfer function of d.c motor.

COURSE NAME: ELECTRICAL MEASUREMENTS & INSTRUMENTATION LABORATORY	
COURSE CODE: EE31L2	
EE31L2.1	Measure the electrical power, energy and electrical characteristics of resistance, inductance and capacitance.
EE31L2.2	Measure the electrical parameters voltage, current, power, energy inductance and capacitance.

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EE31L2.3	Known the characteristics of transducers.
EE31L2.4	Measure the calibration of dc and ac potentiometers.
EE31L2.5	Measure the strains, frequency and phase difference.
EE31L2.6	Measurement of strain.

COURSE NAME: CONTROL SYSTEMS LABORATORY	
COURSE CODE: EE31L3.	
EE31L3.1	Analyze the performance and working magnetic amplifier, d.c and a.c. servo motors and synchros.
EE31L3.2	Design p,pi,pd and pid controllers.
EE31L3.3	Design lag, lead and lag–lead compensators.
EE31L3.4	Control the temperature using pid controller.
EE31L3.5	Determine the transfer function of d.c motor.
EE31L3.6	Control the performance of d.c and a.c servo motor.

III YEAR- II SEM

COURSE NAME: ELECTRIC DRIVES	
COURSE CODE: EE3201	
EE3201.1	Explain the fundamentals of electric drive and different electric braking methods.
EE3201.2	Analyze the operation of three phase converter fed dc motors and four quadrant operations of dc motors using dual converters.
EE3201.3	Describe the converter control of dc motors in various quadrants of operation.
EE3201.4	Know the concept of speed control of induction motor by using ac voltage controllers.
EE3201.5	Know the concept of speed control of induction motor by using voltage source inverters.
EE3201.6	Differentiate the stator side control and rotor side control of three phase induction motor, explain the speed control mechanism of synchronous motors.

COURSE NAME: POWER SYSTEM ANALYSIS	
COURSE CODE: EE3202	
EE3202.1	Draw impedance diagram for a power system network and to understand per unit quantities.
EE3202.2	Form a ybus and zbus for a power system networks.
EE3202.3	Understand the load flow solution of a power system using different methods.
EE3202.4	Find the fault currents for all types faults to provide data for the design of protective devices.
EE3202.5	Find the sequence components of currents for unbalanced power system network.
EE3202.6	Analyze the steady state, transient and dynamic stability concepts of a power system.

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COURSE NAME: DATA STRUCTURES	
COURSE CODE: EE3203	
EE3203.1	Data structures concepts with arrays, stacks, queues.
EE3203.2	Linked lists for stacks, queues and for other applications.
EE3203.3	Traversal methods in the trees.
EE3203.4	Various algorithms available for the graphs.
EE3203.5	Searching in the data ret retrieval applications.
EE3203.6	Sorting in the data ret retrieval applications.

COURSE NAME: DIGITAL CONTROL SYSTEMS	
COURSE CODE: EE3204	
EE3204.1	Learn the advantages of discrete time control systems and the "know how" of various associated accessories.
EE3204.2	Understand z–transformations and their role in the mathematical analysis of different systems(like laplace transforms in analog systems).
EE3204.3	Learn the stability criterion for digital systems adopted for testing the same are explained.
EE3204.4	Learn the stability criterion methods adopted for testing the same are explained.
EE3204.5	Understand the conventional methods of design are also introduced.
EE3204.6	Understand the state space methods of design are also introduced.

COURSE NAME: ENERGY AUDIT AND CONSERVATION AND MANAGEMENT	
COURSE CODE: EE3205.	
EE3205.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface .
EE3205.2	Design solar photo voltaic systems.
EE3205.3	Develop maximum power point techniques in wind energy systems.
EE3205.4	Explain wind energy conversion systems, wind generators, power generation.
EE3205.5	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems.
EE3205.6	Develop maximum power point techniques in solar pv energy systems.

COURSE NAME: POWER ELECTRONICS LABORATORY	
COURSE CODE: EE32L1	
EE32L1.1	Study the characteristics of various power electronic devices.
EE32L1.2	Analyze of single–phase converters with both resistive and inductive loads.
EE32L1.3	Understand the operation of single phase ac voltage regulator with resistive and loads.
EE32L1.4	Analyze and performance of three–phase full–wave bridge converters with both resistive and inductive loads.
EE32L1.5	Understand the operation of single phase ac voltage regulator with and inductive loads.
EE32L1.6	Understand the working of buck converter, boost converter, single–phase square wave inverter and pwm inverter.

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COURSE NAME: MICRO PROCESSORS AND MICRO CONTROLLERS LAB	
COURSE CODE: EE32L2.	
EE32L2.1	Write assembly language program using 8086 micro based on arithmetic, shift operations.
EE32L2.2	Write assembly language program using 8086 micro based on arithmetic, logical operations.
EE32L2.3	Write assembly language program using 8086 micro based on logical, and shift operations.
EE32L2.4	Interface 8086 with i/o and other devices.
EE32L2.5	Do parallel communication using 8051 & pic 18 micro controllers.
EE32L2.6	Do serial communication using 8051 & pic 18 micro controllers.

IV YEAR-I SEM

COURSE NAME: UTILIZATION OF ELECTRICAL	
COURSE CODE: EE4101.	
EE4101.1	Able to identify a suitable motor for electric drives and industrial applications.
EE4101.2	Able to identify most appropriate heating or welding techniques for suitable applications.
EE4101.3	Able to understand various level of illuminosity produced by different illuminating sources.
EE4101.4	Able to estimate the illumination levels produced by various sources and recommend the most efficient illuminating sources and should be able to design different lighting systems by taking inputs and constraints in view.
EE4101.5	Able to determine the speed/time characteristics of different types of traction motors.
EE4101.6	Able to estimate energy consumption levels at various modes of operation.

COURSE NAME: LINEAR IC APPLICATIONS	
COURSE CODE: EE4102	
EE4102.1	Design circuits using operational amplifiers for various applications.
EE4102.2	Analyze active filters using op-amp.
EE4102.3	Diagnose and trouble-shoot linear electronic circuits
EE4102.4	Understand the gain-bandwidth concept and frequency response of the amplifier configurations.
EE4102.5	Analyze and design amplifiers.
EE4102.6	Design operational amplifiers.

COURSE NAME: POWER SYSTEM OPERATION AND CONTROL	
COURSE CODE: EE4103.	
EE4103.1	Able to compute optimal scheduling of generators
EE4103.2	Able to understand hydrothermal scheduling
EE4103.3	Understand the unit commitment problem
EE4103.4	Able to understand importance of the frequency

| EE4103.5 | Understand importance of pid controllers in single area and two area systems. |
| EE4103.6 | Will understand reactive power control and compensation for transmission line. |

COURSE NAME: SWITCHGEAR AND PROTECTION	
COURSE CODE: EE4104.	
EE4104.1	Able to understand the principles of arc interruption for application to high voltage circuit breakers of air, oil, vacuum, sf6 gas type.
EE4104.2	Ability to understand the working principle and operation of different types of electromagnetic protective relays.
EE4104.3	Students acquire knowledge of faults and protective schemes for high power generator and transformers
EE4104.4	Improves the ability to understand various types of protective schemes used for feeders and bus bar protection.
EE4104.5	Able to understand different types of static relays and their applications.
EE4104.6	Able to understand different types of over voltages and protective schemes required For insulation co–ordination.

COURSE NAME: Instrumentation	
COURSE CODE: EE4105	
EE4105.1	Able to represent various types of signals .
EE4105.2	Acquire proper knowledge to use various types of Transducers.
EE4105.3	Able to monitor and measure various parameters such as strain, velocity, temperature, pressure etc.
EE4105.4	Acquire proper knowledge and working principle of various types of digital voltmeters
EE4105.5	Able to measure various parameter like phase and frequency of a signal with the help of CRO.
EE4105.6	Acquire proper knowledge and able to handle various types of signal analyzers.

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COURSE NAME: SPECIAL ELECTRICAL MACHINES	
COURSE CODE: EE4106	
EE4106.1	Acquire proper knowledge to use various types of transducers
EE4106.2	Able to represent various types of signals
EE4106.3	Acquire proper knowledge and working principle of various types of Voltmeters.
EE4106.4	Able to monitor and measure various parameters such as strain, velocity, temperature.
EE4106.5	Acquire proper knowledge and able to handle various types of signal analyzers.
EE4106.6	Acquire proper knowledge and working principle of various types of digital Voltmeters.

COURSE NAME: ELECTRICAL SIMULATION LAB	
COURSE CODE: EE41L1	
EE41L1.1	Able to simulate integrator circuit, differentiator circuit, boost converter, buck converter, full convertor and pwm inverter.
EE41L1.2	Able to simulate transmission line by incorporating line, load and transformer models.
EE41L1.3	Able to perform transient analysis of rlc circuit and single machine connected to Infinite bus(smib).
EE41L1.4	Able to simulate integrator circuit, differentiator circuit.
EE41L1.5	Able to simulate transmission line by incorporating line.
EE41L1.6	Able to perform transient analysis of rlc circuit.

COURSE NAME: POWER SYSTEMS LAB	
COURSE CODE: EE41L2.	
EE41L2.1	State and formulate the optimization problem, without and with constraints, by using design variables from an engineering design problem.
EE41L2.2	Apply classical optimization techniques to minimize or maximize a multi-variable objective function, without or with constraints, and arrive at an optimal solution.
EE41L2.3	Formulate a mathematical model and apply linear programming technique by using simplex method. Also extend the concept of dual simplex method for optimal solutions.
EE41L2.4	Apply gradient and non-gradient methods to nonlinear optimization problems and useinterior or exterior penalty functions for the constraints to derive the optimal solutions.
EE41L2.5	Able to apply genetic algorithms for simple electrical problems.
EE41L2.6	Able to solve practical problems using pso.

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IV YEAR-II SEM

COURSE NAME: DIGITAL CONTROL SYSTEMS	
COURSE CODE: EE4201	
EE4201.1	The students learn the advantages of discrete time control systems and the "know how" of various associated accessories.
EE4201.2	The learner understand z–transformations and their role in the mathematical analysis of different systems(like laplace transforms in analog systems).
EE4201.3	The stability criterion for digital systems and methods adopted for testing the same are explained.
EE4201.4	Finally, the conventional and state space methods of design are also introduced.
EE4201.5	Mathematical analysis of different systems.
EE4201.6	Stability criterion for digital systems and methods.

COURSE NAME: H.V.D.C. TRANSMISSION	
COURSE CODE: EE4102	
EE4102.1	Learn different types of hvdc levels and basic concepts.
EE4102.2	Know the operation of converters.
EE4102.3	Acquire control concept of reactive power control and ac/dc loadflow.
EE4102.4	Understand converter faults, protection and harmonic effects.
EE4102.5	Design low pass and high pass filters.
EE4102.6	Understand converter faults, protection.

COURSE NAME: ELECTRICAL DISTRIBUTION SYSTEMS	
COURSE CODE: EE4103	
EE4103.1	Able to understand various factors of distribution system.
EE4103.2	Able to design the substation and feeders.
EE4103.3	Able to determine the voltage drop and power loss
EE4103.4	Able to understand the protection and its coordination
EE4103.5	Able to understand the effect of compensation forp.f improvement
EE4103.6	Able to understand the effect of voltage control

COURSE NAME: FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEM	
COURSE CODE: EE4104	
EE4104.1	Will understand importance of power system deregulation and restructuring.
EE4104.2	Able to compute available transfer capability.
EE4104.3	Will understand transmission congestion management.
EE4104.4	Able to compute electricity pricing in deregulated environment
EE4104.5	Will be able to understand power system operation in deregulated environment.
EE4104.6	Will understand importance of ancillary services

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2020-2021**

COURSE NAME: ELECTRICAL CIRCUIT ANALYSIS-II	
COURSE CODE: EE2101	
EE2101.1	Solve three- phase circuits under balanced and unbalanced condition.
EE2101.2	Find the transient response of electrical networks for different types of excitations. Find parameters for different types of network.
EE2101.3	Realize electrical equivalent network for a given network transfer function.
EE2101.4	Extract different harmonics components from the response of an electrical network.
EE2101.5	Solve three- phase circuits under unbalanced condition.
EE2101.6	Solve three- phase circuits under balanced and

Course Name: ELECTRICAL MACHINES – I	
Course Code: EE2102	
EE2102.1	Assimilate the concepts of electromechanical energy conversion.
EE2102.2	Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
EE2102.3	Understand the torque production mechanism and control the speed of dc motors.
EE2102.4	Analyze the performance of single phase transformers.
EE2102.5	Predetermine regulation, losses and efficiency of single phase transformers.
EE2102.6	Parallel transformers, control voltages with tap changing methods and achieve three-

Course Name: ELECTRONIC DEVICES AND CIRCUITS	
Course Code: EE2103	
EE2103.1	Understand the concepts of Semiconductor Technology.
EE2103.2	Appraise operation of electronic devices.
EE2103.3	Develop the biasing circuits using the electronic devices.
EE2103.4	Model the amplifier circuits.
EE2103.5	Analyse the characteristics of the devices.
EE2103.6	Appraise the construction of electronic devices.

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Course Name: ELECTROMAGNETIC FIELDS	
Course Code: EE2104	
EE2104.1	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE2104.2	Calculate and design capacitance, energy stored in dielectrics
EE2104.3	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE2104.4	.determine the magnetic forces and torque produced by currents in magnetic field
EE2104.5	Determine self and mutual inductances and the energy stored in the magnetic field
EE2104.6	Calculate induced EMF, understand the concepts of displacement current and Poynting vector

Course Name: Thermal and hydro prime movers	
Course Code: EE2105	
EE2105.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE2105.2	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE2105.3	Calculate and design capacitance, energy stored in dielectrics.
EE2105.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE2105.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE2105.6	Determine self and mutual inductances and the energy stored in the magnetic field

Course Name: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	
Course Code: EE2106	
EE2106.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product
EE2106.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs
EE2106.3	To have the knowledge of different Business Units.
EE2106.4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
EE2106.5	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making
EE2106.6	Price Output determination under various market conditions and also to have the knowledge of different Business Units

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Course Name:THERMAL AND HYDRO LABORATORY	
Course Code: EE21L1	
EE21L1.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE21L1.2	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE21L1.3	Calculate and design capacitance, energy stored in dielectrics
EE21L1.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE21L1.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE21L1.6	Determine self and mutual inductances and the energy stored in the magnetic field

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COURSE NAME: ELECTRICAL CIRCUITS LABORATORY	
COURSE CODE: EE21L2	
EE21L2.1	Measure the electrical power, energy and electrical characteristics of resistance, inductance and capacitance.
EE21L2.2	Measure the electrical parameters voltage, current, power, energy inductance and capacitance.
EE21L2.3	Known the characteristics of transducers.
EE21L2.4	Measure the calibration of DC and AC Potentiometers.
EE21L2.5	Measure the strains, frequency and phase difference.
EE21L2.6	Measurement of strain.

II YEAR- II SEM

COURSE NAME: ELECTRICAL MEASUREMENTS &INSTRUCMENTATIONS	
COURSE CODE: EE2201	
EE2201.1	Explain the fundamentals of electric drive and different electric braking methods.
EE2201.2	Analyze the operation of three phase converter fed dc motors and four quadrant operations of dc motors using dual converters.
EE2201.3	Describe the converter control of dc motors in various quadrants of operation.
EE2201.4	Know the concept of speed control of induction motor by using AC voltage controllers.
EE2201.5	Know the concept of speed control of induction motor by using voltage source inverters.
EE2201.6	Differentiate the stator side control and rotor side control of three phase induction motor, explain the speed control mechanism of synchronous motors.

Course Name: Electrial machines	
Course Code: EE2202	
EE2202.1	Draw impedance diagram for a power system network and to understand per unit quantities.
EE2202.2	Form a Ybus and Zbus for a power system networks.
EE2202.3	Understand the load flow solution of a power system using different methods.
EE2202.4	Find the fault currents for all types faults to provide data for the design of protective devices.
EE2202.5	Find the sequence components of currents for unbalanced power system network.
EE2202.6	Analyze the steady state, transient and dynamic stability concepts of a power system.

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Course Name: digital electronics	
Course Code: EE2203	
EE2203.1	Data structures concepts with arrays, stacks, queues.
EE2203.2	Linked lists for stacks, queues and for other applications.
EE2203.3	Traversal methods in the Trees.
EE2203.4	Various algorithms available for the graphs.
EE2203.5	Searching in the data ret retrival applications.
EE2203.6	Sorting in the data ret retrival applications.

Course Name: control systems	
Course Code: EE2204	
EE2204.1	Learn the advantages of discrete time control systems and the "know how" of various associated accessories.
EE2204.2	Understand z–transformations and their role in the mathematical analysis of different systems(like Laplace transforms in analog systems).
EE2204.3	Learn the stability criterion for digital systems adopted for testing the same are explained.
EE2204.4	Learn the stability criterion methods adopted for testing the same are explained.
EE2204.5	Understand the conventional methods of design are also introduced.
EE2204.6	Understand the state space methods of design are also introduced.

Course Name: power system-I	
Course Code: EE2205.	
EE2205.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface .
EE2205.2	Design solar photo voltaic systems.
EE2205.3	Develop maximum power point techniques in wind energy systems.
EE2205.4	Explain wind energy conversion systems, wind generators, power generation.
EE2205.5	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems.
EE2205.6	Develop maximum power point techniques in solar PV energy systems.

Course Name: SIGNALS & SYSTEMS	
Course Code: EE2206	
EE2206.1	Characterize the signals and systems and principles of vector spaces, Concept of orthgonality
EE2206.2	Analyze the continuous-time signals and continuous-time systems using Fourier series, Fourier transform and Laplace transform.
EE2206.3	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back.
EE2206.4	Understand the relationships among the various representations of LTI systems.
EE2206.5	Understand the Concepts of convolution, correlation, Energy and Power density spectrum and their relationships.
EE2206.6	Apply z-transform to analyze discrete-time signals and systems

COURSE NAME: ELECTRICAL MACHINES-I LABORATORY	
COURSE CODE: EE22L1	
EE22L1.1	Study the characteristics of various power electronic devices.
EE22L1.2	Analyze of single–phase converters with both resistive and inductive loads.
EE22L1.3	Understand the operation of single phase AC voltage regulator with resistive and loads.
EE22L1.4	Analyze and performance of three–phase full–wave bridge converters with both resistive and inductive loads.
EE22L1.5	Understand the operation of single phase AC voltage regulator with and inductive loads.
EE22L1.6	Understand the working of Buck converter, Boost converter, single–phase square wave inverter and PWM inverter.

Course Name: Electrical devices and circuits laboratory	
Course Code: EE22L2	
EE22L2.1	Will be able to write assembly language program using 8086 micro based on arithmetic, logical, and shift operations.
EE22L2.2	Will be able to interface 8086 with I/O and other devices.
EE22L2.3	Will be able to do parallel communication using 8051 & PIC 18 micro controllers.
EE22L2.4	Will be able to do serial communication using 8051 & PIC 18 micro controllers.
EE22L2.5	Will be able to write assembly language program using 8086 micro based on logical, and shift operations.
EE22L2.6	Will be able to write assembly language program using 8086 micro based on Arithmetic, logical operations.

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III YEAR- I SEM

Course Name: Power systems-II	
Course Code: EE3101	
EE3103.1	Able to understand parameters of various types of transmission lines during different operating conditions.
EE3103.2	Able to understand the performance of short transmission lines.
EE3103.3	Able to understand the performance of medium transmission lines.
EE3103.4	Student will be able to understand travelling waves on transmission lines.
EE3103.5	Will be able to understand various factors related to charged transmission lines.
EE3103.6	Will be able to understand sag/tension of transmission lines and performance of line.

Course Name: RENEWABLE ENERGY SOURCES	
Course Code: EE3102	
EE3102.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface
EE3102.2	Design solar thermal collectors, solar thermal plants.
EE3102.3	Design solar photo voltaic systems.
EE3102.4	Develop maximum power point techniques in solar PV and wind energy systems.
EE3102.5	Explain wind energy conversion systems, wind generators, power generation.
EE3102.6	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems

Course Name: SIGNALS & SYSTEMS	
Course Code: EE3103.	
EE3103.1	Characterize the signals and systems and principles of vector spaces, Concept of orthgonality
EE3103.2	Analyze the continuous-time signals and continuous-time systems using Fourier series, Fourier transform and Laplace transform.
EE3103.3	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back.
EE3103.4	Understand the relationships among the various representations of LTI systems.
EE3103.5	Understand the Concepts of convolution, correlation, Energy and Power density spectrum and their relationships.
EE3103.6	Apply z-transform to analyze discrete-time signals and systems

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Course Name: PULSE AND DIGITAL CIRCUITS OBJECTIVES	
Course Code: EE3104	
EE3104.1	Design linear and non-linear wave shaping circuits.
EE3104.2	Apply the fundamental concepts of wave for various switching and signal generating circuits.
EE3104.3	Design different multivibrators and time base generators.
EE3104.4	Utilize the non sinusoidal signals in many experimental research areas.
EE3104.5	Apply the fundamental concepts of wave shaping for various and signal generating circuits.
EE3104.6	Different multivibrators and base generators.

Course Name: POWER ELECTRONICS	
Course Code: EE3105	
EE3105.1	Explain the characteristics of various power semiconductor devices and analyze the static and dynamic characteristics of SCR's.
EE3105.2	Design firing circuits for SCR.
EE3105.3	Explain the operation of single phase full–wave converters and analyze harmonics in the input current.
EE3105.4	Explain the operation of three phase full–wave converters.
EE3105.5	Analyze the operation of different types of DC-DC converters.
EE3105.6	Explain the operation of inverters and application of PWM techniques for voltage control and harmonic mitigation.

Course Name: ELECTRICAL MACHINES – II LABORATORY	
Course Code: EE31L1	
EE31L1.1	Able to assess the performance of single phase and three phase induction motors.
EE31L1.2	Able to control the speed of three phase induction motor.
EE31L1.3	Able to predetermine the regulation of three–phase alternator by various methods.
EE31L1.4	Able to find the Xd/ Xqratio of alternator and asses the performance of three–phasesynchronous motor.
EE31L1.5	Able to find the alternator and asses the performance of three–phasesynchronous motor.
EE31L1.6	Able to control the speed of three phase induction motor.

Course Name: CONTROL SYSTEMS LAB	
Course Code: EE31L2	
EE31L2.1	Able to analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchronous motors.
EE31L2.2	Able to design P,PI,PD and PID controllers.
EE31L2.3	Able to design lag, lead and lag–lead compensators.
EE31L2.4	Able to control the temperature using PID controller.
EE31L2.5	Able to determine the transfer function of D.C.motor.
EE31L2.6	Able to control the position of D.C servo motor performance.

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Course Name: ELECTRICAL MEASUREMENTS LABORATORY	
Course Code: EE31L3.	
EE31L3.1	To be able to measure the electrical parameters voltage, current, power.
EE31L3.2	To be able to measure the current, power, energy and electrical characteristics of resistance, inductance and capacitance
EE31L3.3	To be able to measure the electrical parameters voltage, current, power, energy and electrical characteristics of resistance.
EE31L3.4	To be able to test transformer oil for its effectiveness.
EE31L3.5	To be able to measure the parameters of inductive coil.
EE31L3.6	Test transformer oil.

III YEAR- II SEM

Course Name: POWER ELECTRONIC CONTROLLERS & DRIVES	
Course Code: EE3201	
EE3201.2	Analyze the operation of three phase converter fed dc motors and four quadrant operations of dc motors using dual converters.
EE3201.3	Describe the converter control of dc motors in various quadrants of operation.
EE3201.4	Know the concept of speed control of induction motor by using AC voltage controllers and voltage source inverters.
EE3201.5	Differentiate the stator side control and rotor side control of three phase induction motor..
EE3201.6	Explain the speed control mechanism of synchronous motors.

Course Name: POWER SYSTEM ANALYSIS	
Course Code: EE3202	
EE3202.1	Able to draw impedance diagram for a power system network and to understand per unit quantities.
EE3202.2	Able to form aybus and Zbus for a power system networks.
EE3202.3	Able to understand the load flow solution of a power system using different methods.
EE3202.4	Able to find the fault currents for all types faults to provide data for the design of protective devices.
EE3202.5	• Able to findthe sequence components of currents for unbalanced power system network.
EE3202.6	• Able to analyze the steady state, transient and dynamic stability concepts of a power system.

Course Name: MICROPROCESSORS AND MICROCONTROLLERS	
Course Code: EE3203.	
EE3203.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors.
EE3203.2	To be able to understand the addressing modes of microprocessors.
EE3203.3	To be able to understand the micro controller capability.
EE3203.4	To be able to program mp and mc.
EE3203.5	To be able to interface mp and mc with other electronic devices.
EE3203.6	To be able to develop cyber physical systems.

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Course Name: DATA STRUCTURES	
Course Code: EE3204	
EE3204.1	Distinguish between procedures and object oriented programming.
EE3204.2	Apply advanced data structure strategies for exploring complex data structures.
EE3204.3	Compare and contrast various data structures and design techniques in the area of Performance.
EE3204.4	Incorporate data structures into the applications such as binary search trees, AVL and B Trees.
EE3204.5	Implement data structure algorithms through C++.
EE3204.6	Implement all data structures like stacks, queues, trees, lists and graphs and compare their Performance and trade offs.

COURSE NAME: ENERGY AUDIT AND CONSERVATION &MANAGEMENT	
COURSE CODE: EE3205	
EE3205.1	To understand artificial neuron models.
EE3205.2	To understand learning methods of ANN.
EE3205.3	To utilize different algorithms of ANN.
EE3205.4	To distinguish between classical and fuzzy sets.
EE3205.5	To understand different modules of fuzzy controller.
EE3205.6	To understand applications of neural networks and fuzzy logic.

Course Name: POWER ELECTRONICS LAB	
Course Code: EE32L1.	
EE32L1.1	Able to study the characteristics of various power electronic devices and analyze gate drive circuits of IGBT.
EE32L1.2	Able to analyze the performance of single–phase and three–phase full–wave bridge converters with both inductive loads
EE32L1.3	Able to understand the operation of single phase AC voltage regulator with resistive and inductive loads.
EE32L1.4	Able to understand the working of Buck converter,single–phase square wave inverter and PWM inverter.
EE32L1.5	Able to understand the working of Boost converter, single–phase square wave inverter and PWM inverter.
EE32L1.6	Able to analyze the performance of single–phase and three–phase full–wave bridge converters with both resistive loads

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Course Name: MICROPROCESSORS AND MICROCONTROLLERS LAB	
Course Code:EE32L2	
EE32L2.1	Will be able to write assembly language program using 8086 micro based on arithmetic, logical, and shift operations.
EE32L2.2	Will be able to interface 8086 with I/O and other devices.
EE32L2.3	Will be able to do parallel communication using 8051 & PIC 18 micro controllers.
EE32L2.4	Will be able to do serial communication using 8051 & PIC 18 micro controllers.
EE32L2.5	Will be able to write assembly language program using 8086 micro based on logical, and shift operations.
EE32L2.6	Will be able to write assembly language program using 8086 micro based on Arithmetic, logical operations.

Course Name: DATASTRUCTURES LAB	
Course Code: EE32L3	
EE32L3.1	Be able to design and analyze the time efficiency of the data structure
EE32L3.2	Be capable to identity the appropriate data structure for given problem
EE32L3.3	Have practical knowledge on the application of data structures
EE32L3.4	Be able to design and analyze the space efficiency of the data structur
EE32L3.5	Analyze simple linear and non linear data structures.
EE32L3.6	Apply the suitable data structure for the given real world problem

IV YEAR- I SEM

Course Name: UTILIZATION OF ELECTRICAL ENERGY	
Course Code: EE4101.	
EE4101.1	Able to identify a suitable motor for electric drives and industrial applications.
EE4101.2	Able to identify most appropriate heating or welding techniques for suitable applications.
EE4101.3	Able to understand various level of Illuminosity produced by different illuminating sources.
EE4101.4	Able to estimate the illumination levels produced by various sources and recommend the most efficient illuminating sources and should be able to design different lighting systems by taking inputs and constraints in view.
EE4101.5	Able to determine the speed/time characteristics of different types of traction motors.
EE4101.6	Able to estimate energy consumption levels at various modes of operation.

Course Name: LINEAR IC APPLICATIONS	
Course Code: EE4102	
EE4102.1	Design circuits using operational amplifiers for various applications.
EE4102.2	Analyze active filters using Op-amp.
EE4102.3	Diagnose and trouble-shoot linear electronic circuits
EE4102.4	Understand the gain-bandwidth concept and frequency response of the amplifier configurations.
EE4102.5	Analyze and design amplifiers.
EE4102.6	Design operational amplifiers.

Course Name: POWER SYSTEM OPERATION AND CONTROL	
Course Code: EE4103.	
EE4103.1	Able to compute optimal scheduling of Generators
EE4103.2	Able to understand hydrothermal scheduling
EE4103.3	Understand the unit commitment problem
EE4103.4	Able to understand importance of the frequency
EE4103.5	Understand importance of PID controllers in single area and two area systems.
EE4103.6	Will understand reactive power control and compensation for transmission line.

Course Name: SWITCHGEAR AND PROTECTION	
Course Code: EE4104.	
EE4104.1	Able to understand the principles of arc interruption for application to high voltage circuit breakers of air, oil, vacuum, SF6 gas type.
EE4104.2	Ability to understand the working principle and operation of different types of electromagnetic protective relays.
EE4104.3	Students acquire knowledge of faults and protective schemes for high power generator and transformers
EE4104.4	Improves the ability to understand various types of protective schemes used for feeders and bus bar protection.
EE4104.5	Able to understand different types of static relays and their applications.
EE4104.6	Able to understand different types of over voltages and protective schemes required For insulation co–ordination.

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COURSE NAME: Instrumentation	
COURSE CODE: EE4105	
EE4105.1	Able to represent various types of signals .
EE4105.2	Acquire proper knowledge to use various types of Transducers.
EE4105.3	Able to monitor and measure various parameters such as strain, velocity, temperature, pressure etc.
EE4105.4	Acquire proper knowledge and working principle of various types of digital voltmeters
EE4105.5	Able to measure various parameter like phase and frequency of a signal with the help of CRO.
EE4105.6	Acquire proper knowledge and able to handle various types of signal analyzers.

Course Name: SPECIAL ELECTRICAL MACHINES	
Course Code: EE4106	
EE4106.1	Acquire proper knowledge to use various types of Transducers
EE4106.2	Able to represent various types of signals
EE4106.3	Acquire proper knowledge and working principle of various types of Voltmeters.
EE4106.4	Able to monitor and measure various parameters such as strain, velocity, Temperature.
EE4106.5	Acquire proper knowledge and able to handle various types of signal analyzers.
EE4106.6	Acquire proper knowledge and working principle of various types of digital Voltmeters.

Course Name: ELECTRICAL SIMULATION LAB	
Course Code: EE41L1.	
EE41L1.1	Able to simulate integrator circuit, differentiator circuit, Boost converter, Buck converter, full convertor and PWM inverter.
EE41L1.2	Able to simulate transmission line by incorporating line, load and transformer models.
EE41L1.3	Able to perform transient analysis of RLC circuit and single machine connected to Infinite bus(SMIB).
EE41L1.4	Able to simulate integrator circuit, differentiator circuit.
EE41L1.5	Able to simulate transmission line by incorporating line.
EE41L1.6	Able to perform transient analysis of RLC circuit.

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Course Name: POWER SYSTEMS LAB	
Course Code: EE41L27	
EE41L2.1	State and formulate the optimization problem, without and with constraints, by using design variables from an engineering design problem.
EE41L2.2	Apply classical optimization techniques to minimize or maximize a multi-variable objective function, without or with constraints, and arrive at an optimal solution.
EE41L2.3	Formulate a mathematical model and apply linear programming technique by using Simplex method. Also extend the concept of dual Simplex method for optimal solutions.
EE41L2.4	Apply gradient and non-gradient methods to nonlinear optimization problems and use interior or exterior penalty functions for the constraints to derive the optimal solutions.
EE41L2.5	Able to apply Genetic algorithms for simple electrical problems.
EE41L2.6	Able to solve practical problems using PSO.

IV YEAR-II SEM

COURSE NAME: DIGITAL CONTROL SYSTEMS	
COURSE CODE: EE4201	
EE4201.1	The students learn the advantages of discrete time control systems and the "know how" of various associated accessories.
EE4201.2	The learner understand z–transformations and their role in the mathematical analysis of different systems(like laplace transforms in analog systems).
EE4201.3	The stability criterion for digital systems and methods adopted for testing the same are explained.
EE4201.4	Finally, the conventional and state space methods of design are also introduced.
EE4201.5	Mathematical analysis of different systems.
EE4201.6	Stability criterion for digital systems and methods.

COURSE NAME: H.V.D.C. TRANSMISSION	
COURSE CODE: EE4202	
EE4202.1	Learn different types of hvdc levels and basic concepts.
EE4202.2	Know the operation of converters.
EE4202.3	Acquire control concept of reactive power control and ac/dc loadflow.
EE4202.4	Understand converter faults, protection and harmonic effects.
EE4202.5	Design low pass and high pass filters.
EE4202.6	Understand converter faults, protection.

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COURSE NAME: ELECTRICAL DISTRIBUTION SYSTEMS	
COURSE CODE: EE4203	
EE4203.1	Able to understand various factors of distribution system.
EE4203.2	Able to design the substation and feeders.
EE4203.3	Able to determine the voltage drop and power loss
EE4203.4	Able to understand the protection and its coordination
EE4203.5	Able to understand the effect of compensation forp.f improvement
EE4203.6	Able to understand the effect of voltage control

COURSE NAME: FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEM	
COURSE CODE: EE4204	
EE4204.1	Will understand importance of power system deregulation and restructuring.
EE4204.2	Able to compute available transfer capability.
EE4204.3	Will understand transmission congestion management.
EE4204.4	Able to compute electricity pricing in deregulated environment
EE4204.5	Will be able to understand power system operation in deregulated environment.
EE4204.6	Will understand importance of ancillary services

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2019-2020**

II YEAR- I SEM

Course Name: ELECTRICAL CIRCUIT ANALYSIS-II	
Course Code: EE2101	
EE2101.1	Solve three- phase circuits under balanced and unbalanced condition.
EE2101.2	Find the transient response of electrical networks for different types of excitations. Find parameters for different types of network.
EE2101.3	Realize electrical equivalent network for a given network transfer function.
EE2101.4	Extract different harmonics components from the response of an electrical network.
EE2101.5	Solve three- phase circuits under unbalanced condition.
EE2101.6	Solve three- phase circuits under balanced and

Course Name: ELECTRICAL MACHINES – I	
Course Code: EE2102	
EE2102.1	Assimilate the concepts of electromechanical energy conversion.
EE2102.2	Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
EE2102.3	Understand the torque production mechanism and control the speed of dc motors.
EE2102.4	Analyze the performance of single phase transformers.
EE2102.5	Predetermine regulation, losses and efficiency of single phase transformers.
EE2102.6	Parallel transformers, control voltages with tap changing methods and achieve three-

Course Name: ELECTRONIC DEVICES AND CIRCUITS	
Course Code: EE2103	
EE2103.1	Understand the concepts of Semiconductor Technology.
EE2103.2	Appraise operation of electronic devices.
EE2103.3	Develop the biasing circuits using the electronic devices.
EE2103.4	Model the amplifier circuits.
EE2103.5	Analyse the characteristics of the devices.
EE2103.6	Appraise the construction of electronic devices.

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Course Name: ELECTROMAGNETIC FIELDS	
Course Code: EE2104	
EE2104.1	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE2104.2	Calculate and design capacitance, energy stored in dielectrics
EE2104.3	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE2104.4	.determine the magnetic forces and torque produced by currents in magnetic field
EE2104.5	Determine self and mutual inductances and the energy stored in the magnetic field
EE2104.6	Calculate induced EMF, understand the concepts of displacement current and Poynting vector

Course Name:MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	
Course Code: EE2105	
EE2105.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product
EE2105.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs
EE2105.3	To have the knowledge of different Business Units.
EE2105.4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
EE2105.5	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making
EE2105.6	Price Output determination under various market conditions and also to have the knowledge of different Business Units

Course Name:THERMAL AND HYDRO PRIME MOVERS	
Course Code: EE2106	
EE2106.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE2106.2	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE2106.3	Calculate and design capacitance, energy stored in dielectrics
EE2106.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE2106.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE2106.6	Determine self and mutual inductances and the energy stored in the magnetic field

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Course Name:THERMAL AND HYDRO LABORATORY	
Course Code: EE21L1	
EE21L1.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE21L1.2	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE21L1.3	Calculate and design capacitance, energy stored in dielectrics
EE21L1.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations.
EE21L1.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE21L1.6	Determine self and mutual inductances and the energy stored in the magnetic field

Course Name: ELECTRIAL CIRCUITS LABORATARY	
Course Code: EE21L2	
EE21L2.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE21L2.2	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE21L2.3	Calculate and design capacitance, energy stored in dielectrics
EE21L2.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE21L2.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE21L2.6	Determine self and mutual inductances and the energy stored in the magnetic field

II YEAR- II SEM

Course Name: ELECTRICAL MEASUREMENTS	
Course Code: EE2201	
EE2201.1	Able to choose right type of instrument for measurement of voltage and current for ac and dc.
EE2201.2	Able to choose right type of instrument for measurement of power and energy – able to calibrate energy meter by suitable method.
EE2201.3	Able to calibrate ammeter and potentiometer.
EE2201.4	Able to select suitable bridge for measurement of electrical parameters
EE2201.5	Able to use the ballistic galvanometer and flux meter for magnetic measuring instruments
EE2201.6	Able to measure frequency and phase difference between signals using CRO. Able to use digital instruments in electrical measurements.

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Course Name: ELECTRICAL MACHINES – II	
Course Code: EE2202	
EE2202.1	Able to explain the operation and performance of three phase induction motor.
EE2202.2	Able to analyze the torque-speed relation, performance of induction motor and induction generator.
EE2202.3	Able to explain design procedure for transformers and three phase induction motors. • Implement the starting of single phase induction motors.
EE2202.4	To perform winding design and predetermine the regulation of synchronous generators.
EE2202.5	Implement the starting of single phase induction motors.
EE2202.6	Avoid hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor. Text Books: 1. Electrical Machines – P.S. Bhimb

Course Name: SWITCHING THEORY AND LOGIC DESIGN	
Course Code: EE2203	
EE2203.1	Ability to derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
EE2203.2	Capability to determine time response specifications of second order systems and to determine error constants.
EE2203.3	Acquires the skill to analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method.
EE2203.4	Capable to analyze the stability of LTI systems using frequency response methods.
EE2203.5	Able to design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.
EE2203.6	• Ability to represent physical systems as state models and determine the response. Understanding the concepts of controllability and observability.

Course Name: CONTROL SYSTEMS	
Course Code: EE2204	
EE2204.1	Ability to derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
EE2204.2	Capability to determine time response specifications of second order systems and to determine error constants.
EE2204.3	Cquires the skill to analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method.
EE2204.4	Apable to analyze the stability of LTI systems using frequency response methods.
EE2204.5	Able to design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.
EE2204.6	• Ability to represent physical systems as state models and determine the response. Understanding the concepts of controllability and observability.

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Course Name: POWER SYSTEMS-I	
Course Code: EE2205	
EE2205.1	Students are able to identify the different components of thermal power plants.
EE2205.2	Students are able to identify the different components of nuclear Power plants.
EE2205.3	Students are able to distinguish between AC/DC distribution systems and also estimate voltage drops of distribution systems.
EE2205.4	Students are able to identifythe different components of air and gas insulated substations.
EE2205.5	Students are able to identifysingle core and multi core cables with different insulating materials.
EE2205.6	Students are able to analyzethe different economic factors of power generation and tariffs.

Course Name: MANAGEMENT SCIENCE	
Course Code: EE2206	
EE2206.1	After completion of the Course the student will acquire the knowledge on management functions and organizational behavior.
EE2206.2	Fter completion of the Course the student will acquire the knowledge global leadership and organizational behavior.
EE2206.3	Fter completion of the Course the student will acquire the knowledge on management functions, global leadership and organizational behavior.
EE2206.4	Will familiarize with the concepts of functional management and strategic management.
EE2206.5	Will familiarize with the concepts of functional management.
EE2206.6	Will familiarize with the concepts of functional management project management and strategic management.

Course Name: ELECTRICAL MACHINES – I LABORATORY	
Course Code: EE22L1	
EE22L1.1	To determine and predetermine the performance of DC machines and Transformers.
EE22L1.2	To determine the performance of DC machines and Transformers.
EE22L1.3	To control the speed of DC motor
EE22L1.4	To determine the performance of DC machines.
EE22L1.5	To achieve three phase to two phase transformation.
EE22L1.6	To achieve three phase transformation.

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Course Name: ELECTRONIC DEVICES AND CIRCUITS LAB	
Course Code: EE22L2	
EE22L2.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE22L2.2	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
EE22L2.3	Calculate and design capacitance, energy stored in dielectrics
EE22L2.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE22L2.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE22L2.6	Determine self and mutual inductances and the energy stored in the magnetic field.

III YEAR- I SEM

Course Name: POWER SYSTEMS	
Course Code: EE3101	
EE3101.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface
EE3101.2	Design solar thermal collectors, solar thermal plants.
EE3101.3	Design solar photo voltaic systems.
EE3101.4	Develop maximum power point techniques in solar PV and wind energy systems.
EE3101.5	Explain wind energy conversion systems, wind generators, power generation.
EE3101.6	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems

Course Name: RENEWABLE ENERGY SOURCES	
Course Code: EE3102	
EE3102.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface
EE3102.2	Design solar thermal collectors, solar thermal plants.
EE3102.3	Design solar photo voltaic systems.
EE3102.4	Develop maximum power point techniques in solar PV and wind energy systems.
EE3102.6	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems

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III YEAR- I SEM

Course Name: SIGNALS SYSTEMS	
Course Code: EE3103	
EE3103.1	Characterize the signals and systems and principles of vector spaces, Concept of orthgonality
EE3103.2	Analyze the continuous-time signals and continuous-time systems using Fourier series, Fourier transform and Laplace transform.
EE3103.3	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back.
EE3103.4	Understand the relationships among the various representations of LTI systems.
EE3103.5	Understand the Concepts of convolution, correlation, Energy and Power density spectrum and their relationships.
EE3103.6	Apply z-transform to analyze discrete-time signals and systems

Course Name: PULSE AND DIGITAL CIRCUITS	
Course Code: EE3104	
EE3104.1	Design linear and non-linear wave shaping circuits.
EE3104.2	Apply the fundamental concepts of wave for various switching and signal generating circuits.
EE3104.3	Design different multivibrators and time base generators.
EE3104.4	Utilize the non sinusoidal signals in many experimental research areas.
EE3104.5	Apply the fundamental concepts of wave shaping for various and signal generating circuits.
EE3104.6	Different multivibrators and base generators.

Course Name: POWER ELECTRONICS	
Course Code: EE3105	
EE3105.1	Explain the characteristics of various power semiconductor devices and analyze the static and dynamic characteristics of SCR's.
EE3105.2	Design firing circuits for SCR.
EE3105.3	Explain the operation of single phase full–wave converters and analyze harmonics in the input current.
EE3105.4	Explain the operation of three phase full–wave converters.
EE3105.5	Analyze the operation of different types of DC-DC converters.
EE3105.6	Explain the operation of inverters and application of PWM techniques for voltage control and harmonic mitigation.

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Course Name: ELECTRICAL MACHINES – II LABORATORY	
Course Code: EE31L1	
EE31L1.1	Able to assess the performance of single phase and three phase induction motors.
EE31L1.2	Able to control the speed of three phase induction motor.
EE31L1.3	Able to predetermine the regulation of three–phase alternator by various methods.
EE31L1.4	Able to find the Xd/ Xqratio of alternator and asses the performance of three–phasesynchronous motor.
EE31L1.5	Able to find the alternator and asses the performance of three–phasesynchronous motor.
EE31L1.6	Able to control the speed of three phase induction motor.

Course Name: CONTROL SYSTEMS LAB	
Course Code: EE31L2	
EE31L2.1	Able to analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchronous motors.
EE31L2.2	Able to design P,PI,PD and PID controllers.
EE31L2.3	Able to design lag, lead and lag–lead compensators.
EE31L2.4	Able to control the temperature using PID controller.
EE31L2.5	Able to determine the transfer function of D.C.motor.
EE31L2.6	Able to control the position of D.C servo motor performance.

Course Name: ELECTRICAL MEASUREMENTS LABORATORY	
Course Code: EE31L3.	
EE31L3.1	To be able to measure the electrical parameters voltage, current, power.
EE31L3.2	To be able to measure the current, power, energy and electrical characteristics of resistance, inductance and capacitance
EE31L3.3	To be able to measure the electrical parameters voltage, current, power, energy and electrical characteristics of resistance.
EE31L3.4	To be able to test transformer oil for its effectiveness.
EE31L3.5	To be able to measure the parameters of inductive coil.
EE31L3.6	Test transformer oil.

III YEAR- II SEM

Course Name: POWER ELECTRONIC CONTROLLERS DRIVES	
Course Code: EE3201	
EE3201.2	Analyze the operation of three phase converter fed dc motors and four quadrant operations of dc motors using dual converters.
EE3201.3	Describe the converter control of dc motors in various quadrants of operation.
EE3201.4	Know the concept of speed control of induction motor by using AC voltage controllers and voltage source inverters.
EE3201.5	Differentiate the stator side control and rotor side control of three phase induction motor..
EE3201.6	Explain the speed control mechanism of synchronous motors.

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Course Name: POWER SYSTEM ANALYSIS	
Course Code: EE3202	
EE3202.1	Able to draw impedance diagram for a power system network and to understand per unit quantities.
EE3202.2	Able to form aybusand Zbusfor a power system networks.
EE3202.3	Able to understand the load flow solution of a power system using different methods.
EE3202.4	Able to find the fault currents for all types faults to provide data for the design of protective devices.
EE3202.5	• Able to findthe sequence components of currents for unbalanced power system network.
EE3202.6	• Able to analyze the steady state, transient and dynamic stability concepts of a power system.

Course Name: MICROPROCESSORS AND MICROCONTROLLERS	
Course Code: EE3203.	
EE3203.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors.
EE3203.2	To be able to understand the addressing modes of microprocessors.
EE3203.3	To be able to understand the micro controller capability.
EE3203.4	To be able to program mp and mc.
EE3203.5	To be able to interface mp and mc with other electronic devices.
EE3203.6	To be able to write assembly language program using 8086 micro based on Arithmetic, logical operations.

Course Name: DATA STRUCTURES	
Course Code: EE3204.	
EE3204.1	Distinguish between procedures and object oriented programming.
EE3204.2	Apply advanced data structure strategies for exploring complex data structures.
EE3204.3	Compare and contrast various data structures and design techniques in the area of Performance.
EE3204.4	Incorporate data structures into the applications such as binary search trees, AVL and B Trees.
EE3204.5	Implement data structure algorithms through C++.
EE3204.6	Implement all data structures like stacks, queues, trees, lists and graphs and compare their Performance and trade offs.

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Course Name: Energy audit and conservation &management	
Course Code: EE3205	
EE3205.1	To understand artificial neuron models.
EE3205.2	To understand learning methods of ANN.
EE3205.3	To utilize different algorithms of ANN.
EE3205.4	To distinguish between classical and fuzzy sets.
EE3205.5	To understand different modules of fuzzy controller.
EE3205.6	To understand applications of neural networks and fuzzy logic.

Course Name: POWER ELECTRONICS LAB	
Course Code: EE32L1	
EE32L1.1	Able to study the characteristics of various power electronic devices and analyze gate drive circuits of IGBT.
EE32L1.2	Able to analyze the performance of single–phase and three–phase full–wave bridge converters with both inductive loads
EE32L1.3	Able to understand the operation of single phase AC voltage regulator with resistive and inductive loads.
EE32L1.4	Able to understand the working of Buck converter,single–phase square wave inverter and PWM inverter.
EE32L1.5	Able to understand the working of Boost converter, single–phase square wave inverter and PWM inverter.
EE32L1.6	Able to analyze the performance of single–phase and three–phase full–wave bridge converters with both resistive loads

Course Name: MICRO MPROCESSORS AND MICRO CONTROLLERS LAB	
Course Code:EE32L2	
EE32L2.1	Will be able to write assembly language program using 8086 micro based on arithmetic, logical, and shift operations.
EE32L2.2	Will be able to interface 8086 with I/O and other devices.
EE32L2.3	Will be able to do parallel communication using 8051 & PIC 18 micro controllers.
EE32L2.4	Will be able to do serial communication using 8051 & PIC 18 micro controllers.
EE32L2.5	Will be able to write assembly language program using 8086 micro based on logical, and shift operations.
EE32L2.6	Will be able to write assembly language program using 8086 micro based on Arithmetic, logical operations.

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Course Name: Data structures lab	
Course Code: EE32L3	
EE32L3.1	Be able to design and analyze the time efficiency of the data structure
EE32L3.2	Be capable to identity the appropriate data structure for given problem
EE32L3.3	Have practical knowledge on the application of data structures
EE32L3.4	Be able to design and analyze the space efficiency of the data structur
EE32L3.5	Analyze simple linear and non linear data structures.
EE32L3.6	Apply the suitable data structure for the given real world problem

IV YEAR- I SEM

Course Name: UTILIZATION OF ELECTRICAL	
Course Code: EE4101.	
EE4101.1	Able to identify a suitable motor for electric drives and industrial applications.
EE4101.2	Able to identify most appropriate heating or welding techniques for suitable applications.
EE4101.3	Able to understand various level of illuminosity produced by different illuminating sources.
EE4101.4	Able to estimate the illumination levels produced by various sources and recommend the most efficient illuminating sources and should be able to design different lighting systems by taking inputs and constraints in view.
EE4101.5	Able to determine the speed/time characteristics of different types of traction motors.
EE4101.6	Able to estimate energy consumption levels at various modes of operation.

Course Name: LINEAR IC APPLICATIONS	
Course Code: EE4102	
EE4102.1	Design circuits using operational amplifiers for various applications.
EE4102.2	Analyze active filters using Op-amp.
EE4102.3	Diagnose and trouble-shoot linear electronic circuits
EE4102.4	Understand the gain-bandwidth concept and frequency response of the amplifier configurations.
EE4102.5	Analyze and design amplifiers.
EE4102.6	Design operational amplifiers.

Course Name: POWER SYSTEM OPERATION AND CONTROL	
Course Code: EE4103.	
EE4103.1	Able to compute optimal scheduling of Generators
EE4103.2	Able to understand hydrothermal scheduling
EE4103.3	Understand the unit commitment problem
EE4103.4	Able to understand importance of the frequency
EE4103.5	Understand importance of PID controllers in single area and two area systems.
EE4103.6	Will understand reactive power control and compensation for transmission line.

Course Name: SWITCHGEAR AND PROTECTION	
Course Code: EE4104.	
EE4104.1	Able to understand the principles of arc interruption for application to high voltage circuit breakers of air, oil, vacuum, SF6 gas type.
EE4104.2	Ability to understand the working principle and operation of different types of electromagnetic protective relays.
EE4104.3	Students acquire knowledge of faults and protective schemes for high power generator and transformers
EE4104.4	Improves the ability to understand various types of protective schemes used for feeders and bus bar protection.
EE4104.5	Able to understand different types of static relays and their applications.
EE4104.6	Able to understand different types of over voltages and protective schemes required For insulation co–ordination.

Course Name: SPECIAL ELECTRICAL MACHINES	
Course Code: EE4105	
EE4105.1	Acquire proper knowledge to use various types of Transducers
EE4105.2	Able to represent various types of signals
EE4105.3	Acquire proper knowledge and working principle of various types of Voltmeters.
EE4105.4	Able to monitor and measure various parameters such as strain, velocity, Temperature.
EE4105.5	Acquire proper knowledge and able to handle various types of signal analyzers.
EE4105.6	Acquire proper knowledge and working principle of various types of digital Voltmeters.

Course Name: ELECTRICAL SIMULATION LAB	
Course Code: EE41L1	
EE41L1.1	Able to simulate integrator circuit, differentiator circuit, Boost converter, Buck converter, full convertor and PWM inverter.
EE41L1.2	Able to simulate transmission line by incorporating line, load and transformer models.
EE41L1.3	Able to perform transient analysis of RLC circuit and single machine connected to Infinite bus(SMIB).
EE41L1.4	Able to simulate integrator circuit, differentiator circuit.
EE41L1.5	Able to simulate transmission line by incorporating line.
EE41L1.6	Able to perform transient analysis of RLC circuit.

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Course Name: POWER SYSTEMS LAB	
Course Code: EE41L2	
EE41L2.1	State and formulate the optimization problem, without and with constraints, by using design variables from an engineering design problem.
EE41L2.2	Apply classical optimization techniques to minimize or maximize a multi-variable objective function, without or with constraints, and arrive at an optimal solution.
EE41L2.3	Formulate a mathematical model and apply linear programming technique by using Simplex method. Also extend the concept of dual Simplex method for optimal solutions.
EE41L2.4	Apply gradient and non-gradient methods to nonlinear optimization problems and useinterior or exterior penalty functions for the constraints to derive the optimal solutions.
EE41L2.5	Able to apply Genetic algorithms for simple electrical problems.
EE41L2.6	Able to solve practical problems using PSO.

IV YEAR-II SEM

COURSE NAME: DIGITAL CONTROL SYSTEMS	
COURSE CODE: EE4201	
EE4201.1	The students learn the advantages of discrete time control systems and the "know how" of various associated accessories.
EE4201.2	The learner understand z–transformations and their role in the mathematical analysis of different systems(like laplace transforms in analog systems).
EE4201.3	The stability criterion for digital systems and methods adopted for testing the same are explained.
EE4201.4	Finally, the conventional and state space methods of design are also introduced.
EE4201.5	Mathematical analysis of different systems.
EE4201.6	Stability criterion for digital systems and methods.

COURSE NAME: H.V.D.C. TRANSMISSION	
COURSE CODE: EE4202	
EE4202.1	Learn different types of hvdc levels and basic concepts.
EE4202.2	Know the operation of converters.
EE4202.3	Acquire control concept of reactive power control and ac/dc loadflow.
EE4202.4	Understand converter faults, protection and harmonic effects.
EE4202.5	Design low pass and high pass filters.
EE4202.6	Understand converter faults, protection.

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COURSE NAME: ELECTRICAL DISTRIBUTION SYSTEMS	
COURSE CODE: EE4203	
EE4203.1	Able to understand various factors of distribution system.
EE4203.2	Able to design the substation and feeders.
EE4203.3	Able to determine the voltage drop and power loss
EE4203.4	Able to understand the protection and its coordination
EE4203.5	Able to understand the effect of compensation forp.f improvement
EE4203.6	Able to understand the effect of voltage control

COURSE NAME: FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEM	
COURSE CODE: EE4204	
EE4204.1	Will understand importance of power system deregulation and restructuring.
EE4204.2	Able to compute available transfer capability.
EE4204.3	Will understand transmission congestion management.
EE4204.4	Able to compute electricity pricing in deregulated environment
EE4204.5	Will be able to understand power system operation in deregulated environment.
EE4204.6	Will understand importance of ancillary services

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2018-2019**

Course Name: ELECTRICAL CIRCUIT ANALYSIS-II	
Course Code:EE2101	
EE2101.1	Solve three- phase circuits under balanced and unbalanced condition.
EE2101.2	Find the transient response of electrical networks for different types of excitations. Find parameters for different types of network.
EE2101.3	Realize electrical equivalent network for a given network transfer function.
EE2101.4	Extract different harmonics components from the response of an electrical network.
EE2101.5	Solve three- phascircuits under unbalanced condition.
EE2101.6	Solve three- phase circuits under balanced.

Course Name: ELECTRICAL MACHINES – I	
Course Code: EE2102	
EE2102.1	Assimilate the concepts of electromechanical energy conversion.
EE2102.2	Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
EE2102.3	Understand the torque production mechanism and control the speed of dc motors.
EE2102.4	Analyze the performance of single phase transformers.
EE2102.5	Predetermine regulation, losses and efficiency of single phase transformers.
EE2102.6	Parallel transformers, control voltages with tap changing methods and achieve three-

Course Name: ELECTRONIC DEVICES AND CIRCUITS	
Course Code: EE2103	
EE2103.1	Understand the concepts of Semiconductor Technology.
EE2103.2	Appraise operation of electronic devices.
EE2103.3	Develop the biasing circuits using the electronic devices.
EE2103.4	Model the amplifier circuits.
EE2103.5	Analyse the characteristics of the devices.
EE2103.6	Appraise the construction of electronic devices.

Course Name: ELECTROMAGNETIC FIELDS	
Course Code: EE2104	
EE2104.1	Determine electric fields and potentials using Guass's law or solving Laplace's orpossion's equations, for various electric charge distributions.
EE2104.2	Calculate and design capacitance, energy stored in dielectrics.
EE2104.3	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations.
EE2104.4	.determine the magnetic forces and torque produced by currents in magnetic field.
EE2104.5	Determine self and mutual inductances and the energy stored in the magnetic field.
EE2104.6	Calculate induced EMF, understand the concepts of displacement current and Poyntingvector.

Course Name: THERMAL AND HYDRO PRIME MOVERS	
Course Code: EE2105	
EE2105.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE2105.2	Determine electric fields and potentials using Guass's law or solving Laplace's orpossion's equations, for various electric charge distributions.
EE2105.3	Calculate and design capacitance, energy stored in dielectrics.
EE2105.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations.
EE2105.5	Determine the magnetic forces and torque produced by currents in magnetic field.
EE2105.6	Determine self and mutual inductances and the energy stored in the magnetic field.

Course Name:MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	
Course Code: EE2106	
EE2106.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product
EE2106.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation ofthe least cost combination of inputs
EE2106.3	To have the knowledge of different business Units.
EE2106.4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
EE2106.5	The Learner can able to evaluate various investment project proposals with the help ofcapital budgeting techniques for decision making
EE2106.6	Price Output determination under various market conditions and also to have the knowledge of differentbusiness Units

Course Name:THERMAL AND HYDRO LABORATORY	
Course Code: EE21L1	
EE21L1.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE21L1.2	Determine electric fields and potentials using Guass's law or solving Laplace's orpossion's equations, for various electric charge distributions.
EE21L1.3	Calculate and design capacitance, energy stored in dielectrics
EE21L1.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations.
EE21L1.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE21L1.6	Determine self and mutual inductances and the energy stored in the magnetic field

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Course Name:Electrial circuits laboratary	
Course Code: EE21L2	
EE21L2.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE21L2.2	Determine electric fields and potentials using Guass's law or solving Laplace's orpossion's equations, for various electric charge distributions.
EE21L2.3	Calculate and design capacitance, energy stored in dielectrics
EE21L2.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE21L2.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE21L2.6	Determine self and mutual inductances and the energy stored in the magnetic field

II YEAR- II SEM

Course Name: ELECTRICAL MEASUREMENTS	
Course Code: EE2201	
EE2201.1	Able to choose right type of instrument for measurement of voltage and current for ac and dc.
EE2201.2	Able to choose right type of instrument for measurement of power and energy – able to calibrate energy meter by suitable method.
EE2201.3	Able to calibrate ammeter and potentiometer.
EE2201.4	Able to select suitable bridge for measurement of electrical parameters
EE2201.5	Able to use the ballistic galvanometer and flux meter for magnetic measuring instruments
EE2201.6	Able to measure frequency and phase difference between signals using CRO. Able to use digital instruments in electrical measurements.

Course Name: ELECTRICAL MACHINES – II	
Course Code: EE2202	
EE2202.1	Able to explain the operation and performance of three phase induction motor.
EE2202.2	Able to analyze the torque-speed relation, performance of induction motor and induction generator.
EE2202.3	Able to explain design procedure for transformers and three phase induction motors. • Implement the starting of single phase induction motors.
EE2202.4	To perform winding design and predetermine the regulation of synchronous generators.
EE2202.5	Implement the starting of single phase induction motors.
EE2202.6	Avoid hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor. Text Books: 1. Electrical Machines – P.S. Bhimb

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Course Name: SWITCHING THEORY AND LOGIC DESIGN	
Course Code: EE2203.	
EE2203.1	Ability to derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
EE2203.2	Capability to determine time response specifications of second order systems and to determine error constants.
EE2203.3	Acquires the skill to analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method.
EE2203.4	Capable to analyze the stability of LTI systems using frequency response methods.
EE2203.5	Able to design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.
EE2203.6	Ability to represent physical systems as state models and determine the response. Understanding the concepts of controllability and observability.

Course Name: CONTROL SYSTEMS	
Course Code: EE2204	
EE2204.1	Ability to derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
EE2204.2	Capability to determine time response specifications of second order systems and to determine error constants.
EE2204.3	Cquires the skill to analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method.
EE2204.4	Apable to analyze the stability of LTI systems using frequency response methods.
EE2204.5	Able to design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.
EE2204.6	• Ability to represent physical systems as state models and determine the response. Understanding the concepts of controllability and observability.

Course Name: POWER SYSTEMS-I	
Course Code: EE2205	
EE2205.1	Students are able to identify the different components of thermal power plants.
EE2205.2	Students are able to identify the different components of nuclear Power plants.
EE2205.3	Students are able to distinguish between AC/DC distribution systems and also estimate voltage drops of distribution systems.
EE2205.4	Students are able to identifythe different components of air and gas insulated substations.
EE2205.5	Students are able to identifysingle core and multi core cables with different insulating materials.
EE2205.6	Students are able to analyzethe different economic factors of power generation and tariffs.

Course Name: MANAGEMENT SCIENCE	
Course Code: EE2206	
EE2206.1	After completion of the Course the student will acquire the knowledge on management functions and organizational behavior.
EE2206.2	Fter completion of the Course the student will acquire the knowledge global leadership and organizational behavior.
EE2206.3	Fter completion of the Course the student will acquire the knowledge on management functions, global leadership and organizational behavior.
EE2206.4	Will familiarize with the concepts of functional management and strategic management.
EE2206.5	Will familiarize with the concepts of functional management.
EE2206.6	Will familiarize with the concepts of functional management project management and strategic management.

Course Name: ELECTRICAL MACHINES – I LABORATORY	
Course Code: EE22L1	
EE22L1.1	To determine and predetermine the performance of DC machines and Transformers.
EE22L1.2	To determine the performance of DC machines and Transformers.
EE22L1.3	To control the speed of DC motor
EE22L1.4	To determine the performance of DC machines.
EE22L1.5	To achieve three phase to two phase transformation.
EE22L1.6	To achieve three phase transformation.

Course Name: ELECTRONIC DEVICES AND CIRCUITS LAB	
Course Code: EE22L2	
EE22L2.1	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
EE22L2.2	Determine electric fields and potentials using Guass's law or solving Laplace's orpossion's equations, for various electric charge distributions.
EE22L2.3	Calculate and design capacitance, energy stored in dielectrics
EE22L2.4	Calculate the magnetic field intensity due to current, the application of Ampere's law andthe Maxwell's second and third equations
EE22L2.5	.determine the magnetic forces and torque produced by currents in magnetic field
EE22L2.6	Determine self and mutual inductances and the energy stored in the magnetic field.

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III YEAR- I SEM

Course Name:POWER SYSTEMS–II	
Course Code: EE3101	
EE3101.1	Able to understand parameters of various types of transmission lines during different operating conditions
EE3101.2	Able to understand the performance of short and medium transmission lines.
EE3101.3	Student will be able to understand travelling waves on transmission lines.
EE3101.4	Will be able to understand various factors related to charged transmission lines.
EE3101.5	Will be able to understand sag of transmission lines and performance of line insulators.
EE3101.6	Will be able to understand tension of transmission lines and performance of line insulators.

Course Name: RENEWABLE ENERGY SOURCES	
Course Code: EE3102	
EE3102.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface
EE3102.2	Design solar thermal collectors, solar thermal plants.
EE3102.3	Design solar photo voltaic systems.
EE3102.4	Develop maximum power point techniques in solar PV and wind energy systems.
EE3102.5	Explain wind energy conversion systems, wind generators, power generation.
EE3102.6	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems

Course Name: SIGNALS SYSTEMS	
Course Code: EE3103.	
EE3103.1	Characterize the signals and systems and principles of vector spaces, Concept of orthgonality
EE3103.2	Analyze the continuous-time signals and continuous-time systems using Fourier series, Fourier transform and Laplace transform.
EE3103.3	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back.
EE3103.4	Understand the relationships among the various representations of LTI systems.
EE3103.5	Understand the Concepts of convolution, correlation, Energy and Power density spectrum and their relationships.
EE3103.6	Apply z-transform to analyze discrete-time signals and systems

Course Name: PULSE AND DIGITAL CIRCUITS	
Course Code: EE3104	
EE3104.1	Design linear and non-linear wave shaping circuits.
EE3104.2	Apply the fundamental concepts of wave for various switching and signal generating circuits.
EE3104.3	Design different multivibrators and time base generators.
EE3104.4	Utilize the non sinusoidal signals in many experimental research areas.
EE3104.5	Apply the fundamental concepts of wave shaping for various and signal generating circuits.
EE3104.6	Different multivibrators and base generators.

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Course Name: POWER ELECTRONICS	
Course Code: EE3105	
EE3105.1	Explain the characteristics of various power semiconductor devices and analyze the static and dynamic characteristics of SCR's.
EE3105.2	Design firing circuits for SCR.
EE3105.3	Explain the operation of single phase full–wave converters and analyze harmonics in the input current.
EE3105.4	Explain the operation of three phase full–wave converters.
EE3105.5	Analyze the operation of different types of DC-DC converters.
EE3105.6	Explain the operation of inverters and application of PWM techniques for voltage control and harmonic mitigation.

Course Name: ELECTRICAL MACHINES – II LABORATORY	
Course Code: EE31L1	
EE31L1.1	Able to assess the performance of single phase and three phase induction motors.
EE31L1.2	Able to control the speed of three phase induction motor.
EE31L1.3	Able to predetermine the regulation of three–phase alternator by various methods.
EE31L1.4	Able to find the Xd/ Xqratio of alternator and asses the performance of three–phasesynchronous motor.
EE31L1.5	Able to find the alternator and asses the performance of three–phasesynchronous motor.
EE31L1.6	Able to control the speed of three phase induction motor.

Course Name: CONTROL SYSTEMS LAB	
Course Code: EE31L2	
EE31L2.1	Able to analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchronous motors.
EE31L2.2	Able to design P,PI,PD and PID controllers.
EE31L2.3	Able to design lag, lead and lag–lead compensators.
EE31L2.4	Able to control the temperature using PID controller.
EE31L2.5	Able to determine the transfer function of D.C.motor.
EE31L2.6	Able to control the position of D.C servo motor performance.

Course Name: ELECTRICAL MEASUREMENTS LABORATORY	
Course Code: EE31L3.	
EE31L3.1	To be able to measure the electrical parameters voltage, current, power.
EE31L3.2	To be able to measure the current, power, energy and electrical characteristics of resistance, inductance and capacitance
EE31L3.3	To be able to measure the electrical parameters voltage, current, power, energy and electrical characteristics of resistance.
EE31L3.4	To be able to test transformer oil for its effectiveness.
EE31L3.5	To be able to measure the parameters of inductive coil.
EE31L3.6	Test transformer oil.

III YEAR- II SEM

Course Name: POWER ELECTRONIC CONTROLLERS DRIVES	
Course Code: EE3201	
EE3201.2	Analyze the operation of three phase converter fed dc motors and four quadrant operations of dc motors using dual converters.
EE3201.3	Describe the converter control of dc motors in various quadrants of operation.
EE3201.4	Know the concept of speed control of induction motor by using AC voltage controllers and voltage source inverters.
EE3201.5	Differentiate the stator side control and rotor side control of three phase induction motor..
EE3201.6	Explain the speed control mechanism of synchronous motors.

Course Name: POWER SYSTEM ANALYSIS	
Course Code: EE3202	
EE3202.1	Able to draw impedance diagram for a power system network and to understand perunit quantities.
EE3202.2	Able to form aybusand Zbusfor a power system networks.
EE3202.3	Able to understand the load flow solution of a power system using different methods.
EE3202.4	Able to find the fault currents for all types faults to provide data for the design ofprotective devices.
EE3202.5	• Able to findthe sequence components of currents for unbalanced power systemnetwork.
EE3202.6	• Able to analyze the steady state, transient and dynamic stability concepts of a power system.

Course Name: MICROPROCESSORS AND MICROCONTROLLERS	
Course Code: EE3203.	
EE3203.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors.
EE3203.2	To be able to understand the addressing modes of microprocessors.
EE3203.3	To be able to understand the micro controller capability.
EE3203.4	To be able to program mp and mc.
EE3203.5	To be able to interface mp and mc with other electronic devices.
EE3203.6	To be able to develop cyber physical systems.

Course Name: DATA STRUCTURES	
Course Code: EE3204.	
EE3204.1	Distinguish between procedures and object oriented programming.
EE3204.2	Apply advanced data structure strategies for exploring complex data structures.
EE3204.3	Compare and contrast various data structures and design techniques in the area of Performance.
EE3204.4	Incorporate data structures into the applications such as binary search trees, AVL and B Trees.
EE3204.5	Implement data structure algorithms through C++.
EE3204.6	Implement all data structures like stacks, queues, trees, lists and graphs and compare their Performance and trade offs.

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Course Name: Energy audit and conservation &management	
Course Code: EE3205	
EE3205.1	To understand artificial neuron models.
EE3205.2	To understand learning methods of ANN.
EE3205.3	To utilize different algorithms of ANN.
EE3205.4	To distinguish between classical and fuzzy sets.
EE3205.5	To understand different modules of fuzzy controller.
EE3205.6	To understand applications of neural networks and fuzzy logic.

Course Name: POWER ELECTRONICS LAB	
Course Code: EE32L1.	
EE32L1.1	Able to study the characteristics of various power electronic devices and analyze gate drive circuits of IGBT.
EE32L1.2	Able to analyze the performance of single–phase and three–phase full–wave bridgeconverters with bothinductive loads
EE32L1.3	Able to understand the operation of single phase AC voltage regulator with resistive and inductive loads.
EE32L1.4	Abletounderstandtheworkingofbuckconverter,single–phase square wave inverter and PWM inverter.
EE32L1.5	Abletounderstandtheworkingofboostconverter,single–phase square wave inverter and PWM inverter.
EE32L1.6	Able to analyze the performance of single–phase and three–phase full–wave bridgeconverters with both resistive loads

Course Name: MICRO MPROCESSORS AND MICRO CONTROLLERS LAB	
Course Code:EE32L2	
EE32L2.1	Will be able to write assembly language program using 8086 micro based on arithmetic, logical, and shift operations.
EE32L2.2	Will be able to interface 8086 with I/O and other devices.
EE32L2.3	Will be able to do parallel communication using 8051 & PIC 18 micro controllers.
EE32L2.4	Will be able to do serial communication using 8051 & PIC 18 micro controllers.
EE32L2.5	Will be able to write assembly language program using 8086 micro based on logical, and shift operations.
EE32L2.6	Will be able to write assembly language program using 8086 micro based on Arithmetic, logical operations.

Course Name: Data structures lab	
Course Code: EE32L3	
EE32L3.1	Beabletodesign andanalyzethetimeefficiencyofthedata structure
EE32L3.2	Becapabletoidentitythe appropriatedatastructureforgiven problem
EE32L3.3	Havepracticalknowledgeontheapplicationofdatastructures
EE32L3.4	Beabletodesign andanalyzethespaceefficiencyofthedata structur

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| EE32L3.5 | Analyzesimplelinearandnonlineardata structures. |
| EE32L3.6 | Applythesuitabledatastructureforthegiven real world problem |

IV YEAR- I SEM

Course Name: RENEWABLE ENERGY SOURCES AND SYSTEMS	
Course Code: EE4101.	
EE4101.1	Analyze solar radiation data, extraterrestrial radiation, radiation on Earth's surface.
EE4101.2	Design solar thermal collections.
EE4101.3	Design solar photo voltaic systems.
EE4101.4	Develop maximum power point techniques in solar PV and wind.
EE4101.5	Explain wind energy conversion systems, Betz coefficient, tip speed Ratio.
EE4101.6	Explain basic principle and working of hydro, tidal, biomass, fuel Cell and geothermal systems.

Course Name: HVAC & DC TRANSMISSION	
Course Code: EE4102	
EE4102.1	To be able to acquaint with HV transmission system with regard to Power handling capacity, losses, conductor resistance and Electrostatic field associate with HV.
EE4102.2	To develop ability for determining corona, radio interference, Audible noise generation and frequency spectrum for single and Three phase transmission lines.
EE4102.3	To be able to acquire knowledge in transmission of HVDC power With regard to terminal equipments.
EE4102.4	To be able to develop knowledge with regard to choice of pulse Conversion, control characteristic, firing angle control and effect of Source impedance.
EE4102.5	To develop knowledge of reactive power requirements of Conventional control, filters and reactive power compensation in AC. Side of HVDC system.
EE4102.6	Able to calculate voltage and current harmonics, and design of Filters for six and twelve pulse conversion.

Course Name:POWER SYSTEM OPERATION AND CONTROL	
Course Code: EE4103	
EE4103.1	Able to compute optimal scheduling of Generators
EE4103.2	Able to understand hydrothermal scheduling.
EE4103.3	Understand the unit commitment problem.
EE4103.4	Able to understand importance of the frequency.
EE4103.5	Understand importance of PID controllers in single area and two area systems.
EE4103.6	Will understand reactive power control and line power compensation.

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Course Name:INSTRUMENTATION	
Course Code: EE4104	
EE4104.1	Able to represent various types of signals .
EE4104.2	Acquire proper knowledge to use various types of Transducers.
EE4104.3	Able to monitor and measure various parameters such as strain, velocity, temperature, pressure etc.
EE4104.4	Acquire proper knowledge and working principle of various types of digital voltmeters.
EE4104.5	Able to measure various parameter like phase and frequency of a signal with the help of CRO.
EE4104.6	Acquire proper knowledge and able to handle various types of signal analyzers.

Course Name:Electrical Distribution systems	
Course Code: EE4105	
EE4105.1	Able to understand the various factors of distribution system
EE4105.2	Able to design the substation and feeders
EE4105.3	Able to determine the voltage drop and power loss
EE4105.4	Able to understand the protection and its coordination.
EE4105.5	Able to understand the effect of compensation on p.f improvement.
EE4105.6	Able to understand the effect of voltage, current distribution system performance

Course Name:MICROPROCESSORS AND MICROCONTROLLERS LAB	
Course Code: EE41L1	
EE41L1.1	Will be able to write assembly language program using 8086 micro based on arithmetic, logical, and shift operations.
EE41L1.2	Will be able to do modular and Dos/Bios programming using 8086 micro processor.
EE41L1.3	Will be able to interface 8086 with I/O and other devices.
EE41L1.4	Will be able to do parallel and serial communication using 8051 micro controllers.
EE41L1.5	Will be able to write assembly language program using 8086 micro based on arithmetic.
EE41L1.6	Will be able to do parallel communication using 8051 micro controllers.

Course Name:ELECTRICAL SIMULATION LAB	
Course Code: EE41L2	
EE41L2.1	Able to simulate integrator circuit, differentiator circuit, Boost converter, Buck converter, full convertor and PWM inverter.
EE41L2.2	Able to simulate transmission line by incorporating line, load.
EE41L2.3	Able to perform transient analysis of RLC circuit and single machine connected to

	infinite bus (SMIB).
EE41L2.4	Able to find load flow solution for a transmission network with Newton–Rampson method.
EE41L2.5	Able to simulate transmission line by incorporating line transformer models.
EE41L2.5	Able to perform transient analysis of RLC circuit and single machine connected to infinite bus (SMIB).

Course Name:POWER SYSTEMS LAB	
Course Code: EE41L3	
EE41L3.1	The student is able to determine the parameters of various power system components which are frequently occur in power system studies and he can execute energy management systems functions at load dispatch centre.
EE41L3.2	The student is able to determine the parameters energy management systems.
EE41L3.3	The student is able to determine the parameters of various power system.
EE41L3.4	The student is able to determine the parameters of varioussystems functions .
EE41L3.5	The student is able to determine the parameters of variousfunctions at load dispatch .
EE41L3.5	The student is able to determine the parameters of variousfrequently occur in power system studies and hecan execute.

IV YEAR- II SEM

Course Name: DIGITAL CONTROL SYSTEMS	
Course Code: EE4201	
EE4201.1	The students learn the advantages of discrete time control systems and the "know how" of various associated accessories.
EE4201.2	The learner understand z–transformations and their role in the mathematical analysis of different systems(like laplace transforms in analog systems).
EE4201.3	The stability criterion for digital systems and methods adopted for testing the same are explained.
EE4201.4	Finally, the conventional and state–space methods of design are also introduced.
EE4201.5	The learner understand z–transformations and their role in the mathematical (like laplace transforms in analog systems).
EE4201.6	The students learn the advantages "know how" of various associated accessories.

Course Name: SPECIAL ELECTRICAL MACHINES	
Course Code: EE4202	
EE4202.1	Explain theory of operation and control of switched reluctance motor.
EE4202.2	Explain the performance and control of stepper motors, and their applications.
EE4202.3	Describe the operation and characteristics of permanent magnet dc motor.
EE4202.4	Distinguish between brush dc motor and brush less dc motor
EE4202.5	Explain the theory of travelling magnetic field and applications of linear motors.
EE4202.6	Understand the significance of electrical motors for traction drive

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Course Name: FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEMS	
Course Code: EE4203	
EE4203.1	To learn the basics of power flow control in transmission lines by using FACTS controllers
EE4203.2	To explain the operation and control of voltage source converter.
EE4203.3	To discuss compensation methods to improve stability and reduce power oscillations in the transmission lines
EE4203.4	To learn the method of shunt compensation by using static VAR compensators.
EE4203.5	To learn the methods of compensation by using series compensators.
EE4203.6	To explain the operation of two modern power electronic controllers (Unified Power Quality Conditioner and Interline Power Flow Controller).

Course Name: AI TECHNIQUES	
Course Code: EE4204	
EE4204.1	Explain theory of operation and control of switched reluctance motor.
EE4204.2	Explain the performance and control of stepper motors, and their applications.
EE4204.3	Describe the operation and characteristics of permanent magnet dc motor.
EE4204.4	Distinguish between brush dc motor and brush less dc motor
EE4204.5	Explain the theory of travelling magnetic field and applications of linear motors.
EE4204.6	Understand the significance of electrical motors for traction drive

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DEPARTMENT OF MECHANICAL ENGINEERING
<u>**Course Outcomes**</u>
A.Y:2022-2023

II B.TECH I SEM

Course Name:	VECTOR CALCULUS FOURIER TRANSFORMS and PDE (M-III)
Course Code:ME2101	**Course Outcomes**
ME2101.1	Interpret the physical meaning of different operators such as gradient, curland divergence
ME2101.2	Estimate the work done against a field ,circulation and fluxusing vector calculus
ME2101.3	Apply the Laplace transform for solving differential equations
ME2101.4	Find or compute the Fourier series of periodic signals
ME2101.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
ME2101.6	identifysolutionmethodsforpartialdifferentialequationsthatmodelphysicalprocesses(L3)

Course Name:	MECHANICS OF SOLIDS
Course Code:ME2102	**Course Outcomes**
ME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
ME2102.2	Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
ME2102.3	Students will learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
ME2102.4	Students are able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
ME2102.5	Students attain a deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
ME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name:	Fluid Mechanics& Hydraulic Machines
Course Code:ME2103	**Course Outcomes**
ME2103.1	The basic concepts of fluid properties.
ME2103.2	The mechanics of fluids in static and dynamic conditions

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ME2103.3	Boundary layer theory, flow separation
ME2103.4	Boundary layer theory dimensional analysis
ME2103.5	Hydrodynamic forces of jet on vanes in different positions.
ME2103.6	Working Principles and performance evaluation of hydraulic pump and turbines.

Course Name:	PRODUCTION TECHNOLOGY
Course Code:ME2104	**Course Outcomes**
ME2104.1	Design patterns, Gating, runner and riser systems
ME2104.2	Select a suitable casting process based on the component
ME2104.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements
ME2104.4	Understand various bulk deformation processes
ME2104.5	Understand various sheet metal forming and processing of plastics
ME2104.6	Know the different types of manufacturing processes

Course Name:	KINEMATICS OF MACHINERY
Course Code:ME2105	**Course Outcomes**
ME2105.1	Contrive a mechanism for a given plane motion with single degree of freedom
ME2105.2	Suggest and analyze a mechanism for a given straight line motion
ME2105.3	Suggest and analyze a mechanism for a given automobile steering motion
ME2105.4	Analyze the motion(velocity and acceleration) of a plane mechanism
ME2105.5	Suggestandanalyzemechanismsforaprescribedintermittentmotionlikeopeningand closing of IC engine valves etc
ME2105.6	Select a power transmission system for a given application and analyze motion of different transmission systems

Course Name:	COMPUTER AIDED ENGINEERING DRAWING PRACTICE
Course Code: ME2106	**Course outcomes:**
ME2106.1	To understand the basic principles and conventions of engineering drawing
ME2106.2	To use drawing as a communication mode
ME2106.3	To generate pictorial views using CAD software
ME2106.4	To understand the development of surfaces

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ME2106.5	To visualize engineering components
ME2106.6	Knowledge on recent tools

Course Name:	FLUID MECHANICS & HYDRAULIC MACHINES LAB
Course Code:ME2107	**Course Outcomes**
ME2107.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
ME2107.2	To gain practical exposure on the performance evaluation methods of Venturi meter
ME2107.3	To gain practical exposure on the performance evaluation methods of Pelton wheel
ME2107.4	To gain practical exposure on the performance evaluation methods of Francis turbine
ME2107.5	To gain practical exposure on the performance evaluation methods of Reciprocating pump
ME2107.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name:	PRODUCTION TECHNOLOGY LAB
Course Code:ME2108	**Course Outcomes**
ME2108.1	Design and manufacture simple patterns
ME2108.2	Understanding the properties of moulding sands
ME2108.3	Understand the concept of mould preparation
ME2108.4	Fabricate joints using arc welding.
ME2108.5	Practice on sheet metal operations
ME2108.6	Fabricate joints using Resistant welding.

Course Name:	DRAFTING AND MODELLING LAB
Course Code: ME2109L	**Course Outcomes**
ME2109L.1	Able to use software like AutoCAD, Invertor/ Pro E/ Unigraphics.
ME2109L.2	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 2D Modelling.
ME2109L.3	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 3D Modelling.
ME2109L.4	Able to make 3D assembling of different machine components

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ME2109L.5	Able to make 3D modelling, modification & manipulation along with detailing.
ME2109L.6	Able to prepare surface modelling and sheet metal operations through various exercises

Course Name:	**ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE**
Course Code: ME2109L	**Course Outcomes**
ME2109L.1	Understand the concept of Traditional knowledge and its importance
ME2109L.2	Know the need and importance of protecting traditional knowledge
ME2109L.3	Know the various enactments related to the protection of traditional knowledge
ME2109L.4	Understand the concepts of Intellectual property to protect the traditional knowledge
ME2109L.5	traditional knowledge in different sector
ME2109L.6	basic principle of third process reasoning and inference sustainability is at the course of Indian traditional knowledge system

II YEAR II SEM

Course Name:	**MATERIAL SCIENCE AND METALLURGY**
Course Code: ME2201	**Course Outcomes**
ME2201.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
ME2201.2	Study the behaviour of ferrous and non- ferrous metals and alloys and their application in different domains
ME2201.3	Able to understand the effect of heat treatment
ME2201.4	Understand the effect of addition of alloying elements on properties of ferrous metals
ME2201.5	Grasp the methods of making the metal powders and the applications of powder metallurgy
ME2201.6	Comprehend the properties and applications of ceramics, composites and other advanced methods

Course Name:	**Complex Variables and Statistical Methods**
Course Code: ME2202	Course Outcomes
ME2202.1	apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic

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ME2202.2	find the differentiation and integration of complex functions used in engineering problems
ME2202.3	make use of the Cauchy residue theorem to evaluate certain integrals
ME2202.4	apply discrete and continuous probability distributions
ME2202.5	design the components of a classical hypothesis test
ME2202.6	infer the statistical inferential methods based on small and large sampling tests

Course Name:	DYNAMICS OF MACHINERY
Course Code: ME2203	Course Outcomes
ME2203.1	To compute the frictional losses and transmission in clutches, brakes and dynamometers
ME2203.2	To determine the effect of gyroscopic couple in motor vehicles, ships and aeroplanes
ME2203.3	To analyze the forces in four bar and slider crank mechanisms and design a fly wheel
ME2203.4	To determine the rotary unbalanced mass in reciprocating equipment
ME2203.5	To determine the unbalanced forces and couples in reciprocating and radial engines
ME2203.6	To determine the natural frequencies of discrete systems undergoing longitudinal, torsional and transverse vibrations.

Course Name:	THERMAL ENGINEERING-I
Course Code: ME2204	Course Outcomes
ME2204.1	Derive the actual cycle from fuel-air cycle and air-standard cycle for all practical applications
ME2204.2	Explain working principle and various components ofIC engine
ME2204.3	Explain combustion phenomenon ofCI and SI engines and their impact on engine variables
ME2204.4	Analyze the performance of an IC engine based on the performance parameters
ME2204.5	Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine.
ME2204.6	Explain the applications and working principle of rockets and jet propulsion.

ourse Name:	INDUSTRIALENGINEERINGANDMANAGEMENT
Course	Course Outcomes

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Code: ME2205	
ME2205.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
ME2205.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME2205.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate
ME2205.4	considerations for public health and safety, cultural, societal, and environmental constraints
ME2205.5	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME2205.6	Explain and implement various job evaluation methods. Evaluate the overall cost of production for a product.

Course Name:	MECHANICS OF SOLIDS & METALLURGY LAB
Course Code:ME2206	**Course Outcomes**
ME2206.1	To observe and understand the microstructure of Mild steel.
ME2206.2	To observe and understand the microstructure of Medium carbon steel.
ME2206.3	To observe and understand the microstructure of High carbon steel
ME2206.4	To study the microstructure of Cast Irons and Nonferrous alloys
ME2206.5	To evaluate the hardness of various materials using
ME2206.6	To determine the hardenability of steels by Jominy End Quench test.

Course Name:	MACHINE DRAWING
Course Code:	**Course outcomes:**
ME2207.1	Identify the national and international standards pertaining to machine drawing
ME2207.2	Apply limits and tolerances to assemblies and choose appropriate fits
ME2207.3	Recognize machining and surface finish symbols
ME2207.4	Explain the functional and manufacturing datum
ME2207.5	Illustrate various machine components through drawings.
ME2207.6	knowledge of fastening arrangements such as welding, riveting the different styles of attachment for shaft.

Course Name:	THEORY OF MACHINES LAB

Course Code: ME3108L	Course outcomes:
ME3108L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;
ME3108L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
ME3108L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3108L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3108L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3108L.6	. Explain static and dynamic balancing

Course Name:	PYTHON PROGRAMMING LAB
Course Code:	Course Outcomes
CSAI2102L.1	Solve the different methods for linear
CSAI2102L.2	Non-linear and differential equations.
CSAI2102L.3	Learn the PYTHON Programming language
CSAI2102L.4	Familiar with the strings in PYTHON.
CSAI2102L.5	Familiar with the matrices in PYTHON
CSAI2102L.6	Write the Program scripts and functions in PYTHON to solve the methods

III B.TECH ISEM

Course Name:	THERMAL ENGINEERING-II
Course Code: ME3101	Course Outcomes
ME3101.1	**Able to** Explain the basic concepts of thermal engineering and boilers.
ME3101.2	**Able to** Discuss the concepts of steam nozzles and steam turbines.
ME3101.3	**Able to** Gain knowledge about the concepts of reaction turbine and steam condensers.
ME3101.4	**Able to** Discuss the concepts of reciprocating and rotary type of compressors.
ME3101.5	**Able to** Acquire knowledge about the centrifugal compressors.
ME3101.6	**Able to** Acquire knowledge about the axial flow compressors.

Course Name:	DESIGN OF MACHINE MEMBERS-I
Course Code: ME3102	**Course Outcomes**
ME3102.1	Able to Judge about materials and their properties along with manufacturing considerations.
ME3102.2	Able to Gain knowledge about the strength of machine elements.
ME3102.3	Able to Apply the knowledge in designing the riveted and welded joints, keys,
ME3102.4	Able to Apply the knowledge in designing cotters and knuckle joints.
ME3102.5	Able to Apply the knowledge in designing the shafts and shaft couplings.
ME3102.6	Able to Apply the knowledge in designing the mechanical springs.

Course Name:	MACHINING, MACHINE TOOLS & METROLOGY
Course Code: ME3103	**Course Outcomes**
ME3103.1	Able to Discuss the concepts of machining processes.
ME3103.2	Able to Apply the principles of lathe, shaping, slotting and planning machines.
ME3103.3	Able to Apply the principles of drilling process
ME3103.4	Able to Apply the principles of milling and boring processes.
ME3103.5	Able to Analyze the concepts of finishing processes and the system of limits and fits.
ME3103.6	Able to Learn the concepts of surface roughness and optical measuring instruments.

Course Name:	RENEWABLE ENERGY SOURCES
Course Code: ME3105D	**Course Outcomes**
ME3105D.1	Knowledge on importance of, solar energy collection and storage.
ME3105D.2	Knowledge on wind energy principles.
ME3105D.3	Analyze about biomass energy concepts.
ME3105D.4	Discuss about biomass energy concepts.
ME3105D.5	Apply the principles of tidal energy.
ME3105D.6	Utilize the concepts of geothermal energy.

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Course Name:	OPERATIONS RESEARCH
Course Code: ME3104B	**Course Outcomes**
ME3104B.1	Apply the basics of operations research and linear programming problems.
ME3104B.2	Apply the knowledge in solving problems of transportation, assignment and sequencing.
ME3104B.3	Judge the replacement and game theories
ME3104B.4	Discuss the waiting line models and project management techniques.
ME3104B.5	apply the knowledge to solve problems on replacement and game theories
ME3104B.6	Apply the knowledge in solving problems of dynamic programming and simulation.

Course Name:	MACHINE TOOLS LAB
Course Code: ME3106L	**Course Outcomes**
ME3106L.1	Demonstrate about general purpose machine tools in the machine shop.
ME3106L.2	Perform various operations on lathe machine.
ME3106L.3	Perceive different operations on drilling machine.
ME3106L.4	Experiment with basic operations on shaping machine.
ME3106L.5	Utilize slotting machine to make keyways.
ME3106L.6	Experiment with the basic operations on milling machine.

Course Name:	THERMAL ENGINEERING LAB
Course Code: ME3107L	**Course Outcomes**
ME3107L.1	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
ME3107L.2	Perceive flash point, fire point, calorific value of different fuels using various apparatus.
ME3107L.3	Perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
ME3107L.4	Perform speed test, performance test and cooling temperature on petrol and diesel engines.
ME3107L.5	Utilize air compressor for its performance test and to determine efficiency
ME3107L.6	Discuss the principles through assembly and disassembly of 2/3 wheelers, 2/4 stroke engines, tractor, heavy duty engines, boilers and their mountings and accessories.

Course Name:	ADVANCED COMMUNICATION SKILLS LAB
Course Code: ME3108L	**Course Outcomes**
ME3108L.1	help students acquire behavioural skills for their personal and professional life
ME3108L.2	respond appropriately in different socio-cultural and professional contexts
ME3108L.3	Acquire vocabulary and use it contextually
ME3108L.4	Listen and speak effectively
ME3108L.5	Develop proficiency in academic reading and writing
ME3108L.6	Increase possibilities of job prospects

Course Name:	PROFESSIONAL ETHICS AND HUMAN VALUES
Course Code: ME3110	**Course Outcomes**
ME3110.1	Judge the concepts of human values.
ME3110.2	Justify knowledge about the principles of engineering ethics.
ME3110.3	Interpret engineering as social experimentation.
ME3110.4	Realize engineers' responsibility for safety and risk.
ME3110.5	Learn about the engineers' rights and responsibilities.
ME3110.6	understand engineers' responsibility for safety and risk.

III B.TECH II SEM

Course Name:	HEAT TRANSFER
Course Code: ME3201	**Course Outcomes**
ME3201.1	Apply knowledge about mechanism and modes of heat transfer.
ME3201.2	Understand the concepts of conduction and convective heat transfer.
ME3201.3	Learn about forced and free convection.
ME3201.4	Analyze the concepts of heat transfer with phase change and condensation along with heat exchangers.
ME3201.5	interpret the knowledge about radiation mode of heat transfer.
ME3201.6	Solving problems on one dimensional heat transfer

Course Name:	DESIGN OF MACHINE MEMBERS-II
Course Code: ME3202	**Course Outcomes**
ME3202.1	Apply knowledge about the design of bearings.
ME3202.2	Explain the concepts in designing various engine parts.
ME3202.3	Utilize the knowledge to design curved beams and power screws.
ME3202.4	Justify power transmission systems and to design pulleys
ME3202.5	Apply the concepts in designing various machine tool elements.
ME3202.6	Justify power transmission systems and to design gear drives

Course Name:	INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
Course Code: ME3203	**Course Outcomes**
ME3203.1	Discuss basic concepts of artificial intelligence, neural networks and genetic algorithms.
ME3203.2	Apply the principles of knowledge representation and reasoning.
ME3203.3	Learn about bayesian machine learning.
ME3203.4	Utilize various machine learning techniques.
ME3203.5	Apply the machine learning analytics and deep learning techniques.
ME3203.6	Learn about computational learning and machine learning.

Course Name:	AUTOMOBILE ENGINEERING

Course Code: ME3204A	Course Outcomes
ME3204A.1	Discuss various components of four wheeler automobile.
ME3204A.2	Apply the knowledge of different parts of transmission system.
ME3204A.3	Judge about steering and suspension systems.
ME3204A.4	Justify the braking system used in automobiles.
ME3204A.5	Analyze the concepts about engine specifications and service, safety and electronic system used in automobiles
ME3204A.6	Justify the electrical system used in automobiles.

Course Name:	**ADVANCED MATERIALS**
Course Code: ME3205C	Course Outcomes
ME3205C.1	Justify the knowledge about metals and alloys and their utility in different environments.
ME3205C.2	Judge about polymers and ceramics and their applications.
ME3205C.3	Analyze composite materials along with reinforcements and their applications.
ME3205C.4	Analyze composite materials applications.
ME3205C.5	Utilize shape memory alloys and functionally graded materials for different applications.
ME3205C.6	Justify about the nanomaterials and their applications.

Course Name:	**HEAT TRANSFER LAB**
Course Code: ME3206L	Course Outcomes
ME3206L.1	Determine the heat transfer rate and coefficient.
ME3206L.2	Determine the thermal conductivity, efficiency and effectiveness
ME3206L.3	Determine the emissivity and Stefan Boltzman constant.
ME3206L.4	Determine critical heat flux and investigate Lambert's cosine law
ME3206L.5	Experiment with Virtual labs and analyze conduction, HT coefficient
ME3206L.6	Experiment with Virtual labs and investigate Lambert's laws.

Course Name:	**CAE&CAM LAB**
Course Code: ME3207L	Course Outcomes

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ME3207L.1	Demonstrate the main stages of Finite Element analysis.
ME3207L.2	Perform modeling and analysis of structural and heat transfer problems.
ME3207L.3	Use CAM software to generate NC code
ME3207L.4	Evaluation of Stress concentration factor in a rectangular plate with central hole
ME3207L.5	Stress distribution in thick a cylinder subjected to internal and/external pressures
ME3207L.6	Machine simple components on CNC machines

Course Name:	**MEASUREMENTS & METROLOGY LAB**
Course Code: ME3208L	**Course Outcomes**
ME3208L.1	To gain knowledge of Calibration experiments with Pressure gauge , Strain gauge
ME3208L.2	To gain knowledge of Calibration experiments with rotameter, Seismic apparatus
ME3208L.3	To gain knowledge of Calibration experiments with Vernier calipers, micrometer, Height gauge and Dial gauges
ME3208L.4	To gain knowledge of Calibration experiments with resistance temperature detector
ME3208L.5	To analyse various machine tools for their alignment
ME3208L.6	To measure angular and taper measurement

Course Name:	**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING LAB**
Course Code: ME3209L	**Course Outcomes**
ME3209L.1	Students will demonstrate the ability to solve problems collaboratively
ME3209L.2	Students will demonstrate knowledge of artificial intelligence concepts
ME3209L.3	An understanding of fundamental concepts and methods of machine learning, statistical pattern recognition and its applications
ME3209L.4	An ability to analyze and evaluate simple algorithms for pattern classification.
ME3209L.5	An ability to design simple algorithms for pattern classification, code them with Python programming language and test them with benchmark data sets
ME3209L.6	Practically establish, refine and implement strategies to take the idea in to students and faculty fraternity

Course Name:	**RESEARCH METHODOLOGY AND IPR**
Course Code: ME3210	**Course Outcomes**

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ME3210.1	Knowledge on Formulate research problem
ME3210.2	Analyze literature review and find research gaps to finalize research objectives.
ME3210.3	Identify the need of ethics in research
ME3210.4	dentify the need of IPR of research projects for economic growth and social benefits.
ME3210.5	Relatethat IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about economic growth and social benefits.
ME3210.6	Apply basic data analytics techniques: probability distribution, linear regression, ANOVA

IV.B.TECH I SEM

Course Name:	INDUSTRIAL MANAGEMENT
Course Code: ME4101	Course Outcomes
ME4101.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
ME4101.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME4101.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints
ME4101.4	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME4101.5	Understand the interactions between engineering, business, technological and environmental spheres in the modern society.
ME4101.6	Understand their role as engineers and their impact to society at the national and global context.

Course Name:	FINITE ELEMENT METHODS
Course Code: ME4102	Course Outcomes
ME4102.1	Understand the concepts behind variational methods and weighted residual methods in FEM
ME4102.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element .
ME4102.3	Develop element characteristic equation procedure and
ME4102.4	Generation of global equations solutions to structural, thermal and dynamic problems.

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ME4102.5	Able to apply Suitable boundary conditions to global equations, and reduce it to a solvable form.
ME4102.6	Able to apply the FE procedure to field problems like heat transfer.

Course Name:	PRODUCTION PLANNING & CONTROL
Course Code: ME4103C	**Course Outcomes**
ME4103C.1	Apply the systems concept for the design of production and service systems
ME4103C.2	Make forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques
ME4103C.3	Apply the principles and techniques for planning and control of the production and service systems to optimize/make best use of resources
ME4103C.4	Understand the importance and function of inventory and to be able to apply selected techniques for its control and management under dependent and independent demand circumstances.
ME4103C.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4103C.6	To understand dispatching procedure and applications of computers in production planning and control.

Course Name:	
Course Code:	**Course Outcomes**
ME4105.1	Formulate strategies and tactics that increase productivity and quality to maximize a firm's profitability in a global marketplace
ME4105.2	Define and apply the concepts of productivity and production.
ME4105.3	Assess a firm's operational performance through interpretation of its financial statements
ME4105.4	Apply Operations Management tools and methods to product design and the product life cycle to improve the firm's performance.
ME4105.5	Assess capacity and enhance operating leverage via break-even analysis
ME4105.6	Apply analytical skills and problem-solving tools to resolve the operational issues

Course Name: ME4104C	POWER PLANT ENGINEERING
Course Code:	**Course Outcomes**
ME4104C.1	Basic knowledge of Different types of Power Plants, site selection criteria of each one of them
ME4104C.2	Understanding of Thermal Power Plant Operation, turbine governing, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems

ME4104C.3	Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design
ME4104C.4	Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor
ME4104C.5	Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc
ME4104C.6	Discussing environmental and safety aspects of power plant operation

Course Name:	FINITE ELEMENT SIMULATION LAB
Course Code: ME4106L	**Course Outcomes**
ME4106L.1	Understand the concepts behind formulation methods in FEM
ME4106L.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and iso-parametric elements.
ME4106L.3	able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
ME4106L.4	Use of these tools for any engineering and real time applications
ME4106L.5	Acquire knowledge on utilizing these tools for a better project in their curriculum
ME4106L.6	Acquire knowledge on industry problems with confidence

IV B.TECH II SEM

Course Name:	
Course Code: ME4201	**Course Outcomes**
ME4201.1	Demonstrate appropriate level of understanding on principles of additive manufacturing processes.
ME4201.2	Choose appropriate materials for additive manufacturing processes
ME4201.3	Apply suitable CAD tools and CAD interface for additive manufacturing process
ME4201.4	Develop physical prototypes by identifying suitable process with optimum process parameters
ME4201.5	Demonstrate the knowledge of Additive Manufacturing and Rapid Prototyping technologies
ME4201.6	able to Discuss fundamentals of Reverse Engineering

Course Name:	**NON DESTRUCTIVE EVALUATION**
Course Code:	**Course Outcomes**
ME4202.1	Comprehensive, theory based understanding of the techniques and methods of radio graphic technique
ME4202.2	Comprehensive, theory based understanding of the techniques and methods of Ultrasonic test
ME4202.3	Comprehensive, theory based understanding of the techniques and methods of Liquid Penetrant Test
ME4202.4	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test
ME4202.5	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test &Infrared And Thermal Testing
ME4202.6	Apply methods knowledge of non destructive testing to evaluate products of railways, automobiles, aircrafts, chemical industries etc.

Course Name:	**ADVANCED MATERIALS**
Course Code: ME4204	**Course Outcomes**
ME4204.1	Explain various composite materials with their constituents, advantages, limitations and applications
ME4204.2	Describe various manufacturing methods of polymer matrix composites materials.
ME4204.3	Derive stress strain relationships for orthotropic materials and analyze orthotropic lamina.
ME4204.4	Able to analyze orthotropic lamina.

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ME4204.5	Explain various functionally graded materials with their properties, preparation and applications
ME4204.6	Explain different smart materials with their application

Course Name:	GREEN ENERGY SYSTEMS
Course Code:	**Course Outcomes**
ME4203.1	Explain the importance of solar energy collection and storage.
ME4203.2	Apply the principles of wind energy and biomass energy.
ME4203.3	Analyze knowledge on geothermal and ocean energy
ME4203.4	Learn about energy efficient systems
ME4203.5	Discuss the concepts of green manufacturing systems
ME4203.6	Realise the importance of green technologies in sustainable growth of Industry and society

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DEPARTMENT OF MECHANICAL ENGINEERING
<u>Course Outcomes</u>
A.Y:2021-2022

II.B.TECH I SEM

Course Name:	VECTOR CALCULUS FOURIER TRANSFORMS and PDE (M-III)
Course Code:ME2101	**Course Outcomes**
ME2101.1	Interpret the physical meaning of different operators such as gradient, curland divergence
ME2101.2	Estimate the work done against a field ,circulation and fluxusing vector calculus
ME2101.3	Apply the Laplace transform for solving differential equations
ME2101.4	Find or compute the Fourier series of periodic signals
ME2101.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
ME2101.6	identifysolutionmethodsforpartialdifferentialequationsthatmodelphysicalprocesses(L3)

Course Name:	MECHANICS OF SOLIDS
Course Code:ME2102	**Course Outcomes**
ME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
ME2102.2	Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
ME2102.3	Students will learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
ME2102.4	Students are able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
ME2102.5	Students attain a deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
ME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name:	Fluid Mechanics& Hydraulic Machines
Course Code:ME2103	**Course Outcomes**
ME2103.1	The basic concepts of fluid properties.
ME2103.2	The mechanics of fluids in static and dynamic conditions
ME2103.3	Boundary layer theory, flow separation

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ME2103.4	Boundary layer theory dimensional analysis
ME2103.5	Hydrodynamic forces of jet on vanes in different positions.
ME2103.6	Working Principles and performance evaluation of hydraulic pump and turbines.

Course Name:	PRODUCTION TECHNOLOGY
Course Code:ME2104	**Course Outcomes**
ME2104.1	Design patterns, Gating, runner and riser systems
ME2104.2	Select a suitable casting process based on the component
ME2104.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements
ME2104.4	Understand various bulk deformation processes
ME2104.5	Understand various sheet metal forming and processing of plastics
ME2104.6	Know the different types of manufacturing processes

Course Name:	KINEMATICS OF MACHINERY
Course Code:ME2105	**Course Outcomes**
ME2105.1	Contrive a mechanism for a given plane motion with single degree of freedom
ME2105.2	Suggest and analyze a mechanism for a given straight line motion
ME2105.3	Suggest and analyze a mechanism for a given automobile steering motion
ME2105.4	Analyze the motion(velocity and acceleration) of a plane mechanism
ME2105.5	Suggestandanalyzemechanismsforaprescribedintermittentmotionlikeopeningand closing of IC engine valves etc
ME2105.6	Select a power transmission system for a given application and analyze motion of different transmission systems

Course Name:	COMPUTER AIDED ENGINEERING DRAWING PRACTICE
Course Code: ME2106	**Course outcomes:**
ME2106.1	To understand the basic principles and conventions of engineering drawing
ME2106.2	To use drawing as a communication mode
ME2106.3	To generate pictorial views using CAD software
ME2106.4	To understand the development of surfaces
ME2106.5	To visualize engineering components

ME2106.6	Knowledge on recent tools

Course Name:	**FLUID MECHANICS & HYDRAULIC MACHINES LAB**
Course Code:ME2107	**Course Outcomes**
ME2107.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
ME2107.2	To gain practical exposure on the performance evaluation methods of Venturi meter
ME2107.3	To gain practical exposure on the performance evaluation methods of Pelton wheel
ME2107.4	To gain practical exposure on the performance evaluation methods of Francis turbine
ME2107.5	To gain practical exposure on the performance evaluation methods of Reciprocating pump
ME2107.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name:	**PRODUCTION TECHNOLOGY LAB**
Course Code:ME2108	**Course Outcomes**
ME2108.1	Design and manufacture simple patterns
ME2108.2	Understanding the properties of moulding sands
ME2108.3	Understand the concept of mould preparation
ME2108.4	Fabricate joints using arc welding.
ME2108.5	Practice on sheet metal operations
ME2108.6	Fabricate joints using Resistant welding.

Course Name:	**DRAFTING AND MODELLING LAB**
Course Code: ME2109L	**Course Outcomes**
ME2109L.1	Able to use software like AutoCAD, Invertor/ Pro E/ Unigraphics.
ME2109L.2	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 2D Modelling.
ME2109L.3	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 3D Modelling.
ME2109L.4	Able to make 3D assembling of different machine components
ME2109L.5	Able to make 3D modelling, modification & manipulation along with detailing.
ME2109L.6	Able to prepare surface modelling and sheet metal operations through various

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	exercises

Course Name:	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE
Course Code: ME2109L	**Course Outcomes**
ME2109L.1	Understand the concept of Traditional knowledge and its importance
ME2109L.2	Know the need and importance of protecting traditional knowledge
ME2109L.3	Know the various enactments related to the protection of traditional knowledge
ME2109L.4	Understand the concepts of Intellectual property to protect the traditional knowledge
ME2109L.5	traditional knowledge in different sector
ME2109L.6	basic principle of third process reasoning and inference sustainability is at the course of Indian traditional knowledge system

II YEAR II SEM

Course Name:	Material Science and Metallurgy
Course Code: ME2201	**Course Outcomes**
ME2201.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
ME2201.2	Study the behaviour of ferrous and non- ferrous metals and alloys and their application in different domains
ME2201.3	Able to understand the effect of heat treatment
ME2201.4	Understand the effect of addition of alloying elements on properties of ferrous metals
ME2201.5	Grasp the methods of making the metal powders and the applications of powder metallurgy
ME2201.6	Comprehend the properties and applications of ceramics, composites and other advanced methods

Course Name:	Complex Variables and Statistical Methods
Course Code: ME2202	Course Outcomes
ME2202.1	apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic
ME2202.2	find the differentiation and integration of complex functions used in engineering problems
ME2202.3	make use of the Cauchy residue theorem to evaluate certain integrals
ME2202.4	apply discrete and continuous probability distributions

ME2202.5	design the components of a classical hypothesis test
ME2202.6	infer the statistical inferential methods based on small and large sampling tests

Course Name:	DYNAMICS OF MACHINERY
Course Code: ME2203	Course Outcomes
ME2203.1	To compute the frictional losses and transmission in clutches, brakes and dynamometers
ME2203.2	To determine the effect of gyroscopic couple in motor vehicles, ships and aeroplanes
ME2203.3	To analyze the forces in four bar and slider crank mechanisms and design a fly wheel
ME2203.4	To determine the rotary unbalanced mass in reciprocating equipment
ME2203.5	To determine the unbalanced forces and couples in reciprocating and radial engines
ME2203.6	To determine the natural frequencies of discrete systems undergoing longitudinal, torsional and transverse vibrations.

Course Name:	THERMAL ENGINEERING-I
Course Code: ME2204	Course Outcomes
ME2204.1	Derive the actual cycle from fuel-air cycle and air-standard cycle for all practical applications
ME2204.2	Explain working principle and various components ofIC engine
ME2204.3	Explain combustion phenomenon ofCI and SI engines and their impact on engine variables
ME2204.4	Analyze the performance of an IC engine based on the performance parameters
ME2204.5	Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine.
ME2204.6	Explain the applications and working principle of rockets and jet propulsion.

Course Name:	INDUSTRIALENGINEERINGANDMANAGEMENT
Course Code: ME2205	Course Outcomes
ME2205.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions

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ME2205.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME2205.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate
ME2205.4	considerations for public health and safety, cultural, societal, and environmental constraints
ME2205.5	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME2205.6	Explain and implement various job evaluation methods. Evaluate the overall cost of production for a product.

Course Name:	MECHANICS OF SOLIDS & METALLURGY LAB
Course Code:ME2206	**Course Outcomes**
ME2206.1	To observe and understand the microstructure of Mild steel.
ME2206.2	To observe and understand the microstructure of Medium carbon steel.
ME2206.3	To observe and understand the microstructure of High carbon steel
ME2206.4	To study the microstructure of Cast Irons and Nonferrous alloys
ME2206.5	To evaluate the hardness of various materials using
ME2206.6	To determine the hardenability of steels by Jominy End Quench test.

Course Name:	MACHINE DRAWING
Course Code:	**Course outcomes:**
ME2207.1	Identify the national and international standards pertaining to machine drawing
ME2207.2	Apply limits and tolerances to assemblies and choose appropriate fits
ME2207.3	Recognize machining and surface finish symbols
ME2207.4	Explain the functional and manufacturing datum
ME2207.5	Illustrate various machine components through drawings.
ME2207.6	knowledge of fastening arrangements such as welding, riveting the different styles of attachment for shaft.

Course Name:	THEORY OF MACHINES LAB
Course Code: ME3108L	**Course outcomes:**
ME3108L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;

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ME3108L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
ME3108L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3108L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3108L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3108L.6	Explain static and dynamic balancing

Course Name:	**PYTHON PROGRAMMING LAB**
Course Code:	**Course Outcomes**
CSAI2102L.1	Solve the different methods for linear
CSAI2102L.2	Non-linear and differential equations.
CSAI2102L.3	Learn the PYTHON Programming language
CSAI2102L.4	Familiar with the strings in PYTHON.
CSAI2102L.5	Familiar with the matrices in PYTHON
CSAI2102L.6	Write the Program scripts and functions in PYTHON to solve the methods

III B.TECH I SEM

Course Name:	**DYNAMICS OF MACHINERY**
Course Code: ME3101	**Course Outcomes**
ME3101.1	To compute the frictional losses and transmission in clutches, brakes and dynamometers
ME3101.2	To determine the effect of gyroscopic couple in motor vehicles, ships and aeroplanes
ME3101.3	To analyze the forces in four bar and slider crank mechanisms and design a flywheel
ME3101.4	To determine the rotary unbalanced mass in reciprocating equipment
ME3101.5	To determine the unbalanced forces and couples in reciprocating and radial engines
ME3101.6	To determine the natural frequencies of discrete systems undergoing longitudinal, torsional and transverse vibrations.

Course Name:	**Design of Machine Members-II**
Course Code: ME3102	**Course Outcomes**

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ME3102.1	gives the insight of slider and roller bearings and the life prediction
ME3102.2	Select the suitable bearing based on the application of the loads and predict the life of the bearing.
ME3102.3	Design of IC Engines parts.
ME3102.4	Design of power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws.
ME3102.5	Design spur & helical gear for different engineering applications.
ME3102.6	Design the mechanical systems for power transmission such as gears, belts, ropes, chains, keys and levers

Course Name:	MECHANICAL MEASUREMENTS & METROLOGY
Course Code: ME3103	**Course Outcomes**
ME3103.1	Describe the construction and working principles of measuring instruments for measurement of displacement and speed and select appropriate instrument for a given application.
ME3103.2	Describe the construction and working principles of measuring instruments for strain, force, Torque, power, acceleration and Vibration and select appropriate instrument for a given application.
ME3103.3	Explain shaft basis system and hole basis systems for fits and represent tolerances for a given fit as per the shaft basis system and hole basis system and design limit gauges based on the tolerances for quality check in mass production.
ME3103.4	Explain methods for linear, angle and flatness measurements and select a suitable method and its relevant instrument for a given application.
ME3103.5	To measure the threads, gear tooth profiles, surface roughness and flatness using appropriate instruments and analyze the data.
ME3103.6	Principles of measuring instruments and gauges and their uses

Course Name:	MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY
Course Code: ME3104	**Course Outcomes**
ME3104.1	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
ME3104.2	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
ME3104.3	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
ME3104.4	The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units.
ME3104.5	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis.
ME3104.6	understand the nature of markets, Methods of Pricing in the different market

	structures and to know the different forms of Business organization and the concept of Business Cycles

Course Name:	IC ENGINES & GAS TURBINES
Course Code: ME3105	Course Outcomes
ME3105.1	CO1: Derive the actual cycle from fuel-air cycle and air- standard cycle for all practical applications.
ME3105.2	CO2: Explain working principle and various components of IC engine
ME3105.3	CO3: Explain combustion phenomenon of CI and SI engines and their impact on engine variables.
ME3105.4	CO4: Analyze the performance of an IC engine based on the performance parameters.
ME3105.5	CO5: Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine.
ME3105.6	CO6: Explain the applications and working principle of rockets and jet propulsion.

Course Name:	THERMAL ENGINEERING LAB
Course Code: ME3106L	Course Outcomes
ME3106L.1	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics
ME3106L.2	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
ME3106L.3	Perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
ME3106L.4	Perform speed test, performance test and cooling temperature on petrol and diesel engines.
ME3106L.5	Utilize air compressor for its performance test and to determine efficiency.
ME3106L.6	Discuss the principles through assembly and disassembly of 2/3 wheelers, 2/4 stroke engines, tractor, heavy duty engines, boilers and their mountings and accessories.

Course Name:	THEORY OF MACHINES LAB
Course Code: ME3107L	Course Outcomes
ME3107L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;
ME3107L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.

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ME3107L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3107L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3107L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3107L.6	Explain static and dynamic balancing

Course Name:	MECHANICAL MEASUREMENTS & METROLOGY LAB
Course Code: ME3108L	Course Outcomes
ME3108L.1	To gain knowledge of Calibration experiments with Pressure gauge , Strain gauge
ME3108L.2	To gain knowledge of Calibration experiments with rotameter, Seismic apparatus
ME3108L.3	To gain knowledge of Calibration experiments with Vernier calipers, micrometer, Height gauge and Dial gauges
ME3108L.4	To gain knowledge of Calibration experiments with resistance temperature detector
ME3108L.5	To analyse various machine tools for their alignment
ME3108L.6	To measure angular and taper measurement

III B.TECH II SEM

Course Name:	OPERATIONS RESEARCH
Course Code: ME3201	Course Outcomes
ME3201.1	Apply the basics of operations research and linear programming problems.
ME32012	Apply the knowledge in solving problems of transportation, assignment and sequencing.
ME3201.3	Judge there placement and gametheories
ME3201.4	Judge the replacement and game theories and apply the knowledge to solve problems
ME3201.5	Discuss the waiting line models and project management techniques.
ME3201.6	Apply the knowledge in solving problems of dynamic programming and simulation.

Course Name:	HEAT TRANSFER
Course Code: ME3202	Course Outcomes

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ME3202.1	Compute rate of heat transfer for 1D, steady state composite systems without heat generation.
ME3202.2	Analyze the system with heat generation, variable thermal conductivity, fins and 1D transient conduction heat transfer problems.
ME3202.3	Develop the empirical equations for forced convection problems by using Buckingham's pi theorem.
ME3202.4	Compute the rate of heat transfer for natural convection systems and design and analysis of heat exchangers.
ME3202.5	Solve the heat transfer systems with phase change and radiation.
ME3202.6	understand different modes of heat transfer and apply these basics in the design of thermal systems

Course Name:	CAD/CAM
Course Code: ME3203	**Course Outcomes**
ME3203.1	Identify the various elements and their activities in the Computer Integrated Manufacturing Systems.
ME3203.2	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
ME3203.3	Describe the use of GT and CAPP for the product development
ME3203.4	understand the different geometric modeling techniques like solid modeling, surface modeling, feature based modeling etc. and to visualize how .5the components look like before its manufacturing or fabrication
ME3203	K.nowledge onthe part programming, importance of group technology, computer aided process planning, computer aided quality control
ME3203	learn the overall configuration and elements of computer integrated manufacturing systems

Course Name:	UNCONVENTIONAL MACHINING PROCESSES
Course Code: ME3204C	**Course Outcomes**
ME3204C.1	Perform experiments in the advanced unconventional machining processes such as laser beam machining and electron beam machining
ME3204C.2	Understand the characteristics and importance of different types of unconventional machining processes
ME3204C.3	☐ Identify the appropriate unconventional machining process for the implementation in a typical industrial scenario based on the applications
ME3204C.4	☐ Understand the significance of tools and resources used for machining the components in unconventional machining
ME3204C.5	☐ Machine the components through ECM / EDM and other machining processes

ME3204C.6	Knowledge fundamentals and operational behaviors of different types of unconventional / nontraditional machining processes

Course Name:	AUTOMOBILE ENGINEERING
Course Code: ME3205C	**Course Outcomes**
ME3205C.1	Discuss various components of four wheeler automobile
ME3205C.2	Apply the knowledge of different parts of transmission system
ME3205C.3	Judge about Steering system
ME3205C.4	Judge about Suspension system
ME3205C.5	Justify the braking system and electrical system used in automobiles
ME3205C.6	Analyse the concepts about engine specifications and service, safety and electronic systems used in automobiles

Course Name:	SIMULATION OF MECHANICAL SYSTEMS LAB
Course Code: ME3206L	**Course Outcomes**
ME3206L.1	Knowledge on Mechanical Rotational System with stick-slip motion, Linkage Mechanism & Steering Mechanism using MATLAB/SCILAB
ME3206L.2	Solving the Mass-Spring-Damper with controller using MATLAB/SCILAB
ME3206L.3	determining on Double Mass-Spring- Damper using MATLAB/SCILAB
ME3206L.4	Solving the Simple Mechanical System using MATLAB/SCILAB
ME3206L.5	Knowledge on Mechanical System with Translational Friction using MATLAB/SCILAB
ME3206L.6	Knowledge on Mechanical System with Translational Hard stop using MATLAB/SCILAB

Course Name:	HEAT TRANSFER LAB
Course Code: ME3207L	**Course Outcomes**
ME3207L.1	Determine the heat transfer rate and coefficient.
ME3207L.2	Determine the thermal conductivity, efficiency and effectiveness
ME3207L.3	Determine the emissivity and Stefan Boltzman constant.
ME3207L.4	Determine critical heat flux and investigate Lambert's cosine law
ME3207L.5	Experiment with Virtual labs and analyze conduction, HT coefficient
ME3207L.6	Experiment with Virtual labs and investigate Lambert's laws.

Course Name:	CAD /CAM LAB
Course Code: ME3208L	Course Outcomes
ME3208L.1	able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
ME3208L.2	Use of these tools for any engineering and real time applications
ME3208L.3	Acquire knowledge on utilizing these tools for a better project in their curriculum
ME3208L.4	Acquire knowledge on industry problems with confidence
ME3208L.5	developing skills in CAD software like AutoCAD and Creo to create 2D and 3D parts
ME3208L.6	performing analysis with ANSYS, developing CNC programs

IV B.TECH I SEM

Course Name:	MECHATRONICS
Course Code: ME4101	Course outcomes:
ME4101.1	Understand key elements of Mechatronics system, representation into block diagram
ME4101.2	Understand concept of transfer function, reduction and analysis
ME4101.3	Understand principles of sensors, its characteristics, interfacing with DAQ microcontroller
ME4101.4	Understand the concept of PLC system and its ladder programming, and significance of PLC systems in industrial application
ME4101.5	Understand the system modeling and analysis in time domain and frequency domain.
ME4101.6	Understand control actions such as Proportional, derivative and integral and study its significance in industrial applications

Course Name:	CAD/CAM
Course Code: ME4102	Course outcomes:
ME4102.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
ME4102.2	Describe the use of Group Technologyt
ME4102.3	Knowledge CAPP for the product development
ME4102.4	Identify the various elements and their activities in the Computer Integrated Manufacturing Systems.

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ME4102.5	Explain fundamental and advanced features of CNC machines
ME4102.6	Illustrate Group Technology, CAQC and CIM concepts

Course Name:	FINITE ELEMENT METHODS
Course Code: ME4103	**Course outcomes:**
ME4103.1	Understand the concepts behind variational methods and weighted residual methods in FEM
ME4103.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
ME4103.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
ME4103.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
ME4103.5	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.
ME4103.6	Upon completion of this course, the students can able to understand different mathematical Techniques used in FEM analysis and

Course Name:	POWER PLANT ENGINEERING
Course Code: ME4104	**Course outcomes:**
ME4104.1	Basic knowledge of Different types of Power Plants, site selection criteria of each one of them
ME4104.2	Understanding of Thermal Power Plant Operation, turbine governing, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems
ME4104.3	Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design
ME4104.4	Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor
ME4104.5	Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc
ME4104.6	Discussing environmental and safety aspects of power plant operation

Course Name:	ADDITIVE MANUFACTURING
Course Code: ME4105C	**Course outcomes:**
ME4105C.1	Demonstrate appropriate level of understanding on principles of additive manufacturing processes

ME4105C.2	Choose appropriate materials for additive manufacturing processes
ME4105C.3	Apply suitable CAD tools and CAD interface for additive manufacturing process
ME4105C.4	Develop physical prototypes by identifying suitable process with optimum process parameters
ME4105C.5	Demonstrate the knowledge of Additive Manufacturing and Rapid Prototyping technologies.
ME4105C.6	Discuss fundamentals of Reverse Engineering.

Course Name:	ADVANCED MATERIALS
Course Code: ME4106A	**Course outcomes:**
ME4106A.1	Demonstrate the Properties of constituents, classification of composites and their suitability for the structural applications.
ME4106A.2	Demonstrate the Manufacturing processes.
ME4106A.3	Demonstrate the Smart materials and their applications.
ME4106A.4	Demonstrate the Nano materials in comparison with bulk materials.
ME4106A.5	Understand the mechanics of different materials. This understanding will include concepts such as anisotropic material behaviour
ME4106A.6	Constituent properties and manufacturing processes of different composites. Suitability of smart and nano materials for engineering applications.

Course Name:	CAD/CAM LAB
Course Code: ME4107L	**Course outcomes:**
ME4107L.1	Able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
ME4107L.2	Use of these tools for any engineering and real time applications
ME4107L.3	Acquire knowledge on utilizing these tools for a better project in their curriculum
ME4107L.4	Acquire knowledge on industry problems with confidence
ME4107L.5	Developing skills in CAD software like AutoCAD and Creo to create 2D and 3D parts
ME4107L.6	Performing analysis with ANSYS, developing CNC programs

Course Name:	MECHATRONICS LAB
Course Code: ME4108L	**Course outcomes:**
ME4108L.1	Understand the Characteristics of LVDT
ME4108L.2	Measure load, displacement and temperature using analogue and digital

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	sensors.
ME4108L.3	Develop PLC programs for control of traffic lights, water level, lifts and conveyor belts.
ME4108L.4	Simulate and analyze PID controllers for a physical system using MATLAB.
ME4108L.5	Develop pneumatic and hydraulic circuits using Automaton studio.
ME4108L.6	Design, Simulate & Analyze on AUTOMATION STUDIO SOFTWARE

IV B.TECH II SEM

Course Name:	PRODUCTION PLANNING AND CONTROL
Course Code: ME4201	Course outcomes:
ME4201.1	To understand the different types of production systems and the internal organization of production planning and control.
ME4201.2	To estimate forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques.
ME4201.3	To understands the importance and function of inventory and to be able to apply for its control
ME4201.4	To understands the importance and function of inventory and to be able to apply for its management
ME4201.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4201.6	To understand dispatching procedure and applications of computers in production planning and control.

Course Name:	AUTOMOBILE ENGINEERING
Course Code: ME4203	Course outcomes:
ME4203.1	Discuss various components of four wheeler automobile
ME4203.2	Apply the knowledge of different parts of transmission system
ME4203.3	Judge about Steering system
ME4203.4	Judge about Suspension system
ME4203.5	Justify the braking system and electrical system used in automobiles
ME4203.6	Analyse the concepts about engine specifications and service, safety and electronic systems used in automobiles

Course Name:	NON - DESTRUCTIVE EVALUATION
Course Code:	Course outcomes:
ME4204.1	Comprehensive, theory based understanding of the techniques and methods of radio graphic technique
ME4204.2	Comprehensive, theory based understanding of the techniques and methods of Ultrasonic test
ME4204.3	Comprehensive, theory based understanding of the techniques and methods of Liquid Penetrant Test
ME4204.4	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test

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| ME4204.5 | Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test &Infrared And Thermal Testing |
| ME4204.6 | Apply methods knowledge of non destructive testing to evaluate products of railways, automobiles, aircrafts, chemical industries etc. |

Course Name:	**UNCONVENTIONAL MACHINING PROCESSES**
Course Code: ME4202	**Course outcomes:**
ME4202.1	Understand the concepts of modern machining processes. .
ME4202.2	Learn the principles of ultrasonic machining.
ME4202.3	Apply the principles and procedure of electro chemical and processes.
ME4202.4	Apply the principles and procedure of chemical machining processes
ME4202.5	Apply the principles and procedure of thermal metal removal processes
ME4202.6	Illustrate the principles and procedure of electron beam machining, laser beam machining and plasma machining.

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DEPARTMENT OF MECHANICAL ENGINEERING
<u>Course Outcomes</u>
A.Y:2020-2021

Year/Sem: II B.Tech I SEM

Course Name:	
Course Code: ME2101	**Course outcomes:**
ME2101.1	Interpret the physical meaning of different operators such as gradient, curl and divergence
ME2101.2	Estimate the work done against a field, circulation and flux using vector calculus
ME2101.3	Apply the Laplace transform for solving differential equations.
ME2101.4	Find or compute the Fourier series of periodic signals
ME2101.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
ME2101.6	Identify solution methods for partial differential equations that model physical processes

Course Name:	**MECHANICS OF SOLIDS**
Course Code: ME2102	**Course outcomes:**
ME2102 .1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium
ME2102 .2	Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
ME2102 .3	learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses
ME2102 .4	solve deflection problems in preparation for the design of such structural components able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
ME2102 .5	deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
ME2102 .6	Design and analysis of Industrial components like pressure vessels.

Course Name:	
Course Code: ME2103	**Course outcomes:**
ME2103.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
ME2103.2	Study the behavior of ferrous and non ferrous metals and alloys and their application in different domains

ME2103.3	Able to understand the effect of heat treatment, addition of alloying elements on properties of ferrous metals
ME2103.4	Able to understand the addition of alloying elements on properties of ferrous metals
ME2103.5	Grasp the methods of making of metal powders and applications of powder metallurgy
ME2103.6	Comprehend the properties and applications of ceramic, composites and other advanced methods.

Course Name:	
Course Code: ME2104	**Course outcomes:**
ME2104.1	Able to design the patterns and core boxes for metal casting processes
ME2104.2	Able to design the gating system for different metallic components
ME2104.3	Know the different types of manufacturing processes
ME2104.4	Know the different types of FOUNDRY PROCESSES
ME2104.5	Be able to use forging, extrusion processes
ME2104.6	Learn about the different types of welding processes used for special fabrication.

Course Name:	
Course Code: ME2105	**Course outcomes:**
ME2105.1	Undergoing the Basic concepts of thermodynamics
ME2105.2	Undergoing the Laws of thermodynamics
ME2105.3	Undergoing the Concept of entropy
ME2105.4	Undergoing the THERMODYNAMIC RELATIONS
ME2105.5	Property evaluation of vapors and their depiction in tables and charts
ME2105.6	Evaluation of properties of perfect gas mixtures.

Course Name:	
Course Code: ME2107	**Course outcomes:**
ME2107.1	Draw and represent standard dimensions of different mechanical fasteners and joints and Couplings.
ME2107.2	Draw different types of bearings showing different components
ME2107.3	Assemble components of a machine part and draw the sectional assembly drawing showing the dimensions of all the components of the assembly as per bill of materials

ME2107.4	Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved tapered features and surface finish indication
ME2107.5	To prepare manufacturing drawings indicating fits, tolerances, surface finish and surface treatment requirements
ME2107.6	Select and represent fits and geometrical form of different mating parts in assembly drawings

Course Name:	METALLURGY& MECHANICS OF SOLIDS LAB
Course Code: ME2108L	Course outcomes:
ME2108L.1	To observe and understand the microstructure of Mild steel.
ME2108L.2	To observe and understand the microstructure of Medium carbon steel.
ME2108L.3	To observe and understand the microstructure of High carbon steel
ME2108L.4	To study the microstructure of Cast Irons and Nonferrous alloys
ME2108L.5	To evaluate the hardness of various materials using
ME2108L.6	To determine the hardenability of steels by Jominy End Quench test.

Course Name:	PRODUCTION TECHNOLOGY LAB
Course Code: ME2109L	Course outcomes:
ME2109L .1	Design and manufacture simple patterns
ME2109L .2	Understanding the properties of moulding sands
ME2109L .3	Understand the concept of mould preparation
ME2109L .4	Fabricate joints using arc welding.
ME2109L .5	Practice on sheet metal operations
ME2109L .6	Fabricate joints using Resistant welding.

Course Name:	ENVIRONMENTAL SCIENCE
Course Code: ME2110	Course outcomes:
ME2110.1	Overall understanding of the natural resources.
ME2110.2	Basic understanding of the ecosystem and its diversity.
ME2110.3	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
ME2110.4	Knowledge on bidervisity and its conservation
ME2110.5	An understanding of the environmental impact of developmental activities.
ME2110.6	Awareness on the social issues, environmental legislation and global treaties.

II B.TECH II SEM

Course Name:	COMPLEX VARIABLES & STATISTICAL METHODS
Course Code: ME2201	Course outcomes:
ME2201.1	Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic (L3)
ME2201.2	Find the differentiation and integration of complex functions used in engineering problems (L5)
ME2201.3	Make use of the Cauchy residue theorem to evaluate certain integrals (L3)
ME2201.4	Apply discrete and continuous probability distributions (L3)
ME2201.5	Design the components of a classical hypothesis test (L6)
ME2201.6	Infer the statistical inferential methods based on small and large sampling tests (L4)

Course Name:	KINEMATICS OF MACHINERY
Course Code: ME2202	Course outcomes:
ME2202.1	Able to Contrive a mechanism for a given plane motion with single degree of freedom.
ME2202.2	Able to Suggest and analyze a mechanism for a given straight line motion and automobile steering motion.
ME2202.3	Able to Analyze the motion (velocity and acceleration) of a plane mechanism.
ME2202.4	Able to analyze mechanisms for a prescribed intermittent motion like opening and closing of IC engine valves etc.
ME2202.5	Able to Suggest mechanisms for a prescribed intermittent motion like opening and closing of IC engine valves etc.
ME2202.6	Able to Select a power transmission system for a given application and analyze motion of different transmission systems

Course Name:	APPLIED THERMODYNAMICS
Course Code: ME2203	Course outcomes:
ME2203.1	Expected to learn the working of steam power cycles and also should be able to analyze and evaluate the performance of individual components
ME2203.2	Student is able to learn the principles of combustion , stochiometry and flue gas analysis
ME2203.3	Students will be able to design the components and calculate the losses and efficiency of the boilers, nozzles and impulse turbines.
ME2203.4	Students will be able to design the components and calculate the losses and efficiency of reactions turbines and condensers.

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ME2203.5	Student is able to learn various types of compressors, principles of working and their performance evaluation.
ME2203.6	study the thermodynamic analysis of major components of Rankine cycle, refrigeration cycles and compressible fluids and to analyze the energy transfers and transformations in these components including individual performance evaluation

Course Name:	**FLUID MECHANICS & HYDRAULIC MACHINES**
Course Code: ME2204	**Course outcomes:**
ME2204.1	The basic concepts of fluid properties.
ME2204.2	The mechanics of fluids in static and dynamic conditions.
ME2204.3	Boundary layer theory, flow separation and dimensional analysis.
ME2204.4	Hydrodynamic forces of jet on vanes in different positions.
ME2204.5	Working Principles and performance evaluation of hydraulic pump and turbines.
ME2204.6	understand the properties of fluids, its kinematic and dynamic behavior through various laws of fluids

Course Name:	**METAL CUTTING & MACHINE TOOLS**
Course Code: ME2205	**Course outcomes:**
ME2205.1	Learned the fundamental knowledge and principals in material removal process.
ME2205.2	Acquire the knowledge on operations in conventional, automatic, Capstan and turret lathes
ME2205.3	capable of understanding the working principles and operations of shaping, slotting, planning , drilling and boring machines.
ME2205.4	able to make gear and keyway in milling machines and understand the indexing mechanisms
ME2205.5	Understand the different types of unconventional machining methods and principles of finishing processes.
ME2205.6	knowledge of basic mathematics to calculate the machining parameters for different machining processes

Course Name:	**DESIGN OF MACHINE MEMBERS – I**
Course Code: ME2206	**Course outcomes:**
ME2206.1	Able to Calculate stresses in different types of springs subjected to static loads and dynamic loads.
ME2206.2	Able to Calculate different stresses in the machine components subjected to various static loads, failures and suitability of a material for an engineering application.
ME2206.3	Able to. Calculate dynamic stresses in the machine components subjected to variable loads.

ME2206.4	able to Design riveted, welded, bolted joints, keys, cotters and knuckle joints subjected to static loads and their failure modes
ME2206.5	Able to Design the machine shafts and suggest suitable coupling for a given application.
ME2206.6	Able to select proper materials to different machine elements based on their physical and mechanical properties

Course Name:	**FLUID MECHANICS & HYDRAULIC MACHINERY LAB**
Course Code: ME2207L	**Course outcomes:**
ME2207L.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
ME2207L.2	To gain practical exposure on the performance evaluation methods of Venturi meter
ME2207L.3	To gain practical exposure on the performance evaluation methods of Pelton wheel
ME2207L.4	To gain practical exposure on the performance evaluation methods of Francis turbine
ME2207L.5	To gain practical exposure on the performance evaluation methods of Reciprocating pump
ME2207L.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name:	**MACHINE TOOLS LAB**
Course Code: ME2209L	**Course outcomes:**
ME2209L.1	Demonstrate about general purpose machine tools in the machine shop.
ME2209L.2	Perform various operations on lathe machine.
ME2209L.3	Perceive different operations on drilling machine.
ME2209L.4	Experiment with basic operations on shaping machine.
ME2209L.5	Utilize slotting machine to make keyways.
ME2209L.6	Experiment with the basic operations on milling machine.

COURSE OUTCOME STATEMENTS

Course Name:	**IPR&P**
Course Code: ME2210	**Course outcomes:**
ME2210.1	Understand the concepts of Intellectual property to protect the traditional knowledge
ME2210.2	Understand the concept of Traditional knowledge and its importance
ME2210.3	Know the need and importance of protecting traditional knowledge
ME2210.4	Know the various enactments related to the protection of traditional knowledge
ME2210.5	knowledge and intellectual property mechanism of traditional knowledge and protection
ME2210.6	importing basic principle of third process reasoning and inference sustainability is at the course of Indian traditional knowledge system

III B.TECH I SEM

Course Name:	Dynamics of Machinery
Course Code: ME3101	**Course outcomes:**
ME3101.1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles
ME3101.2	Compute frictional losses, torque transmission of mechanical systems.
ME3101.3	Analyze dynamic force analysis of slider crank mechanism
ME3101.4	Knowledge and analyse on design of flywheel.
ME3101.5	Understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
ME3101.6	Understand balancing of reciprocating and rotary masses.

Course Name:	METAL CUTTING & MACHINE TOOLS
Course Code: ME3102	**Course outcomes:**
ME3102.1	Apply cutting mechanics to metal machining based on cutting force and power consumption
ME3102.2	Operate lathe, milling machines, drill press, grinding machines, etc.
ME3102.3	Select cutting tool materials and tool geometries for different metals.
ME3102.4	Select appropriate machining processes and conditions for different metals.
ME3102.5	Learn machining economics & principles of CNC Machines
ME3102.6	Design jigs and Fixtures for simple parts.

Course Name:	DESIGN OF MACHINE MEMBERS– II
Course Code: ME3103	**Course outcomes:**
ME3103.1	The student will able to select the suitable bearing based on the application of the loads and predict the life of the bearing
ME3103.2	Design power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws.
ME3103.3	Design of IC Engines parts.
ME3103.4	Utilize the knowledge to design power screws.
ME3103.5	Justify power transmission systems and to design pulleys and geardrives.
ME3103.6	Apply the concepts in designing various machine tool elements.

Course Name:	OPERATIONS RESEARCH
Course Code: ME3104	Course outcomes:
ME3104.1	Apply the basics of operations research and linear programming problems.
ME3104.2	Apply the knowledge in solving problems of transportation, assignment and sequencing.
ME3104.3	Judge there placement and gametheories
ME3104.4	Judge the replacement and game theories and apply the knowledge to solve problems
ME3104.5	Discuss the waiting line models and project management techniques.
ME3104.6	Apply the knowledge in solving problems of dynamic programming and simulation.

Course Name:	THERMAL ENGINEERING – II
Course Code: ME3105	Course outcomes:
ME3105.1	Explain the basic concepts of thermal engineering and boilers.
ME3105.2	Discuss the concepts of steam nozzles and steam turbines.
ME3105.3	Gain knowledge about the concepts of reaction turbine
ME3105.4	Gain knowledge about the concepts of steam condensers.
ME3105.5	Discuss the concepts of reciprocating and rotary type of compressors.
ME3105.6	Acquire knowledge about the centrifugal and axial flow compressors.

Course Name:	THEORY OF MACHINES LAB
Course Code: ME3106L	Course outcomes:
ME3106L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;
ME3106L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
ME3106L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3106L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3106L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3106L.6	. Explain static and dynamic balancing

Course Name:	MACHINE TOOLS LAB
Course Code:	Course outcomes:
ME3107L.1	Demonstrate about general purpose machine tools in the machine shop.

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ME3107L.2	Perform various operations on lathe machine.
ME3107L.3	Perceive different operations on drilling machine.
ME3107L.4	Experiment with basic operations on shaping machine.
ME3107L.5	Utilize slotting machine to make keyways.
ME3107L.6	Experiment with the basic operations on milling machine.

Course Name:	
Course Code: ME3108L	Course outcomes:
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
ME3108L	Perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
ME3108L	Perform speed test, performance test and cooling temperature on petrol and diesel engines.
ME3108L	Utilize air compressor for its performance test and to determine efficiency.
ME3108L	Discuss the principles through assembly and disassembly of 2/3 wheelers, 2/4 stroke engines, tractor, heavy duty engines, boilers and their mountings and accessories.

Course Name:	IPR & PATENTS
Course Code:	Course outcomes:
ME3109.1	Distinguish and Explain various forms of IPRs.
ME3109.2	Distinguish and Explain various forms of IPRs.
ME3109.3	Apply statutory provisions to protect particular form of IPRs.
ME3109.4	Analyse rights and responsibilities of holder of Patent, Copyright, Trademark, Industrial Designetc.
ME3109.5	Identify procedure to protect different forms of IPRs national and international level
ME3109.6	Develop skill of making search using modern tools and technics.

III B.TECH II SEM

Course Name:	
Course Code: ME3201	Course outcomes:
ME3201.1	To describe the concept of metrology
ME3201.2	To explain about metrology instruments and application for various

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	measurements.
ME3201.3	To discuss the concept of computer applications in metrology.
ME3201.4	To acquire the principles of various Inspection, Instruments and Methodology.
ME3201.5	To develop the knowledge in the area of non-contact inspection
ME3201.6	able to design tolerances and fits for selected product quality. They can choose appropriate method

Course Name:	INSTRUMENTATION & CONTROL SYSTEMS
Course Code:	Course outcomes:
ME3202.1	Identify the different types of mechanical instruments.
ME3202.2	Recognise parts of mechanical instruments
ME3202.3	Interpret the types of measurements that can be made with different mechanical instruments
ME3202.4	Measure with mechanical instruments
ME3202.5	select appropriate device for the measurement of parameters like temperature, pressure, speed, stress, humidity, flow velocity etc.,
ME3202.6	justify its use through characteristics and performance.

Course Name:	REFRIGERATION & AIR CONDITIONING
Course Code:	Course outcomes:
ME3203.1	Calculate the COP of air refrigeration systems
ME3203.2	Describe various components used in vapour-Compression refrigeration system and Estimate the performance
ME3203.3	Discuss the working principles of vapour absorption, steam jet, thermoelectric and vortex tube refrigeration systems
ME3203.4	Recognize the properties of air, summarize the various Psychometric processes and acquire the knowledge of load estimation
ME3203.5	Evaluate cooling and heating loads in an air conditioning and describe the various components of air conditioning system
ME3203.6	undergoing the refrigerating cycles and evaluate their performance

Course Name:	HEAT TRANSFER
Course Code: ME3204	Course outcomes:
ME3204.1	Understand the basic modes of heat and mass transfer.
ME3204.2	Apply principles of heat and mass transfer to predict transfer coefficients
ME3204.3	Analyze working of various heat transfer equipment
ME3204.4	Design heat and mass transfer equipment.

ME3204.5	Evaluate no. of stages required for given mass transfer problem.
ME3204.6	Analyze the concepts of heat transfer with phase change and condensation along with heat exchangers.

Course Name:	
Course Code: ME3205F	**Course outcomes:**
ME3205F.1	The student shall understand the principles of solar, wind, biomass, geo thermal green energy systems
ME3205F.2	The student shall understand the working of solar, wind, biomass green energy systems
ME3205F.3	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.4	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.5	Knowledge their significance in view of their importance in the current scenario and
ME3205F.6	Knowledge potential future applications

Course Name:	**HEAT TRANSFER LAB**
Course Code:	**Course outcomes:**
ME3206L.1	Determine the heat transfer rate and coefficient.
ME3206L.2	Determine the thermal conductivity, efficiency and effectiveness
ME3206L.3	Determine the emissivity and Stefan Boltzman constant.
ME3206L.4	Determine critical heat flux and investigate Lambert's cosine law
ME3206L.5	Experiment with Virtual labs and analyze conduction, HT coefficient
ME3206L.6	Experiment with Virtual labs and investigate Lambert's laws.

Course Name:	**METROLOGY & INSTRUMENTATION LAB**
Course Code: ME3208L	**Course outcomes:**
ME3208L.1	To gain knowledge of Calibration experiments with Pressure gauge , Strain gauge
ME3208L.2	To gain knowledge of Calibration experiments with rotameter, Seismic apparatus
ME3208L.3	To gain knowledge of Calibration experiments with Vernier calipers, micrometer, Height gauge and Dial gauges
ME3208L.4	To gain knowledge of Calibration experiments with resistance temperature detector
ME3208L.5	To analyse various machine tools for their alignment

ME3208L.6	To measure angular and taper measurement

Course Name:	COMPUTATIONAL FLUID DYNAMICS LABORATORY
Course Code: ME3209L	**Course outcomes:**
ME3209L.1	Recognize the importance of CFD in Heat and Fluid flow.
ME3209L.2	Analyze forced convection heat transfer coefficient over regular bodies like sphere, cylinder.
ME3209L.3	: Estimation of drag coefficient in circular pipe under turbulent flow and bent pipe.
ME3209L.4	: Recognize how to handling moving boundaries and wall effects in motion of fluid.
ME3209L.5	Analyze how to handle power law fluids in CFD.
ME3209L.6	ability to describe various flow features in terms of appropriate fluid mechanical principles and force balances.

Course Name:	PROFESSIONAL ETHICS & HUMAN VALUES
Course Code: ME3209	**Course outcomes:**
ME3209.1	Understanding basic purpose of profession, professional ethics and various moral and social issues.
ME3209.2	Awareness of professional rights and responsibilities of a Engineer, safety and risk benefit analysis of a Engineer
ME3209.3	Acquiring knowledge of various roles of Enbgineer In applying ethical principles at various professional levels
ME3209.4	Professional Ethical values and contemporary issues
ME3209.5	Excelling in competitive and challenging environment to contribute to industrial growth.
ME3209.6	a comprehensive understanding of a variety issues that are encountered by every professional in discharging professional duties.

IV B.TECH I SEM

Course Name:	MECHATRONICS
Course Code: ME4101	**Course outcomes:**
ME4101.1	Understand key elements of Mechatronics system, representation into block diagram
ME4101.2	Understand concept of transfer function, reduction and analysis
ME4101.3	Understand principles of sensors, its characteristics, interfacing with DAQ microcontroller
ME4101.4	Understand the concept of PLC system and its ladder programming, and significance of PLC systems in industrial application

ME4101.5	Understand the system modeling and analysis in time domain and frequency domain.
ME4101.6	Understand control actions such as Proportional, derivative and integral and study its significance in industrial applications

Course Name:	CAD/CAM
Course Code: ME4102	**Course outcomes:**
ME4102.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
ME4102.2	Describe the use of Group Technologyt
ME4102.3	Knowledge CAPP for the product development
ME4102.4	Identify the various elements and their activities in the Computer Integrated Manufacturing Systems.
ME4102.5	Explain fundamental and advanced features of CNC machines
ME4102.6	Illustrate Group Technology, CAQC and CIM concepts

Course Name:	FINITE ELEMENT METHODS
Course Code: ME4103	**Course outcomes:**
ME4103.1	Understand the concepts behind variational methods and weighted residual methods in FEM
ME4103.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
ME4103.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
ME4103.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
ME4103.5	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.
ME4103.6	Upon completion of this course, the students can able to understand different mathematical Techniques used in FEM analysis and

Course Name:	POWER PLANT ENGINEERING
Course Code: ME4104	**Course outcomes:**
ME4104.1	Basic knowledge of Different types of Power Plants, site selection criteria of each one of them
ME4104.2	Understanding of Thermal Power Plant Operation, turbine governing, different

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	types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems
ME4104.3	Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design
ME4104.4	Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor
ME4104.5	Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc
ME4104.6	Discussing environmental and safety aspects of power plant operation

Course Name:	ADDITIVE MANUFACTURING
Course Code: ME4105C	**Course outcomes:**
ME4105C.1	Demonstrate appropriate level of understanding on principles of additive manufacturing processes
ME4105C.2	Choose appropriate materials for additive manufacturing processes
ME4105C.3	Apply suitable CAD tools and CAD interface for additive manufacturing process
ME4105C.4	Develop physical prototypes by identifying suitable process with optimum process parameters
ME4105C.5	Demonstrate the knowledge of Additive Manufacturing and Rapid Prototyping technologies.
ME4105C.6	Discuss fundamentals of Reverse Engineering.

Course Name:	ADVANCED MATERIALS
Course Code: ME4106A	**Course outcomes:**
ME4106A.1	Demonstrate the Properties of constituents, classification of composites and their suitability for the structural applications.
ME4106A.2	Demonstrate the Manufacturing processes.
ME4106A.3	Demonstrate the Smart materials and their applications.
ME4106A.4	Demonstrate the Nano materials in comparison with bulk materials.
ME4106A.5	Understand the mechanics of different materials. This understanding will include concepts such as anisotropic material behaviour
ME4106A.6	Constituent properties and manufacturing processes of different composites. Suitability of smart and nano materials for engineering applications.

Course Name:	CAD/CAM LAB
Course Code: ME4107L	**Course outcomes:**
ME4107L.1	able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.

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ME4107L.2	Use of these tools for any engineering and real time applications
ME4107L.3	Acquire knowledge on utilizing these tools for a better project in their curriculum
ME4107L.4	Acquire knowledge on industry problems with confidence
ME4107L.5	developing skills in CAD software like AutoCAD and Creo to create 2D and 3D parts
ME4107L.6	performing analysis with ANSYS, developing CNC programs

Course Name:	MECHATRONICS LAB
Course Code: ME4108L	Course outcomes:
ME4108L.1	Understand the Characteristics of LVDT
ME4108L.2	Measure load, displacement and temperature using analogue and digital sensors.
ME4108L.3	Develop PLC programs for control of traffic lights, water level, lifts and conveyor belts.
ME4108L.4	Simulate and analyze PID controllers for a physical system using MATLAB.
ME4108L.5	Develop pneumatic and hydraulic circuits using Automaton studio.
ME4108L.6	Design, Simulate & Analyze on AUTOMATION STUDIO SOFTWARE

IV B.TECH II SEM

Course Name:	PRODUCTION PLANNING AND CONTROL
Course Code: ME4201	Course outcomes:
ME4201.1	To understand the different types of production systems and the internal organization of production planning and control.
ME4201.2	To estimate forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques.
ME4201.3	To understands the importance and function of inventory and to be able to apply for its control
ME4201.4	To understands the importance and function of inventory and to be able to apply for its management
ME4201.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4201.6	To understand dispatching procedure and applications of computers in production planning and control.

Course Name:	AUTOMOBILE ENGINEERING
Course Code: ME4203	Course outcomes:

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ME4203.1	Discuss various components of four wheeler automobile
ME4203.2	Apply the knowledge of different parts of transmission system
ME4203.3	Judge about Steering system
ME4203.4	Judge about Suspension system
ME4203.5	Justify the braking system and electrical system used in automobiles
ME4203.6	Analyse the concepts about engine specifications and service, safety and electronic systems used in automobiles

Course Name:	**NON - DESTRUCTIVE EVALUATION**
Course Code:	**Course outcomes:**
ME4204.1	Comprehensive, theory based understanding of the techniques and methods of radio graphic technique
ME4204.2	Comprehensive, theory based understanding of the techniques and methods of Ultrasonic test
ME4204.3	Comprehensive, theory based understanding of the techniques and methods of Liquid Penetrant Test
ME4204.4	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test
ME4204.5	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test &Infrared And Thermal Testing
ME4204.6	Apply methods knowledge of non destructive testing to evaluate products of railways, automobiles, aircrafts, chemical industries etc.

Course Name:	**UNCONVENTIONAL MACHINING PROCESSES**
Course Code: ME4202	**Course outcomes:**
ME4202.1	Understand the concepts of modern machining processes. .
ME4202.2	Learn the principles of ultrasonic machining.
ME4202.3	Apply the principles and procedure of electro chemical and processes.
ME4202.4	Apply the principles and procedure of chemical machining processes
ME4202.5	Apply the principles and procedure of thermal metal removal processes
ME4202.6	Illustrate the principles and procedure of electron beam machining, laser beam machining and plasma machining.

DEPARTMENT OF MECHANICAL ENGINEERING
<u>Course Outcomes</u>
A.Y:2019-2020

Year/Sem: II B.Tech I SEM

Course Name:	METALLURGY & MATERIALS SCIENCE
Course Code: ME2101	Course outcomes:
ME2101.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
ME2101.2	Study the behaviour of ferrous and non- ferrous metals and alloys and their application in different domains
ME2101.3	Able to understand the effect of heat treatment
ME2101.4	Understand the effect of addition of alloying elements on properties of ferrous metals
ME2101.5	Grasp the methods of making the metal powders and the applications of powder metallurgy
ME2101..6	Comprehend the properties and applications of ceramics, composites and other advanced methods

Course Name:	MECHANICS OF SOLIDS
Course Code: ME2102	Course outcomes:
ME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
ME2102.2	Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
ME2102.3	Students will learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
ME2102.4	Students are able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
ME2102.5	Students attain a deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
ME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name:	THERMODYNAMICS
Course Code: ME2103	Course outcomes:
ME2103.1	Ability to understand the basic concepts of thermodynamic such as temperature, pressure, system, properties, process, state, cycles and equilibrium
ME2103.2	Ability to conduct experiments regarding the measurement and calibration of temperatures and pressures in groups.

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ME2103.3	Ability to identify the properties of substances on property diagrams and obtain the data from property tables.
ME2103.4	Ability to define energy transfer through mass, heat and work for closed and control volume systems
ME2103.5	Ability to apply the first Law of Thermodynamics on closed and control volume systems
ME2103.6	Ability to apply Second Law of Thermodynamics and entropy concepts in analysing the thermal efficiencies of heat engines such as Carnot and Rankine cycles and the coefficients of performance for refrigerators.

Course Name:	MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS
Course Code: ME2104	Course outcomes:
ME2104.1	Knowledge of estimating the Demand and demand elasticity for a product
ME2104.2	Understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
ME2104.3	understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units
ME2104.4	able to prepare Financial Statements and the usage of various Accounting tools for Analysis
ME2104.5	able to to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
ME2104.6	Evaluate and interpret the financial statements to make informed decisions

Course Name:	FLUID MECHANICS & HYDRAULIC MACHINES
Course Code: ME2105	Course outcomes:
ME2105.1	The basic concepts of fluid properties.
ME2105.2	The mechanics of fluids in static and dynamic conditions
ME2105.3	Boundary layer theory, flow separation
ME2105.4	Boundary layer theory dimensional analysis
ME2105.5	Hydrodynamic forces of jet on vanes in different positions.
ME2105.6	Working Principles and performance evaluation of hydraulic pump and turbines.

Course Name:	COMPUTER AIDED ENGINEERING DRAWING PRACTICE
Course Code: ME2106	Course outcomes:
ME2106.1	To understand the basic principles and conventions of engineering drawing

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ME2106.2	To use drawing as a communication mode
ME2106.3	To generate pictorial views using CAD software
ME2106.4	To understand the development of surfaces
ME2106.5	To visualize engineering components
ME2106.6	Knowledge on recent tools

Course Name:	ELECTRICAL & ELECTRONICS ENGINEERING LAB
Course Code: ME2107L	Course outcomes:
ME2107L.1	Able to find out the efficiency of dc shunt machine without actual loading of the machine.
ME2107L.2	Able to estimate the efficiency and regulation for different load conditions and power factors of single phase transformer with OC and SC test.
ME2107L.3	Able to analyse the performance characteristics and to determine efficiency of DC shunt motor &3-phase induction motor.
ME2107L.4	Able to pre-determine the regulation of an alternator by synchronous impedance method.
ME2107L.5	Able to control the speed of dc shunt motor using speed control methods.
ME2107L.6	Able to find out the characteristics of PN junction diode & transistor and to determine the ripple factor of half wave & full wave rectifiers.

Course Name:	MECHANICS OF SOLIDS & METALLURGY LAB
Course Code: ME2108L	Course outcomes:
ME2108L.1	To observe and understand the microstructure of Mild steel.
ME2108L.2	To observe and understand the microstructure of Medium carbon steel.
ME2108L.3	To observe and understand the microstructure of High carbon steel
ME2108L.4	To study the microstructure of Cast Irons and Nonferrous alloys
ME2108L.5	To evaluate the hardness of various materials using
ME2108L.6	To determine the hardenability of steels by Jominy End Quench test.

II B.TECH II SEM

Course Name:	KINEMATICS OF MACHINERY
Course Code: ME2201	Course outcomes:
ME2201.1	Discuss the concepts of machining processes.
ME2201.2	Apply the principles of lathe, shaping,

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	slotting and planning machines
ME2201.3	Apply the principles of drilling processes
ME2201.4	Apply the principles of milling and boring processes
ME2201.5	Analyze the concepts of finishing processes and the system of limits and fits
ME2201.6	Learn the concepts of surface roughness and optical measuring instruments.

Course Name:	**THERMAL ENGINEERING – I**
Course Code: ME2202	**Course outcomes:**
ME2202	Derive the actual cycle from fuel-air cycle and air-standard cycle for all practical applications
ME2202	Explain working principle and various components of IC engine
ME2202	Explain combustion phenomenon of CI and SI engines and their impact on engine variables
ME2202	Analyze the performance of an IC engine based on the performance parameters
ME2202	Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine.
ME2202	Explain the applications and working principle of rocket sandjet propulsion.

Course Name:	**PRODUCTION TECHNOLOGY**
Course Code: ME2203	**Course outcomes:**
ME2203.1	Design patterns, Gating, runner and riser systems
ME2203.2	Select a suitable casting process based on the component
ME2203.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements
ME2203.4	Understand various bulk deformation processes
ME2203.5	Understand various sheet metal forming and processing of plastics
ME2203.6	Know the different types of manufacturing processes

Course Name:	**DESIGN OF MACHINE MEMBERS – I**
Course Code: ME2204	**Course outcomes:**
ME2204.1	Apply the design procedure to engineering problems, including the consideration of technical and manufacturing constraints.
ME2204.2	Select suitable materials and significance of tolerances and fits in critical design applications

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ME2204.3	Utilize design data hand book and design the elements for strength, stiffness and fatigue.
ME2204.4	Identify the loads, the machine members subjected and calculate static and dynamic stresses to ensure safe design.
ME2204.5	Gain knowledge about the strength of machine elements.
ME2204.6	Judge about materials and their properties along with manufacturing considerations

Course Name:	MACHINE DRAWING
Course Code:	Course outcomes:
ME2205.1	Identify the national and international standards pertaining to machine drawing
ME2205.2	Apply limits and tolerances to assemblies and choose appropriate fits
ME2205.3	Recognize machining and surface finish symbols
ME2205.4	Explain the functional and manufacturing datum
ME2205.5	Illustrate various machine components through drawings.
ME2205.6	knowledge of fastening arrangements such as welding, riveting the different styles of attachment for shaft.

Course Name:	INDUSTRIAL ENGINEERING AND MANAGEMENT
Course Code: ME2206	Course outcomes:
ME2206.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
ME2206.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME2206.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate
ME2206.4	considerations for public health and safety, cultural, societal, and environmental constraints
ME2206.5	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME2206.6	Explain and implement various job evaluation methods. Evaluate the overall cost of production for a product.

Course Name:	FLUID MECHANICS & HYDRAULIC MACHINES LAB
Course Code: ME2207L	Course outcomes:
ME2207L.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter

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ME2207L.2	To gain practical exposure on the performance evaluation methods of Venturi meter
ME2207L.3	To gain practical exposure on the performance evaluation methods of Pelton wheel
ME2207L.4	To gain practical exposure on the performance evaluation methods of Francis turbine
ME2207L.5	To gain practical exposure on the performance evaluation methods of Reciprocating pump
ME2207L.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name:	PRODUCTION TECHNOLOGY LAB
Course Code: ME2208L	Course outcomes:
ME2208L.1	Design and manufacture simple patterns
ME2208L.2	Understanding the properties of moulding sands
ME2208L.3	Understand the concept of mould preparation
ME2208L.4	Fabricate joints using arc welding.
ME2208L.5	Practice on sheet metal operations
ME2208L.6	Fabricate joints using Resistant welding.

III B.TECH I SEM

Course Name:	DYNAMICS OF MACHINERY
Course Code: ME3101	Course outcomes:
ME3101.1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles
ME3101.2	Compute frictional losses, torque transmission of mechanical systems.
ME3101.3	Analyze dynamic force analysis of slider crank mechanism
ME3101.4	Knowledge and analyse on design of flywheel.
ME3101.5	Understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
ME3101.6	Understand balancing of reciprocating and rotary masses.

Course Name:	METAL CUTTING & MACHINE TOOLS
Course Code: ME3102	Course outcomes:
ME3102.1	Apply cutting mechanics to metal machining based on cutting force and power consumption

ME3102.2	Operate lathe, milling machines, drill press, grinding machines, etc.
ME3102.3	Select cutting tool materials and tool geometries for different metals.
ME3102.4	Select appropriate machining processes and conditions for different metals.
ME3102.5	Learn machining economics & principles of CNC Machines
ME3102.6	Design jigs and Fixtures for simple parts.

Course Name:	DESIGN OF MACHINE MEMBERS– II
Course Code: ME3103	**Course outcomes:**
ME3103.1	The student will able to select the suitable bearing based on the application of the loads and predict the life of the bearing
ME3103.2	Design power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws.
ME3103.3	Design of IC Engines parts.
ME3103.4	Utilize the knowledge to design power screws.
ME3103.5	Justify power transmission systems and to design pulleys and geardrives.
ME3103.6	Apply the concepts in designing various machine tool elements.

Course Name:	OPERATIONS RESEARCH
Course Code: ME3104	**Course outcomes:**
ME3104.1	Apply the basics of operations research and linear programming problems.
ME3104.2	Apply the knowledge in solving problems of transportation, assignment and sequencing.
ME3104.3	Judge there placement and gametheories
ME3104.4	Judge the replacement and game theories and apply the knowledge to solve problems
ME3104.5	Discuss the waiting line models and project management techniques.
ME3104.6	Apply the knowledge in solving problems of dynamic programming and simulation.

Course Name:	THERMAL ENGINEERING – II
Course Code: ME3105	**Course outcomes:**
ME3105.1	Explain the basic concepts of thermal engineering and boilers.
ME3105.2	Discuss the concepts of steam nozzles and steam turbines.
ME3105.3	Gain knowledge about the concepts of reaction turbine

ME3105.4	Gain knowledge about the concepts of steam condensers.
ME3105.5	Discuss the concepts of reciprocating and rotary type of compressors.
ME3105.6	Acquire knowledge about the centrifugal and axial flow compressors.

Course Name:	THEORY OF MACHINES LAB
Course Code: ME3106L	Course outcomes:
ME3106L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;
ME3106L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
ME3106L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3106L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3106L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3106L.6	. Explain static and dynamic balancing

Course Name:	MACHINE TOOLS LAB
Course Code:	Course outcomes:
ME3107L.1	Demonstrate about general purpose machine tools in the machine shop.
ME3107L.2	Perform various operations on lathe machine.
ME3107L.3	Perceive different operations on drilling machine.
ME3107L.4	Experiment with basic operations on shaping machine.
ME3107L.5	Utilize slotting machine to make keyways.
ME3107L.6	Experiment with the basic operations on milling machine.

Course Name:	
Course Code: ME3108L	Course outcomes:
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
ME3108L	Perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
ME3108L	Perform speed test, performance test and cooling temperature on petrol and diesel engines.
ME3108L	Utilize air compressor for its performance test and to determine efficiency.
ME3108L	Discuss the principles through assembly and disassembly of 2/3 wheelers,

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2/4 stroke engines, tractor, heavy duty engines, boilers and their mountings and accessories.	

Course Name:	IPR & PATENTS
Course Code:	**Course outcomes:**
ME3109.1	Distinguish and Explain various forms of IPRs.
ME3109.2	Distinguish and Explain various forms of IPRs.
ME3109.3	Apply statutory provisions to protect particular form of IPRs.
ME3109.4	Analyse rights and responsibilities of holder of Patent, Copyright, Trademark, Industrial Designetc.
ME3109.5	Identify procedure to protect different forms of IPRs national and international level
ME3109.6	Develop skill of making search using modern tools and technics.

III B.TECH II SEM

Course Name:	
Course Code: ME3201	**Course outcomes:**
ME3201.1	To describe the concept of metrology
ME3201.2	To explain about metrology instruments and application for various measurements.
ME3201.3	To discuss the concept of computer applications in metrology.
ME3201.4	To acquire the principles of various Inspection, Instruments and Methodology.
ME3201.5	To develop the knowledge in the area of non-contact inspection
ME3201.6	able to design tolerances and fits for selected product quality. They can choose appropriate method

COURSE OUTCOMES

Course Name:	INSTRUMENTATION & CONTROL SYSTEMS
Course Code:	**Course outcomes:**
ME3202.1	Identify the different types of mechanical instruments.
ME3202.2	Recognise parts of mechanical instruments
ME3202.3	Interpret the types of measurements that can be made with different mechanical instruments
ME3202.4	Measure with mechanical instruments
ME3202.5	select appropriate device for the measurement of parameters like temperature, pressure, speed, stress, humidity, flow velocity etc.,
ME3202.6	justify its use through characteristics and performance.

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Course Name:	REFRIGERATION & AIR CONDITIONING
Course Code:	**Course outcomes:**
ME3203.1	Calculate the COP of air refrigeration systems
ME3203.2	Describe various components used in vapour-Compression refrigeration system and Estimate the performance
ME3203.3	Discuss the working principles of vapour absorption, steam jet, thermoelectric and vortex tube refrigeration systems
ME3203.4	Recognize the properties of air, summarize the various Psychometric processes and acquire the knowledge of load estimation
ME3203.5	Evaluate cooling and heating loads in an air conditioning and describe the various components of air conditioning system
ME3203.6	undergoing the refrigerating cycles and evaluate their performance

Course Name:	HEAT TRANSFER
Course Code: ME3204	**Course outcomes:**
ME3204.1	Understand the basic modes of heat and mass transfer.
ME3204.2	Apply principles of heat and mass transfer to predict transfer coefficients
ME3204.3	Analyze working of various heat transfer equipment
ME3204.4	Design heat and mass transfer equipment.
ME3204.5	Evaluate no. of stages required for given mass transfer problem.
ME3204.6	Analyze the concepts of heat transfer with phase change and condensation along with heat exchangers.

Course Name:	GREEN ENGINEERING SYSTEMS
Course Code: ME3205F	**Course outcomes:**
ME3205F.1	The student shall understand the principles of solar, wind, biomass, geo thermal green energy systems
ME3205F.2	The student shall understand the working of solar, wind, biomass green energy systems
ME3205F.3	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.4	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.5	Knowledge their significance in view of their importance in the current scenario and
ME3205F.6	Knowledge potential future applications

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Course Name:	HEAT TRANSFER LAB
Course Code:	**Course outcomes:**
ME3206L.1	Determine the heat transfer rate and coefficient.
ME3206L.2	Determine the thermal conductivity, efficiency and effectiveness
ME3206L.3	Determine the emissivity and Stefan Boltzman constant.
ME3206L.4	Determine critical heat flux and investigate Lambert's cosine law
ME3206L.5	Experiment with Virtual labs and analyze conduction, HT coefficient
ME3206L.6	Experiment with Virtual labs and investigate Lambert's laws.

Course Name:	METROLOGY & INSTRUMENTATION LAB
Course Code: ME3208L	**Course outcomes:**
ME3208L.1	To gain knowledge of Calibration experiments with Pressure gauge , Strain gauge
ME3208L.2	To gain knowledge of Calibration experiments with rotameter, Seismic apparatus
ME3208L.3	To gain knowledge of Calibration experiments with Vernier calipers, micrometer, Height gauge and Dial gauges
ME3208L.4	To gain knowledge of Calibration experiments with resistance temperature detector
ME3208L.5	To analyse various machine tools for their alignment
ME3208L.6	To measure angular and taper measurement

Course Name:	COMPUTATIONAL FLUID DYNAMICS LABORATORY
Course Code: ME3209L	**Course outcomes:**
ME3209L.1	Recognize the importance of CFD in Heat and Fluid flow.
ME3209L.2	Analyze forced convection heat transfer coefficient over regular bodies like sphere, cylinder.
ME3209L.3	: Estimation of drag coefficient in circular pipe under turbulent flow and bent pipe.
ME3209L.4	: Recognize how to handling moving boundaries and wall effects in motion of fluid.
ME3209L.5	Analyze how to handle power law fluids in CFD.
ME3209L.6	ability to describe various flow features in terms of appropriate fluid mechanical principles and force balances.

Course Name:	PROFESSIONAL ETHICS & HUMAN VALUES
Course Code:	**Course outcomes:**

ME3209	
ME3209.1	Understanding basic purpose of profession, professional ethics and various moral and social issues.
ME3209.2	Awareness of professional rights and responsibilities of a Engineer, safety and risk benefit analysis of a Engineer
ME3209.3	Acquiring knowledge of various roles of Enbgineer In applying ethical principles at various professional levels
ME3209.4	Professional Ethical values and contemporary issues
ME3209.5	Excelling in competitive and challenging environment to contribute to industrial growth.
ME3209.6	a comprehensive understanding of a variety issues that are encountered by every professional in discharging professional duties.

IV B.TECH I SEM

Course Name:	**MECHATRONICS**
Course Code: ME4101	**Course outcomes:**
ME4101.1	Understand key elements of Mechatronics system, representation into block diagram
ME4101.2	Understand concept of transfer function, reduction and analysis
ME4101.3	Understand principles of sensors, its characteristics, interfacing with DAQ microcontroller
ME4101.4	Understand the concept of PLC system and its ladder programming, and significance of PLC systems in industrial application
ME4101.5	Understand the system modeling and analysis in time domain and frequency domain.
ME4101.6	Understand control actions such as Proportional, derivative and integral and study its significance in industrial applications

Course Name:	**CAD/CAM**
Course Code: ME4102	**Course outcomes:**
ME4102.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
ME4102.2	Describe the use of Group Technologyt
ME4102.3	Knowledge CAPP for the product development

ME4102.4	Identify the various elements and their activities in the Computer Integrated Manufacturing Systems.
ME4102.5	Explain fundamental and advanced features of CNC machines
ME4102.6	Illustrate Group Technology, CAQC and CIM concepts

Course Name:	FINITE ELEMENT METHODS
Course Code: ME4103	Course outcomes:
ME4103.1	Understand the concepts behind variational methods and weighted residual methods in FEM
ME4103.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
ME4103.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
ME4103.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
ME4103.5	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.
ME4103.6	Upon completion of this course, the students can able to understand different mathematical Techniques used in FEM analysis and

Course Name:	POWER PLANT ENGINEERING
Course Code: ME4104	Course outcomes:
ME4104.1	Basic knowledge of Different types of Power Plants, site selection criteria of each one of them
ME4104.2	Understanding of Thermal Power Plant Operation, turbine governing, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems
ME4104.3	Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design
ME4104.4	Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor
ME4104.5	Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc
ME4104.6	Discussing environmental and safety aspects of power plant operation

Course Name:	ADDITIVE MANUFACTURING
Course Code: ME4105C	Course outcomes:
ME4105C.1	Demonstrate appropriate level of understanding on principles of additive

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	manufacturing processes
ME4105C.2	Choose appropriate materials for additive manufacturing processes
ME4105C.3	Apply suitable CAD tools and CAD interface for additive manufacturing process
ME4105C.4	Develop physical prototypes by identifying suitable process with optimum process parameters
ME4105C.5	Demonstrate the knowledge of Additive Manufacturing and Rapid Prototyping technologies.
ME4105C.6	Discuss fundamentals of Reverse Engineering.

Course Name:	ADVANCED MATERIALS
Course Code: ME4106A	Course outcomes:
ME4106A.1	Demonstrate the Properties of constituents, classification of composites and their suitability for the structural applications.
ME4106A.2	Demonstrate the Manufacturing processes.
ME4106A.3	Demonstrate the Smart materials and their applications.
ME4106A.4	Demonstrate the Nano materials in comparison with bulk materials.
ME4106A.5	Understand the mechanics of different materials. This understanding will include concepts such as anisotropic material behaviour
ME4106A.6	Constituent properties and manufacturing processes of different composites. Suitability of smart and nano materials for engineering applications.

Course Name:	CAD/CAM LAB
Course Code: ME4107L	Course outcomes:
ME4107L.1	Able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
ME4107L.2	Use of these tools for any engineering and real time applications
ME4107L.3	Acquire knowledge on utilizing these tools for a better project in their curriculum
ME4107L.4	Acquire knowledge on industry problems with confidence
ME4107L.5	developing skills in CAD software like AutoCAD and Creo to create 2D and 3D parts
ME4107L.6	performing analysis with ANSYS, developing CNC programs

Course Name:	MECHATRONICS LAB
Course Code: ME4108L	Course outcomes:
ME4108L.1	Understand the Characteristics of LVDT
ME4108L.2	Measure load, displacement and temperature using analogue and digital

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	sensors.
ME4108L.3	Develop PLC programs for control of traffic lights, water level, lifts and conveyor belts.
ME4108L.4	Simulate and analyze PID controllers for a physical system using MATLAB.
ME4108L.5	Develop pneumatic and hydraulic circuits using Automaton studio.
ME4108L.6	Design, Simulate & Analyze on AUTOMATION STUDIO SOFTWARE

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IV B.TECH II SEM

Course Name:	PRODUCTION PLANNING AND CONTROL
Course Code: ME4201	Course outcomes:
ME4201.1	To understand the different types of production systems and the internal organization of production planning and control.
ME4201.2	To estimate forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques.
ME4201.3	To understands the importance and function of inventory and to be able to apply for its control
ME4201.4	To understands the importance and function of inventory and to be able to apply for its management
ME4201.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4201.6	To understand dispatching procedure and applications of computers in production planning and control.

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Course Name:	AUTOMOBILE ENGINEERING
Course Code: ME4203	Course outcomes:
ME4203.1	Discuss various components of four wheeler automobile
ME4203.2	Apply the knowledge of different parts of transmission system
ME4203.3	Judge about Steering system
ME4203.4	Judge about Suspension system
ME4203.5	Justify the braking system and electrical system used in automobiles
ME4203.6	Analyse the concepts about engine specifications and service, safety and electronic systems used in automobiles
Course Name:	NON - DESTRUCTIVE EVALUATION
Course Code:	Course outcomes:
ME4204.1	Comprehensive, theory based understanding of the techniques and methods of radio graphic technique
ME4204.2	Comprehensive, theory based understanding of the techniques and methods of Ultrasonic test
ME4204.3	Comprehensive, theory based understanding of the techniques and methods of Liquid Penetrant Test
ME4204.4	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test
ME4204.5	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test &Infrared And Thermal Testing
ME4204.6	Apply methods knowledge of non destructive testing to evaluate products of railways, automobiles, aircrafts,

	chemical industries etc.

Course Name:	**UNCONVENTIONAL MACHINING PROCESSES**
Course Code: ME4202	**Course outcomes:**
ME4202.1	Understand the concepts of modern machining processes. .
ME4202.2	Learn the principles of ultrasonic machining.
ME4202.3	Apply the principles and procedure of electro chemical and processes.
ME4202.4	Apply the principles and procedure of chemical machining processes
ME4202.5	Apply the principles and procedure of thermal metal removal processes
ME4202.6	Illustrate the principles and procedure of electron beam machining, laser beam machining and plasma machining.

DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes

A.Y:2018-2019

Year/Sem: II B.Tech I SEM

Course Name:	METALLURGY & MATERIALS SCIENCE
Course Code: ME2101	**Course outcomes:**
ME2101.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
ME2101.2	Study the behaviour of ferrous and non- ferrous metals and alloys and their application in different domains
ME2101.3	Able to understand the effect of heat treatment
ME2101.4	Understand the effect of addition of alloying elements on properties of ferrous metals
ME2101.5	Grasp the methods of making the metal powders and the applications of powder metallurgy
ME2101..6	Comprehend the properties and applications of ceramics, composites and other advanced methods

Course Name:	MECHANICS OF SOLIDS
Course Code: ME2102	**Course outcomes:**
ME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
ME2102.2	Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
ME2102.3	Students will learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
ME2102.4	Students are able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
ME2102.5	Students attain a deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
ME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name:	THERMODYNAMICS
Course Code: ME2103	**Course outcomes:**
ME2103.1	Ability to understand the basic concepts of thermodynamic such as temperature, pressure, system, properties, process, state, cycles and equilibrium
ME2103.2	Ability to conduct experiments regarding the measurement and calibration of temperatures and pressures in groups.

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ME2103.3	Ability to identify the properties of substances on property diagrams and obtain the data from property tables.
ME2103.4	Ability to define energy transfer through mass, heat and work for closed and control volume systems
ME2103.5	Ability to apply the first Law of Thermodynamics on closed and control volume systems
ME2103.6	Ability to apply Second Law of Thermodynamics and entropy concepts in analysing the thermal efficiencies of heat engines such as Carnot and Rankine cycles and the coefficients of performance for refrigerators.

Course Name:	MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS
Course Code: ME2104	**Course outcomes:**
ME2104.1	knowledge of estimating the Demand and demand elasticities for a product
ME2104.2	understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
ME2104.3	understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units
ME2104.4	able to prepare Financial Statements and the usage of various Accounting tools for Analysis
ME2104.5	able to to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
ME2104.6	Evaluate and interpret the financial statements to make informed decisions

Course Name:	FLUID MECHANICS & HYDRAULIC MACHINES
Course Code: ME2105	**Course outcomes:**
ME2105.1	The basic concepts of fluid properties.
ME2105.2	The mechanics of fluids in static and dynamic conditions
ME2105.3	Boundary layer theory, flow separation
ME2105.4	Boundary layer theory dimensional analysis
ME2105.5	Hydrodynamic forces of jet on vanes in different positions.
ME2105.6	Working Principles and performance evaluation of hydraulic pump and turbines.

Course Name:	COMPUTER AIDED ENGINEERING DRAWING PRACTICE
Course Code: ME2106	**Course outcomes:**
ME2106.1	To understand the basic principles and conventions of engineering drawing

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ME2106.2	To use drawing as a communication mode
ME2106.3	To generate pictorial views using CAD software
ME2106.4	To understand the development of surfaces
ME2106.5	To visualize engineering components
ME2106.6	Knowledge on recent tools

Course Name:	ELECTRICAL & ELECTRONICS ENGINEERING LAB
Course Code: ME2107L	**Course outcomes:**
ME2107L.1	Able to find out the efficiency of dc shunt machine without actual loading of the machine.
ME2107L.2	Able to estimate the efficiency and regulation for different load conditions and power factors of single phase transformer with OC and SC test.
ME2107L.3	Able to analyse the performance characteristics and to determine efficiency of DC shunt motor &3-phase induction motor.
ME2107L.4	Able to pre-determine the regulation of an alternator by synchronous impedance method.
ME2107L.5	Able to control the speed of dc shunt motor using speed control methods.
ME2107L.6	Able to find out the characteristics of PN junction diode & transistor and to determine the ripple factor of half wave & full wave rectifiers.

Course Name:	MECHANICS OF SOLIDS & METALLURGY LAB
Course Code: ME2108L	**Course outcomes:**
ME2108L.1	To observe and understand the microstructure of Mild steel.
ME2108L.2	To observe and understand the microstructure of Medium carbon steel.
ME2108L.3	To observe and understand the microstructure of High carbon steel
ME2108L.4	To study the microstructure of Cast Irons and Nonferrous alloys
ME2108L.5	To evaluate the hardness of various materials using
ME2108L.6	To determine the hardenability of steels by Jominy End Quench test.

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II B.TECH II SEM

Course Name:	KINEMATICS OF MACHINERY
Course Code: ME2201	Course outcomes:
ME2201.1	Discuss the concepts of machining processes.
ME2201.2	Apply the principles of lathe, shaping, slotting and planning machines
ME2201.3	Apply the principles of drilling processes
ME2201.4	Apply the principles of milling and boring processes
ME2201.5	Analyze the concepts of finishing processes and the system of limits and fits
ME2201.6	Learn the concepts of surface roughness and optical measuring instruments.

Course Name:	THERMAL ENGINEERING – I
Course Code: ME2202	Course outcomes:
ME2202	Derive the actual cycle from fuel-air cycle and air-standard cycle for all practical applications
ME2202	Explain working principle and various components ofIC engine
ME2202	Explain combustion phenomenon of CI and SI engines and their impact on engine variables
ME2202	Analyze the performance of an IC engine based on the performance parameters
ME2202	Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine.
ME2202	Explain the applications and working principle of rocket sandjet propulsion.

Course Name:	PRODUCTION TECHNOLOGY
Course Code: ME2203	Course outcomes:
ME2203.1	Design patterns, Gating, runner and riser systems
ME2203.2	Select a suitable casting process based on the component
ME2203.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements
ME2203.4	Understand various bulk deformation processes
ME2203.5	Understand various sheet metal forming and processing of plastics
ME2203.6	Know the different types of manufacturing processes

Course Name:	**DESIGN OF MACHINE MEMBERS – I**
Course Code: ME2204	**Course outcomes:**
ME2204.1	Apply the design procedure to engineering problems, including the consideration of technical and manufacturing constraints.
ME2204.2	Select suitable materials and significance of tolerances and fits in critical design applications
ME2204.3	Utilize design data hand book and design the elements for strength, stiffness and fatigue.
ME2204.4	Identify the loads, the machine members subjected and calculate static and dynamic stresses to ensure safe design.
ME2204.5	Gain knowledge about the strength of machine elements.
ME2204.6	Judge about materials and their properties along with manufacturing considerations

Course Name:	**MACHINE DRAWING**
Course Code:	**Course outcomes:**
ME2205.1	Identify the national and international standards pertaining to machine drawing
ME2205.2	Apply limits and tolerances to assemblies and choose appropriate fits
ME2205.3	Recognize machining and surface finish symbols
ME2205.4	Explain the functional and manufacturing datum
ME2205.5	Illustrate various machine components through drawings.
ME2205.6	knowledge of fastening arrangements such as welding, riveting the different styles of attachment for shaft.

Course Name:	**INDUSTRIAL ENGINEERING AND MANAGEMENT**
Course Code: ME2206	**Course outcomes:**
ME2206.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
ME2206.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME2206.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate
ME2206.4	considerations for public health and safety, cultural, societal, and environmental constraints
ME2206.5	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME2206.6	Explain and implement various job evaluation methods. Evaluate the overall cost of production for a product.

Course Name:	FLUID MECHANICS & HYDRAULIC MACHINES LAB
Course Code: ME2207L	**Course outcomes:**
ME2207L.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
ME2207L.2	To gain practical exposure on the performance evaluation methods of Venturi meter
ME2207L.3	To gain practical exposure on the performance evaluation methods of Pelton wheel
ME2207L.4	To gain practical exposure on the performance evaluation methods of Francis turbine
ME2207L.5	To gain practical exposure on the performance evaluation methods of Reciprocating pump
ME2207L.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name:	PRODUCTION TECHNOLOGY LAB
Course Code: ME2208L	**Course outcomes:**
ME2208L.1	Design and manufacture simple patterns
ME2208L.2	Understanding the properties of moulding sands
ME2208L.3	Understand the concept of mould preparation
ME2208L.4	Fabricate joints using arc welding.
ME2208L.5	Practice on sheet metal operations
ME2208L.6	Fabricate joints using Resistant welding.

III B.TECH I SEM

Course Name:	Dynamics of Machinery
Course Code: ME3101	**Course outcomes:**
ME3101.1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles
ME3101.2	Compute frictional losses, torque transmission of mechanical systems.
ME3101.3	Analyze dynamic force analysis of slider crank mechanism
ME3101.4	Knowledge and analyse on design of flywheel.
ME3101.5	Understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
ME3101.6	Understand balancing of reciprocating and rotary masses.

Course Name:	**METAL CUTTING & MACHINE TOOLS**
Course Code: ME3102	**Course outcomes:**
ME3102.1	Apply cutting mechanics to metal machining based on cutting force and power consumption
ME3102.2	Operate lathe, milling machines, drill press, grinding machines, etc.
ME3102.3	Select cutting tool materials and tool geometries for different metals.
ME3102.4	Select appropriate machining processes and conditions for different metals.
ME3102.5	Learn machining economics & principles of CNC Machines
ME3102.6	Design jigs and Fixtures for simple parts.

Course Name:	**DESIGN OF MACHINE MEMBERS– II**
Course Code: ME3103	**Course outcomes:**
ME3103.1	The student will able to select the suitable bearing based on the application of the loads and predict the life of the bearing
ME3103.2	Design power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws.
ME3103.3	Design of IC Engines parts.
ME3103.4	Utilize the knowledge to design power screws.
ME3103.5	Justify power transmission systems and to design pulleys and geardrives.
ME3103.6	Apply the concepts in designing various machine tool elements.

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Course Name:	OPERATIONS RESEARCH
Course Code: ME3104	Course outcomes:
ME3104.1	Apply the basics of operations research and linear programming problems.
ME3104.2	Apply the knowledge in solving problems of transportation, assignment and sequencing.
ME3104.3	Judge there placement and gametheories
ME3104.4	Judge the replacement and game theories and apply the knowledge to solve problems
ME3104.5	Discuss the waiting line models and project management techniques.
ME3104.6	Apply the knowledge in solving problems of dynamic programming and simulation.

Course Name:	THERMAL ENGINEERING – II
Course Code: ME3105	Course outcomes:
ME3105.1	Explain the basic concepts of thermal engineering and boilers.
ME3105.2	Discuss the concepts of steam nozzles and steam turbines.
ME3105.3	Gain knowledge about the concepts of reaction turbine
ME3105.4	Gain knowledge about the concepts of steam condensers.
ME3105.5	Discuss the concepts of reciprocating and rotary type of compressors.
ME3105.6	Acquire knowledge about the centrifugal and axial flow compressors.

Course Name:	THEORY OF MACHINES LAB
Course Code: ME3106L	Course outcomes:
ME3106L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;
ME3106L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
ME3106L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3106L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3106L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3106L.6	. Explain static and dynamic balancing

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Course Name:	MACHINE TOOLS LAB
Course Code:	**Course outcomes:**
ME3107L.1	Demonstrate about general purpose machine tools in the machine shop.
ME3107L.2	Perform various operations on lathe machine.
ME3107L.3	Perceive different operations on drilling machine.
ME3107L.4	Experiment with basic operations on shaping machine.
ME3107L.5	Utilize slotting machine to make keyways.
ME3107L.6	Experiment with the basic operations on milling machine.

Course Name:	
Course Code: ME3108L	**Course outcomes:**
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
ME3108L	Perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
ME3108L	Perform speed test, performance test and cooling temperature on petrol and diesel engines.
ME3108L	Utilize air compressor for its performance test and to determine efficiency.
ME3108L	Discuss the principles through assembly and disassembly of 2/3 wheelers, 2/4 stroke engines, tractor, heavy duty engines, boilers and their mountings and accessories.

Course Name:	IPR & PATENTS
Course Code:	**Course outcomes:**
ME3109.1	Distinguish and Explain various forms of IPRs.
ME3109.2	Distinguish and Explain various forms of IPRs.
ME3109.3	Apply statutory provisions to protect particular form of IPRs.
ME3109.4	Analyse rights and responsibilities of holder of Patent, Copyright, Trademark, Industrial Designetc.
ME3109.5	Identify procedure to protect different forms of IPRs national and international level
ME3109.6	Develop skill of making search using modern tools and technics.

III B.TECH II SEM

Course Name:	**GREEN ENGINEERING SYSTEMS**
Course Code: ME3201	**Course outcomes:**
ME3201.1	To describe the concept of metrology
ME3201.2	To explain about metrology instruments and application for various measurements.
ME3201.3	To discuss the concept of computer applications in metrology.
ME3201.4	To acquire the principles of various Inspection, Instruments and Methodology.
ME3201.5	To develop the knowledge in the area of non-contact inspection
ME3201.6	able to design tolerances and fits for selected product quality. They can choose appropriate method

Course Name:	**INSTRUMENTATION & CONTROL SYSTEMS**
Course Code:	**Course outcomes:**
ME3202.1	Identify the different types of mechanical instruments.
ME3202.2	Recognise parts of mechanical instruments
ME3202.3	Interpret the types of measurements that can be made with different mechanical instruments
ME3202.4	Measure with mechanical instruments
ME3202.5	select appropriate device for the measurement of parameters like temperature, pressure, speed, stress, humidity, flow velocity etc.,
ME3202.6	justify its use through characteristics and performance.

Course Name:	**REFRIGERATION & AIR CONDITIONING**
Course Code:	**Course outcomes:**
ME3203.1	Calculate the COP of air refrigeration systems
ME3203.2	Describe various components used in vapour-Compression refrigeration system and Estimate the performance
ME3203.3	Discuss the working principles of vapour absorption, steam jet, thermoelectric and vortex tube refrigeration systems
ME3203.4	Recognize the properties of air, summarize the various Psychometric processes and acquire the knowledge of load estimation
ME3203.5	Evaluate cooling and heating loads in an air conditioning and describe the various components of air conditioning system
ME3203.6	undergoing the refrigerating cycles and evaluate their performance

Course Name:	HEAT TRANSFER
Course Code: ME3204	**Course outcomes:**
ME3204.1	Understand the basic modes of heat and mass transfer.
ME3204.2	Apply principles of heat and mass transfer to predict transfer coefficients
ME3204.3	Analyze working of various heat transfer equipment
ME3204.4	Design heat and mass transfer equipment.
ME3204.5	Evaluate no. of stages required for given mass transfer problem.
ME3204.6	Analyze the concepts of heat transfer with phase change and condensation along with heat exchangers.

Course Name:	
Course Code: ME3205F	**Course outcomes:**
ME3205F.1	The student shall understand the principles of solar, wind, biomass, geo thermal green energy systems
ME3205F.2	The student shall understand the working of solar, wind, biomass green energy systems
ME3205F.3	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.4	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.5	Knowledge their significance in view of their importance in the current scenario and
ME3205F.6	Knowledge potential future applications

Course Name:	HEAT TRANSFER LAB
Course Code:	**Course outcomes:**
ME3206L.1	Determine the heat transfer rate and coefficient.
ME3206L.2	Determine the thermal conductivity, efficiency and effectiveness
ME3206L.3	Determine the emissivity and Stefan Boltzman constant.
ME3206L.4	Determine critical heat flux and investigate Lambert's cosine law
ME3206L.5	Experiment with Virtual labs and analyze conduction, HT coefficient
ME3206L.6	Experiment with Virtual labs and investigate Lambert's laws.

Course Name:	METROLOGY & INSTRUMENTATION LAB
Course Code: ME3208L	**Course outcomes:**
ME3208L.1	To gain knowledge of Calibration experiments with Pressure gauge , Strain gauge

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ME3208L.2	To gain knowledge of Calibration experiments with rotameter, Seismic apparatus
ME3208L.3	To gain knowledge of Calibration experiments with Vernier calipers, micrometer, Height gauge and Dial gauges
ME3208L.4	To gain knowledge of Calibration experiments with resistance temperature detector
ME3208L.5	To analyse various machine tools for their alignment
ME3208L.6	To measure angular and taper measurement

Course Name:	COMPUTATIONAL FLUID DYNAMICS LABORATORY
Course Code: ME3209L	**Course outcomes:**
ME3209L.1	Recognize the importance of CFD in Heat and Fluid flow.
ME3209L.2	Analyze forced convection heat transfer coefficient over regular bodies like sphere, cylinder.
ME3209L.3	: Estimation of drag coefficient in circular pipe under turbulent flow and bent pipe.
ME3209L.4	: Recognize how to handling moving boundaries and wall effects in motion of fluid.
ME3209L.5	Analyze how to handle power law fluids in CFD.
ME3209L.6	ability to describe various flow features in terms of appropriate fluid mechanical principles and force balances.

Course Name:	PROFESSIONAL ETHICS & HUMAN VALUES
Course Code: ME3209	**Course outcomes:**
ME3209.1	Understanding basic purpose of profession, professional ethics and various moral and social issues.
ME3209.2	Awareness of professional rights and responsibilities of a Engineer, safety and risk benefit analysis of a Engineer
ME3209.3	Acquiring knowledge of various roles of Enbgineer In applying ethical principles at various professional levels
ME3209.4	Professional Ethical values and contemporary issues
ME3209.5	Excelling in competitive and challenging environment to contribute to industrial growth.
ME3209.6	a comprehensive understanding of a variety issues that are encountered by every professional in discharging professional duties.

IV B.TECH I SEM

Course Name:	AUTOMOBILE ENGINEERING
Course Code: ME4101	**Course Outcomes**
ME4101.1	Discuss various components of four wheeler automobile
ME4101.2	Apply the knowledge of different parts of transmission system
ME4101.3	Judge about Steering system
ME4101.4	Judge about Suspension system
ME4101.5	Justify the braking system and electrical system used in automobiles
ME4101.6	Analyse the concepts about engine specifications and service, safety and electronic systems used in automobiles

Course Name:	CAD/CAM
Course Code: ME4102	**Course Outcomes**
ME4102.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves
ME4102.2	Describe the mathematical basis in the technique of representation of surfaces and solid
ME4102.3	Describe the mathematical basis in the technique of representation of geometric entities including technique of transformation of geometric entities using transformation matrix.
ME4102.4	Describe the use of GT and CAPP for the product development.
ME4102.5	Identify the various elements in the Computer Integrated Manufacturing Systems.
ME4102.6	various elements and their activities in the Computer Integrated Manufacturing Systems

Course Name:	FINITE ELEMENT METHODS
Course Code:	**Course Outcomes**
ME4103.1	Understand the concepts behind variational methods and weighted residual methods in FEM.
ME4103.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
ME4103.3	Develop element characteristic equation procedure
ME4103.4	generation of global stiffness equation will be applied.
ME4103.5	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form
ME4103.6	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.

Course Name:	UN CONVENTIONAL MACHINING PROCESSES
Course Code:	**Course Outcomes**
ME4104.1	CO1: Understand the concepts of modern machining processes. .

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ME4104.2	CO2: Learn the principles of ultrasonic machining.
ME4104.3	CO3: Apply the principles and procedure of electro chemical and processes.
ME4104.4	Apply the principles and procedure of chemical machining processes
ME4104.5	CO4: Apply the principles and procedure of thermal metal removal processes
ME4104.6	CO5: Illustrate the principles and procedure of electron beam machining, laser beam machining and plasma machining.

Course Name:	NANO TECHNOLOGY
Course Code: ME4105	**Course Outcomes**
ME4105.1	Understand principles and mechanisms of various synthesis and processing techniques
ME4105.2	Demonstrate the knowledge to synthesize different nanomaterial choosing suitable method
ME4105.3	Design desired nanostructure with controlled size and desired morphology and property.
ME4105.4	Able to Identify the essential concepts used in nanotechnology.
ME4105.5	Identify the materials, properties, syntheses and fabrication, characterization and applications in various fields.
ME4105.6	Analyze the data obtained from different techniques

Course Name:	AUTOMATION IN MANUFACTURING
Course Code: ME4106	**Course Outcomes**
ME4106	Able to Solve the line balancing problems in the various flow line systems with and without use buffer storage.
ME4106	Understand the different automated material handling, storage and retrieval systems and automated inspection systems.
ME4106	Use of Adaptive Control principles and implement the same online inspection and control.
ME4106	The types and strategies and various components in Automated Systems.
ME4106	Understand the automated flow lines, line balancing, material storage and retrieval and inspection.
ME4106	Knowledge on Automated Material Handling And Storage Systems

Course Name:	SIMULATION LAB
Course Code: ME4107L	**Course Outcomes**
ME4107L.1	The student will be able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
ME4107L.2	Use of these tools for any engineering and real time applications.
ME4107L.3	Acquire knowledge on utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence

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	when it matters to use these tools in their employment.
ME4107L.4	Experiment with harmonic analysis, HT analysis and buckling analysis.
ME4107L.5	Create part programmes using FANUC controller.
ME4107L.6	Apply G-codes for automated tool path using CAM software.

IV B.TECH II SEM

Course Name:	PRODUCTON PLANNING AND CONTROL
Course Code:	Course Outcomes
ME4201.1	Tounderstandthedifferenttypesofproductionsystemsandtheinternalorganizationof production planning and control.
ME4201.2	To estimate forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques.
ME4201.3	To understands the importance and function of inventory and to be able to apply for its control
ME4201.4	To understands the importance and function of inventory and to be able to apply for its management
ME4201.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4201.6	To understand dispatching procedure and applications of computers in production planning and control.

Course Name:	GREEN ENGINEERING SYSTEMS
Course Code: ME4202	Course Outcomes
ME4202.1	The student shall understand the principles of solar, wind, biomass, geo thermal green energy systems
ME4202.2	The student shall understand the working of solar, wind, biomass green energy systems
ME4202.3	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME4202.4	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME4202.5	Knowledge their significance in view of their importance in the current scenario and
ME4202.6	Knowledge potential future applications

Course Name:	POWER PLANT ENGINEERING
Course Code: ME4203	Course Outcomes
ME4203.1	Basic knowledge of Different types of Power Plants, site selection criteria of each one of them
ME4203.2	Understanding of Thermal Power Plant Operation, turbine governing, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems

ME4203.3	Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design
ME4203.4	Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor
ME4203.5	Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc
ME4203.6	Discussing environmental and safety aspects of power plant operation

Course Name:	QUALITY AND RELIABILITY ENGINEERING
Course Code: ME4204	**Course Outcomes**
ME4204.1	1. Attain the basic techniques of quality improvement, fundamental knowledge of statistics and probability
ME4204.2	Use control charts to analyze for improving the process quality.
ME4204.3	Describe different sampling plans
ME4204.4	Acquire basic knowledge of total quality management
ME4204.5	Understand the concepts of reliability and maintainability
ME4204.6	approaches and techniques to assess and improve process and/or product quality and reliability

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Department of Electronics and Communication Engineering

Course Outcomes

Regulation R20/19

Year/Sem: II B.Tech I SEM

Course Name: **Electronic Devices and Circuits**	
Course Code: **EC2101**	
EC2101.1	Apply the basic concepts of semiconductor physics.
EC2101.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EC2101.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons
EC2101.4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
EC2101.5	Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
EC2101.6	Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations

Course Name: **Switching Theory and Logic Design**	
Course Code: **EC2102**	
EC2102.1	Classify different number systems and apply to generate various codes
EC2102.2	Use the concept of Boolean algebra in minimization of switching functions
EC2102.3	Design different types of combinational logic circuits.
EC2102.4	Apply knowledge of flip-flops in designing of Registers and counters
EC2102.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
EC2102.6	Produce innovative designs by modifying the traditional design techniques.

Course Name: **Signals and Systems**	
Course Code: **EC2103**	
EC2103.1	Differentiate the classification of signals as well as systems operations on signals and signal approximation.
EC2103.2	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals using Fourier series
EC2103.3	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals Using Fourier transform.
EC2103.4	Able to learn sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
EC2103.5	Define and evaluate the concept of convolution and filters such as LPF,HPF,BPF ,correlation functions.
EC2103.6	Apply laplace-transform to analyze continuous--time signals and systems and z-transform to analyze discrete-time signals and systems.

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Course Name: **Mathematics-III (Transforms and Vector Calculus)**	
Course Code: **EC2104**	
EC2104.1	State and prove vector Line, Surface and volume integral Theorems.State and prove Stokes and Green's theorems.
EC2104.2	Derive Laplace transform standard functions. Deduce inverse Laplace transform functions.
EC2104.3	Explain about Periodic functions , even and odd functions.Explain about Half range sine and cosine series. Explain Fourier transforms.State and prove Fourier integral theorem and problems.
EC2104.4	Explain Fourier Transforms. State and prove Fourier integral theorem and problems.
EC2104.5	Explain By eliminating Orbitary constants and Orbitary functions. Derive Legrangies equation and problems.
EC2104.6	Derive solutions of linear P.D.E with constant coefficientsand problems. Explain method of separation of variables and wave & heat equations.

Course Name: **Random Variables and Stochastic Processes**	
Course Code: **EC2105**	
EC2105.1	Able to Identify random variables and Define and manipulate distribution and densityfunctions.
EC2105.2	Able to Compute various operations like expectations, variances, etc. from probability density functions and probability distribution functions.
EC2105.3	Able to Characterize probability density and distribution function for multiple random variables
EC2105.4	Able to perform operations on Multiple random variables
EC2105.5	Explain the concept of random process, differentiate between stochastic and ergodic processes
EC2105.6	Illustrate the concept of random processes and determine covariance and spectral density of stationary random processes, Analyze the LTI systems with random inputs and understand the concept of noise

Course Name: **OOPS through Java Lab**	
Course Code: **EC2106**	
EC2106.1	Identify classes, objects, members of a class and the relationship among them needed for as pacific problem
EC2106.2	Implement programs to distinguish different forms of inheritance
EC2106.3	Create packages and to reuse them
EC2106.4	Develop programs using Exception Handling mechanism
EC2106.5	Develop multithreaded application using synchronization concept
EC2106.6	Design GUI based applications using Swings and AWT.

Course Name: **Electronic Devices and Circuits Lab**	
Course Code: **EC2107**	
EC2107.1	Ability to analyze PN junctions in semiconductor devices under various

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	conditions.
EC2107.2	Ability to analyzeZener in semiconductor devices under various conditions.
EC2107.3	Ability to design and analyze simple rectifiers and voltage regulators using diodes
EC2107.4	Ability to design and analyze simple BJT and FET circuits.
EC2107.5	Know the CRO and CRO uses
EC2107.6	Ability to design and amplify the BJT and FET

Course Name: Switching Theory and Logic Design–Lab	
Course Code: **EC2108**	
EC2108.1	Test the operation of different logic gates using relevant IC's.
EC2108.2	Examine the operation of different combinational logic circuits.
EC2108.3	Apply the concept of Boolean algebra or k-maps to reduce and Construct logic circuit for given function
EC2108.4	Analyse the Truth tables of different Flip-Flops.
EC2108.5	Design of registers using sequential logic circuits.
EC2108.6	Design of Synchronous and Asynchronous counters using Flip-Flops

Course Name:Python Programming	
Course Code: **EC2109**	
EC2109.1	Know comprehensions in python
EC2109.2	Know generators in python
EC2109.3	Know exception handling in python
EC2109.4	Know file Input/output
EC2109.5	Understand various data types like lists, tuples, strings etc
EC2109.6	Know the usage of various pre-defined functions on the above data types

Year/Sem: II B.Tech II SEM

Course Name: Electronic Circuit Analysis	
Course Code: **EC2201**	
EC2201.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
EC2201.2	Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT.
EC2201.3	Know the feedback amplifiers and feedback amplifier topologies
EC2201.4	Derive the expressions for feedback amplifiers Gain and impedance of input and output
EC2201.5	Derive the expressions for frequency ofoscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stabilityconcept.
EC2201.6	Know the classification of the power and tuned amplifiers and their analysis with performance comparison.

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Course Name: Digital IC Design	
Course Code: **EC2202**	
EC2202.1	Introduction of digital logic families and inter facing concepts for digital design is considered.
EC2202.2	VHDL fundamentals were discussed to modelling the digital system design blocks.
EC2202.3	Design and implementation of combinational and sequential digital logic circuits is explained.
EC2202.4	Model complex digital systems at several levels of abstractions, behavioural, structural, simulation, synthesis and rapid system prototyping.
EC2202.5	Analyze basic digital circuits with combinatorial circuits using VHDL.
EC2202.6	Analyze sequential logic circuits using VHDL Evaluate the basic design steps for Synchronous and Asynchronous Sequential Circuits.

Course Name: Analog Communications	
Course Code: **EC2203**	
EC2203.1	Understand modulation and demodulation Techniques of Amplitude modulation.
EC2203.2	Applying modulation and demodulation Techniques to DSB & SS
EC2203.3	Learn the basic concepts of Frequency modulation and also modulation and demodulation Techniques.
EC2203.4	Able to explain the principles of Radio Transmitters and Receivers.
EC2203.5	Analyse the Noise performance of AM, DSB, SSB and FM and Understand the generation and demodulation of pulse analog modulation techniques.
EC2203.6	Analyse Understand the generation and demodulation of pulse analog modulation techniques.

Course Name: Linear control Systems	
Course Code: **EC2204**	
EC2204.1	Explain the concepts of feedback and its advantages to various control systems
EC2204.2	Analyze the performance metrics to design the control system in time-domain
EC2204.3	Find the stability analysis for control systems
EC2204.4	Draw the root locus for control systems
EC2204.5	Analyze the performance metrics to design the control system in frequency-domain
EC2204.6	Analyze the state space approach for the analysis of control systems

Course Name: Management and Organizational Behaviour	
Course Code: **EC2205**	
EC2205.1	After completion of the Course the student will acquire the knowledge on management, Functions, global leadership and organizational structure.
EC2205.2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments

EC2205.3	The learner is able to think in strategically through contemporary management practices.
EC2205.4	The learner may also know about the contemporary practices in concept
EC2205.5	The learner can develop positive attitude through personality development and can equip with motivational theories.
EC2205.6	The student can attain the group performance and grievance handling in managing the organizational culture.

Course Name: Electronic Circuit Analysis Lab	
Course Code: **EC2206**	
EC2204.1	Determination of fT for transistor
EC2204.2	Design different types of Amplifier and Oscillator circuits
EC2204.3	Simulate different types of Amplifier and Oscillator circuits using software tool
EC2204.4	Test different types of Amplifiers and Oscillator circuits using hardware.
EC2204.5	Design the power amplifiers using software and hard ware to
EC2204.6	Design the Tuned amplifiers to find the factor using software and hard ware to

Course Name: Analog Communications Lab	
Course Code: **EC2207**	
EC2207.1	Analyze the concepts, write and simulate the concepts of AM and AM Demodulation process in Communication.
EC2207.2	Know the origin and simulation of FM and FM-Demodulation process in communication
EC2207.3	Acquaint with AM and FM basic functionalities
EC2207.4	Discriminate the AM and FM functionalities
EC2207.5	Interpret with various angle modulation and demodulation systems
EC2207.6	Create the writing and simulation environments in PWM, PPM, Mixer and ring modulation

Course Name: Digital IC Design Lab	
Course Code: **EC2208**	
EC2208.1	Demonstrate a clear Understanding in hardware design language VHDL.
EC2208.2	Verify the logic behaviour of IC gates
EC2208.3	Model a Combinational circuit using VHDL and validate its functionality.
EC2208.4	Model a Sequential circuit using VHDL and validate its functionality
EC2208.5	Model a SHIFT REGISTERS using VHDL and validate its functionality
EC2208.6	Model MAC & ALU using VHDL and validate its functionality

Course Name: Soft Skills	
Course Code: **EC2209**	
EC2209.1	Use language fluently, accurately and appropriately in debates and group discussions

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EC2209.2	Exhibit interview skills and develop soft skills
EC2209.3	Understand how to making meeting effective, Negotiation skills
EC2209.4	Use their skills of listening comprehension to communicate effectively in cross-cultural contexts
EC2209.5	Learn and use new vocabulary
EC2209.6	Write resumes, project reports and reviews.

Course Name: Constitution of India	
Course Code: **EC2210**	
EC2210.1	Understand historical background of the constitution making and its importance for building a democratic India.
EC2210.2	Understamd the function of Union Government and its Administration Secretariat, LokSabha, RajyaSabha,
EC2210.3	The Supreme Court and High Court: Powers and Functions;
EC2210.4	Understand the structure of state government & Central Government
EC2210.5	Analyze the decentralization of power between central, state and local self-government
EC2210.6	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.

Year/Sem: III B.Tech I SEM

Course Name: Analog ICs and Applications	
Course Code **EC3101**	
EC3104.1	Describe the characteristics of operational amplifiers.
EC3104.2	Design the various linear and non-linear applications of op-amp.
EC3104.3	Design the Active filters using Operational Amplifier
EC3104.4	Describe the Op-Amp and internal Circuitry: 555 Timer, PLL
EC3104.5	Discuss the Applications of Operational amplifier: 555 Timer, PLL
EC3104.6	Use the Op-Amp in A to D & D to A Converters

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Course Name: Electromagnetic Waves and Transmission Lines	
Course Code: **EC3102**	
EC3102.1	Acquire knowledge on various types of transmission lines, derive transmission-line equations from a circuit model in terms of primary and secondary constants
EC3102.2	Derive and Calculate the expressions for input impedance of transmission lines, reflection coefficient, VSWR etc. using smith chart
EC3102.3	Determine E and H using various laws and applications of electric & magnetic fields
EC3102.4	Apply the Maxwell equations to analyze the time varying behaviour of EM waves
EC3102.5	Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media
EC3102.6	. Calculate Brewster angle, critical angle and total internal reflection

Course Name: Digital Communications	
Course Code: **EC3103**	
EC3103.1	Define and Determine the performance of pulse digital modulation techniques such as PCM,DPCM,DM,ADM.
EC3103.2	Elaborate the principles of digital modulation techniques like ASK, FSK, PSK, DPSK, and QPSK.
EC3103.3	Determine the probability of error for digital modulation schemes such as FSK,ASK, BPSK
EC3103.4	Determine the probability of error for digital modulation schemes such as BPSK, BFSK, and QPSK.
EC3103.5	Understand the concept of digital information over the channel, Analyze different source coding techniques Shanon-Fano coding, Huffman coding etc.
EC3103.6	Able to Compute and analyze different error control coding schemes along with different domain approaches.

Course Name: **Open Elective Course-1 (Renewable Energy Sources)**	
Course Code: **EC3104**	
EC3104.1	Analyze solar radiation data, extra-terrestrial radiation, radiation on earth's surface and Solar energy storage
EC3104.2	Illustrate the components of Wind energy systems
EC3104.3	Illustrate the working of bio digesters
EC3104.4	Illustrate the working of geothermal plants
EC3104.5	Demonstrate the principle of energy production from OTEC, Tidal and Waves
EC3104.6	Explain the concept and working of Fuel cells & MHD Power generation

Course Name: **Professional Elective courses -1 (Electronic Measurements and Instrumentation)**	
Course Code: **EC3105**	
EC3105.1	Select the instrument to be used based on the requirements.

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EC3105.2	Understand and analyze different signal generators and analyzers.
EC3105.3	Understand the design of oscilloscopes for different applications
EC3105.4	Understand the design of Digital oscilloscopes for different applications
EC3105.5	Design and derive the different bridges
EC3105.6	Design different transducers for measurement of different parameters

Course Name: **Analog ICs and Applications LAB**	
Course Code: **EC3106**	
EC3106.1	Design and analyse the various linear application of op-amp
EC3106.2	Design and analyse the various non-linear application of op-amp
EC3106.3	Design and analyse filter circuits using op-amp
EC3106.4	Design and analyse oscillators and multivibrator circuits using op-amp
EC3106.5	Design and analyse the various application of 555 timer
EC3106.6	Analyse the performance of oscillators and multivibrators using PSPICE.

Course Name: **Digital Communications Lab**	
Course Code: **EC3107**	
EC3107.1	Able to understand basic theories of Digital communication system in practical.
EC3107.2	Able to design and implement different modulation and demodulation techniques.
EC3107.3	Able to analyze digital modulation techniques
EC3107.4	Able to identify and describe different techniques in modern digital communications, in particular in source coding
EC3107.5	Able to perform channel coding.
EC3107.6	Able to detect and correct errors using LBC,Binary Cyclic codes & detect dual bit errors in Convolution codes

Course Name: **Data Structures using Java Lab**	
Course Code: **EC3108**	
EC3108.1	To examine the components that form an abstract data type(ADT),also implement a programmer – defined ADT in Java
EC3108.2	Create to implementations of the Stack ADT and Queue ADT one based on an array representation of stack and the other based on a singly linked list representation.
EC3108.3	Determining and Analyzing the execution times of sorting and searching routines .
EC3108.4	Computation of shortest paths by dfs and bfs for a given graph
EC3108.5	Simulating the flow of tasks in an operating system using priority queue ADT
EC3108.6	Computation of shortest paths by dfs and bfs for a given graph Implementation of KMP pattern matching algorithm using JAVA.

Course Name: **Indian Traditional Knowledge**	
Course Code: **EC3109**	
EC3109.1	Identify the concept of Traditional knowledge and its importance.

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EC3109.2	Explain the need for and importance of protecting traditional knowledge
EC3109.3	Illustrate the various enactments related to the protection of traditional knowledge.
EC3109.4	Interpret the concepts of Intellectual property to protect the traditional knowledge.
EC3109.5	Explain the importance of Traditional knowledge in Agriculture and Medicine.
EC3109.6	Explain the importance of Traditional knowledge in Agriculture and Medicine.

Course Name: **Summer Internship 2 Months**	
Course Code: **EC3110:**	
EC3104.1	Understanding the modern tools used in the field of Electronics and Communication engineering for product development
EC3104.2	Work in real time situations in industries through hands on job execution
EC3104.3	Apply theoretical aspects to solve engineering problems in the industries
EC3104.4	Understand the resources requirement and planning to facilitate the Internship success.

Year/Sem: III B.Tech II SEM

Course Name: **Microprocessor and Microcontrollers**	
Course Code: **EC3201**	
EC3201.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors
EC3201.2	To be able to understand the addressing modes of microprocessors
EC3201.3	To be able to understand the micro controller capability
EC3201.4	To be able to program MP&MC
EC3201.5	To be able to interface MP & MC with other electronic devices
EC3201.6	To be able to understand the ARM processor architecture

Course Name: **VLSI Design**	
Course Code: **EC3202**	
C3204.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
C3204.2	Apply the design Rules and draw layout of a given logic circuit
C3204.3	Design MOSFET based logic circuit. Design basic building blocks in Analog IC design.

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C3204.4	Analyze the behaviour of amplifier circuits with various loads
C3204.5	Design various CMOS logic circuits for design of Combinational logic circuits.
C3204.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS

Course Name: **Digital Signal Processing**	
Course Code: **EC3203**	
EC3203.1	Apply the difference equations concept in the analyzation of Discrete time systems
EC3203.2	Able to apply the FFT algorithm for solving the DFT of a given signal
EC3203.3	Student can able to design a Digital filter (IIR) from the given specifications and Realize the IIR Structures.
EC3203.4	Design a Digital filter (FIR) from the given specifications and Realize the FIR Structures.
EC3203.5	Use the Multirate Processing concepts in various applications Such as Design of phase shifters, Interfacing of digital systems.
EC3203.6	Able to learn the architecture of DSP Processor and addressing modes.

Course Name: **Professional Elective courses – 2 (Mobile & Cellular Communication)**	
Course Code: **EC3204**	
EC3204.1	Introduction to Cellular Mobile System, Cellular Concepts
EC3204.2	Types of interferences, Co-channel Interference Reduction Factor, non-co-channel interference-different types.
EC3204.3	Frequency management And Channel Assignment, Numbering and grouping
EC3204.4	Cell Coverage For Signal , phase difference between direct and reflected paths
EC3204.5	TRAFFIC Concept of Handoff, types of handoff, soft and hard hand offs,
EC3204.6	Digital Cellular Networks, GSM architecture, TDMA, CDMA, OFDMA

Course Name: **Open Elective Course/Job oriented elective -2 (Computer Networks)**	
Course Code: **EC3205**	
EC3205.1	Demonstrate different network topologies, reference models OSI, TCP/IP, methods and protocol standards, Identification and working mechanism of transmission media
EC3205.2	Demonstrate the various services provided by Data link layer, flow and error controlling by HDLC and PPP.
EC3205.3	Compare and Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
EC3205.4	Demonstrate the various Wired LAN protocols used for data transmission.
EC3205.5	Able to demonstrate how the packets are routed using network layer protocols, Congestion Control, traffic controlling in network, Addressing and internet routing is demonstrated.

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EC3205.6	Demonstrated the User datagram and transport datagram, error and flow control mechanism at high layers. Determine application layer services and client server protocols working with the client server paradigms.

Course Name: **Microprocessor and Microcontrollers - Lab**	
Course Code: **EC3206**	
EC3204.1	The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers
EC3204.2	Explain 80x86/80x51instruction set and gain the knowledge how assembly language works
EC3204.3	The student will learn hardware and software interaction and integration.
EC3204.4	To apply the concepts in the design of microprocessor/microcontroller based systems in real time applications
EC3204.5	Make use of standard test and measurement equipment to evaluate digital interfaces.
EC3204.6	To understand the KEIL MDK software

Course Name: **VLSI Design Lab**	
Course Code: **EC3207**	
EC3204.1	Understand the physical design process of Digital Integrated Circuits.
EC3204.2	Describe procedure for designing of programmable circuits.
EC3204.3	Demonstrate the ability to use various EDA tools for digital system design
EC3204.4	Demonstrate the ability to use various Mentor Graphics Software for digital system design
EC3204.5	Implement various combinational and sequential circuits using VHDL on FPGA.
EC3204.6	Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Course Name: Digital Signal Processing Lab	
Course Code: EC3208	
EC3208.1	Carryout basic signal processing operations
EC3208.2	Design and Implement the FIR and IIR Filters using MATLAB
EC3208.3	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
EC3208.4	Analyze the architecture of a DSP Processor
EC3208.5	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
EC3208.6	Design a DSP system for various applications of DSP

Course Name: **ARM based/ Aurdino based Programming**	

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Course Code: **EC3209**	
EC3209.1	Comprehend Microcontroller-Sensors Interface techniques
EC3209.2	Comprehend Microcontroller-Transducers Interface techniques
EC3209.3	Establish Serial Communication link with Arduino
EC3209.4	Analyze basics of SPI interface
EC3209.5	Interface Stepper Motor with Arduino
EC3209.6	Analyze Accelerometer interface techniques

Course Name: **Research Methodology**	
Course Code: **EC3210**	
EC3210.1	Explain key research concepts and issues
EC3210.2	Read, comprehend, and explain research articles in their academic discipline
EC3210.3	Fundamentals of Research Methodology.
EC3210.4	Quantitative methods
EC3210.5	Decision making on research topics.
EC3210.6	Identifying sources of research problems

Year/Sem: IV B.Tech I SEM

Course Name: **Digital Image and Video Processing**	
Course Code **EC4103**	
EC4103.1	Know the fundamentals of a digital image processing; representation of digital images in transform domain; and various mathematical transforms necessary for image processing.
EC4103.2	Learn and implement various Intensity transformations and spatial filtering methods in image enhancement and image restoration process.
EC4103.3	To know Image Restoration and Reconstruction process by using different mathematical approaches.
EC4103.4	To understand compressing images by using different mathematical approaches.
EC4103.5	To know image segmentation by the detection of point, line and edges in images, edge linking through local/global processing.
EC4103.6	To know Image Restoration process by using different mathematical approaches.

Course Name: **Embedded Systems**	
Course Code: **EC4105**	
EC4105.1	Understand the design process of an embedded system
EC4105.2	Understand typical embedded System & its components
EC4105.3	Understand embedded firmware design approaches
EC4105.4	Learn the basics of OS and RTOS
EC4105.5	Analyze various protocols of Web communication & Message communication for connected devices and Web connectivity for connected-devices
EC4105.6	Analyze various protocols of Web communication & Message communication for connected devices

Course Name: **Smart Sensors**	
Course Code: **EC4104**	
EC4104.1	understand the selection criterions of various sensors for industrial applications
EC4104.2.	Apply the complete understanding of various sensors in development of interfaces for various applications
EC4104.3	Understand Smart sensor architecture and its use in real word applications
EC4104.4	Demonstrate the understanding of miniaturized design of sensors in form of MEMS and NEMS
EC4105.5	Describe the network architectures and communication protocols for sensor networks
EC4105.6	Demonstrate the understanding of miniaturized design of sensors in form of MEMS

Course Name: **Microwave & Optical Communication Engineering**	
Course Code: **EC4101**	
EC4101.1	Understand the significance of microwaves and microwave transmission lines
EC4101.2	Analyze the characteristics of microwave tubes and compare them
EC4101.3	Be able to list and explain the various microwave solid state devices
EC4101.4	Can set up a microwave bench for measuring microwave parameters
EC4101.5	Verify frequency range of Radar
EC4101.6	Analyze the characteristics of microwave tubes

Course Name:	**Data Communications & Computer Networks**
Course Code: **EC4102**	**Course Outcomes**
EC4102.1	Know the Categories and functions of various Data communication Networks
EC4102.2	Design and analyze various error detection techniques.

EC4102.3	Know the Functioning of various Network layer Protocols
EC4102.4	Demonstrate the mechanism of routing the data in network layer
EC4102.5	Know the significance of various Flow control and Congestion control Mechanisms
EC4102.6	Know about the various Network layer Protocols

Course Name: **Internet Of Things Lab**	
Course Code: **EC4106**	
EC4106.1	Interface various input and output devices with Raspberry pi.
EC4106.2	Design the minimum system for sensor-based application.
EC4106.3	Solve the problems related to the primitive needs using IoT.
EC4106.4	Develop full-fledged IoT application for distributed environment.
EC4106.5	Devolop and Design sensor based application
EC4106.6	Solve the problems

Course Name: **Project Part-I**	
Course Code: **EC4108**	
EC4108.1	Work on proposed engineering solution as per industry need
EC4108.2	Customize various tools and techniques needed for project development.
EC4108.3	Understand significance of safe and ethical practices during project.

Course Name: **Microwave & Optical Communications Lab**	
Course Code: **EC4107**	
EC4107.1	Able to handle microwave equipment
EC4107.2	Able to understand microwave measurements
EC4107.3	Able to understand Wave guide and antenna measurements
EC4107.4	Able to understand Wave guide and klystron measurements
EC4107.5	Able to understand Wave guide and measurements
EC4107.6	Able to understand klystron measurements

Year/Sem: IV B.Tech II SEM

Course Name: **Project Part-II**	
Course Code: **EC4201**	
EC4201.1	Work on proposed engineering solution as per industry need

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EC4201.2	Customize various tools and techniques needed for project development.
EC4201.3	Understand significance of safe and ethical practices during project.
EC4201.4	Work in a team with healthy working environment
EC4201.5	Develop skill to present project related activities effectively to peers and mentors.
EC4201.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **CS&CG**	
Course Code: **EC4202**	
EC4202.1	Students will be able to describe the fundamental algorithms used in computer graphics and to some extent be able to compare and evaluate them
EC4202.2	Students will be able to work and interact, through hands-on experiences, to design, develop, and modify electronically generated imaginary using a wide range of sophisticated graphical tools and techniques.
EC4202.3	Students will be able to summarize different hidden surface elimination algorithms and shading techniques used in computer graphics and digital media production.
EC4202.4	Students will be able to explain about the technology necessary for creating multimedia content for the web, video, DVD, 2D and 3D graphics, Sound and programming
EC4202.5	Students can apply the knowledge, techniques, skills and modern tools to become successful professionals in communication and media industries
EC4202.6	Students will be able to explain about the technology necessary for creating multimedia content for the web, video, DVD, 2D and 3D graphics

Course Name: **Wireless Communication**	
Course Code: **EC4201**	
EC4201.1	Describe the principles of wireless communications networking and cellular system design concepts
EC4201.2	Distinguish various multiple access schemes used in wireless communications
EC4201.3	Explain wireless wide area network and their performance analysis
EC4201.4	Define equalizer and classify the various diversity techniques
EC4201.5	Compare existing and emerging wireless standards
EC4201.6	Explain wireless wide area network

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Department of Electronics and Communication Engineering
Course Outcomes
Regulation R20/19/16

Year/Sem: II B.Tech I SEM

Course Name: **Electronic Devices and Circuits**	
Course Code: **EC2101**	
EC2101.1	Apply the basic concepts of semiconductor physics.
EC2101.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EC2101.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons
EC2101.4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
EC2101.5	Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
EC2101.6	Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations

Course Name: **Switching Theory and Logic Design**	
Course Code: **EC2102**	
EC2102.1	Classify different number systems and apply to generate various codes
EC2102.2	Use the concept of Boolean algebra in minimization of switching functions
EC2102.3	Design different types of combinational logic circuits.
EC2102.4	Apply knowledge of flip-flops in designing of Registers and counters
EC2102.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
EC2102.6	Produce innovative designs by modifying the traditional design techniques.

Course Name: **Signals and Systems**	
Course Code: **EC2103**	
EC2103.1	Differentiate the classification of signals as well as systems operations on signals and signal approximation.
EC2103.2	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals using Fourier series
EC2103.3	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals Using Fourier transform.
EC2103.4	Able to learn sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
EC2103.5	Define and evaluate the concept of convolution and filters such as LPF,HPF,BPF ,correlation functions.
EC2103.6	Apply laplace-transform to analyze continuous--time signals and systems and z-

	transform to analyze discrete-time signals and systems.

Course Name: **Mathematics-III (Transforms and Vector Calculus)**	
Course Code: **EC2104**	
R2021011.1	State and prove vector Line, Surface and volume integral Theorems.State and prove Stokes and Green's theorems.
R2021011.2	Derive Laplace transform standard functions. Deduce inverse Laplace transform functions.
R2021011.3	Explain about Periodic functions , even and odd functions.Explain about Half range sine and cosine series. Explain Fourier transforms.State and prove Fourier integral theorem and problems.
R2021011.4	Explain Fourier Transforms. State and prove Fourier integral theorem and problems.
R2021011.5	Explain By eliminating Orbitary constants and Orbitary functions. Derive Legrangies equation and problems.
R2021011.6	Derive solutions of linear P.D.E with constant coefficientsand problems. Explain method of separation of variables and wave & heat equations.

Course Name: **Random Variables and Stochastic Processes**	
Course Code: **EC2105**	
EC2105.1	Able to Identify random variables and Define and manipulate distribution and densityfunctions.
EC2105.2	Able to Compute various operations like expectations, variances, etc. from probability density functions and probability distribution functions.
EC2105.3	Able to Characterize probability density and distribution function for multiple random variables
EC2105.4	Able to perform operations on Multiple random variables
EC2105.5	Explain the concept of random process, differentiate between stochastic and ergodic processes
EC2105.6	Illustrate the concept of random processes and determine covariance and spectral density of stationary random processes, Analyze the LTI systems with random inputs and understand the concept of noise

Course Name: **OOPS through Java Lab**	
Course Code: **EC2106**	
EC2106.1	Identify classes, objects, members of a class and the relationship among them needed for as pacific problem
EC2106.2	Implement programs to distinguish different forms of inheritance
EC2106.3	Create packages and to reuse them
EC2106.4	Develop programs using Exception Handling mechanism
EC2106.5	Develop multithreaded application using synchronization concept
EC2106.6	Design GUI based applications using Swings and AWT.

Course Name: **Electronic Devices and Circuits Lab**	
Course Code: **EC2107**	

EC2107.1	Ability to analyze PN junctions in semiconductor devices under various conditions.
EC2107.2	Ability to analyzeZener in semiconductor devices under various conditions.
EC2107.3	Ability to design and analyze simple rectifiers and voltage regulators using diodes
EC2107.4	Ability to design and analyze simple BJT and FET circuits.
EC2107.5	Know the CRO and CRO uses
EC2107.6	Ability to design and amplify the BJT and FET

Course Name: Switching Theory and Logic Design–Lab	
Course Code: **EC2108**	
EC2108.1	Test the operation of different logic gates using relevant IC's.
EC2108.2	Examine the operation of different combinational logic circuits.
EC2108.3	Apply the concept of Boolean algebra or k-maps to reduce and Construct logic circuit for given function
EC2108.4	Analyse the Truth tables of different Flip-Flops.
EC2108.5	Design of registers using sequential logic circuits.
EC2108.6	Design of Synchronous and Asynchronous counters using Flip-Flops

Course Name:Python Programming	
Course Code: **EC2109**	
EC2109.1	Know comprehensions in python
EC2109.2	Know generators in python
EC2109.3	Know exception handling in python
EC2109.4	Know file Input/output
EC2109.5	Understand various data types like lists, tuples, strings etc
EC2109.6	Know the usage of various pre-defined functions on the above data types

Year/Sem: II B.Tech II SEM

Course Name: Electronic Circuit Analysis	
Course Code: **EC2201**	
EC2201.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
EC2201.2	Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT.
EC2201.3	Know the feedback amplifiers and feedback amplifier topologies
EC2201.4	Derive the expressions for feedback amplifiers Gain and impedance of input and output
EC2201.5	Derive the expressions for frequency ofoscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stabilityconcept.
EC2201.6	Know the classification of the power and tuned amplifiers and their analysis with performance comparison.

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Course Name: Digital IC Design	
Course Code: **EC2202**	
EC2202.1	Introduction of digital logic families and inter facing concepts for digital design is considered.
EC2202.2	VHDL fundamentals were discussed to modelling the digital system design blocks.
EC2202.3	Design and implementation of combinational and sequential digital logic circuits is explained.
EC2202.4	Model complex digital systems at several levels of abstractions, behavioural, structural, simulation, synthesis and rapid system prototyping.
EC2202.5	Analyze basic digital circuits with combinatorial circuits using VHDL.
EC2202.6	Analyze sequential logic circuits using VHDL Evaluate the basic design steps for Synchronous and Asynchronous Sequential Circuits.

Course Name: Analog Communications	
Course Code: **EC2203**	
EC2203.1	Understand modulation and demodulation Techniques of Amplitude modulation.
EC2203.2	Applying modulation and demodulation Techniques to DSB & SS
EC2203.3	Learn the basic concepts of Frequency modulation and also modulation and demodulation Techniques.
EC2203.4	Able to explain the principles of Radio Transmitters and Receivers.
EC2203.5	Analyse the Noise performance of AM, DSB, SSB and FM and Understand the generation and demodulation of pulse analog modulation techniques.
EC2203.6	Analyse Understand the generation and demodulation of pulse analog modulation techniques.

Course Name: Linear control Systems	
Course Code: **EC2204**	
EC2204.1	Explain the concepts of feedback and its advantages to various control systems
EC2204.2	Analyze the performance metrics to design the control system in time-domain
EC2204.3	Find the stability analysis for control systems
EC2204.4	Draw the root locus for control systems
EC2204.5	Analyze the performance metrics to design the control system in frequency-domain
EC2204.6	Analyze the state space approach for the analysis of control systems

Course Name: Management and Organizational Behaviour

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Course Code: **EC2205**	
EC2205.1	After completion of the Course the student will acquire the knowledge on management, Functions, global leadership and organizational structure.
EC2205.2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments
EC2205.3	The learner is able to think in strategically through contemporary management practices.
EC2205.4	The learner may also know about the contemporary practices in concept
EC2205.5	The learner can develop positive attitude through personality development and can equip with motivational theories.
EC2205.6	The student can attain the group performance and grievance handling in managing the organizational culture.

Course Name: **Electronic Circuit Analysis Lab**	
Course Code: **EC2206**	
EC2204.1	Determination of fT for transistor
EC2204.2	Design different types of Amplifier and Oscillator circuits
EC2204.3	Simulate different types of Amplifier and Oscillator circuits using software tool
EC2204.4	Test different types of Amplifiers and Oscillator circuits using hardware.
EC2204.5	Design the power amplifiers using software and hard ware to
EC2204.6	Design the Tuned amplifiers to find the factor using software and hard ware to

Course Name: **Analog Communications Lab**	
Course Code: **EC2207**	
EC2207.1	Analyze the concepts, write and simulate the concepts of AM and AM Demodulation process in Communication.
EC2207.2	Know the origin and simulation of FM and FM-Demodulation process in communication
EC2207.3	Acquaint with AM and FM basic functionalities
EC2207.4	Discriminate the AM and FM functionalities
EC2207.5	Interpret with various angle modulation and demodulation systems
EC2207.6	Create the writing and simulation environments in PWM, PPM, Mixer and ring modulation

Course Name: **Digital IC Design Lab**	
Course Code: **EC2208**	
EC2208.1	Demonstrate a clear Understanding in hardware design language VHDL.
EC2208.2	Verify the logic behaviour of IC gates
EC2208.3	Model a Combinational circuit using VHDL and validate its functionality.
EC2208.4	Model a Sequential circuit using VHDL and validate its functionality
EC2208.5	Model a SHIFT REGISTERS using VHDL and validate its functionality
EC2208.6	Model MAC & ALU using VHDL and validate its functionality

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Course Name:Soft Skills	
Course Code: **EC2209**	
EC2209.1	Use language fluently, accurately and appropriately in debates and group discussions
EC2209.2	Exhibit interview skills and develop soft skills
EC2209.3	Understand how to making meeting effective, Negotiation skills
EC2209.4	Use their skills of listening comprehension to communicate effectively in cross-cultural contexts
EC2209.5	Learn and use new vocabulary
EC2209.6	Write resumes, project reports and reviews.

Course Name: Constitution of India	
Course Code: **EC2210**	
EC2210.1	Understand historical background of the constitution making and its importance for building a democratic India.
EC2210.2	Understamd the function of Union Government and its Administration Secretariat, LokSabha, RajyaSabha,
EC2210.3	The Supreme Court and High Court: Powers and Functions;
EC2210.4	Understand the structure of state government & Central Government
EC2210.5	Analyze the decentralization of power between central, state and local self-government
EC2210.6	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.

Year/Sem: III B.Tech I SEM

Course Name: Linear IC Applications	
Course Code **EC3101**	
EC3101.1	Describe the characteristics of operational amplifiers.
EC3101.2	Design the various linear and non-linear applications of op-amp.

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EC3101.3	Design the Active filters using Operational Amplifier
EC3101.4	Describe the Op-Amp and internal Circuitry: 555 Timer, PLL
EC3101.5	Design the OP-Amp Regulator Circuits
EC3101.6	Design the Linear Applications of Op-Amp

Course Name: Digital Communications	
Course Code: **EC3103**	
EC3103.1	Define and Determine the performance of pulse digital modulation techniques such as PCM,DPCM,DM,ADM.
EC3103.2	Elaborate the principles of digital modulation techniques like ASK, FSK, PSK, DPSK, and QPSK.
EC3103.3	Determine the probability of error for digital modulation schemes such as FSK,ASK, BPSK
EC3103.4	Determine the probability of error for digital modulation schemes such as BPSK, BFSK, and QPSK.
EC3103.5	Understand the concept of digital information over the channel, Analyze different source coding techniques Shanon-Fano coding, Huffman coding etc.
EC3103.6	Able to Compute and analyze different error control coding schemes along with different domain approaches.

Course Name: **Electronic Measurements and Instrumentation**	
Course Code: **EC3105**	
EC3105.1	Select the instrument to be used based on the requirements.
EC3105.2	Understand and analyze different signal generators and analyzers.
EC3105.3	Understand the design of oscilloscopes for different applications
EC3105.4	Understand the design of Digital oscilloscopes for different applications
EC3105.5	Design and derive the different bridges
EC3105.6	Design different transducers for measurement of different parameters

Course Name: **Linear IC and Applications LAB**	
Course Code: **EC3106**	
EC3106.1	Design and analyse the various linear application of op-amp
EC3106.2	Design and analyse the various non-linear application of op-amp
EC3106.3	Design and analyse filter circuits using op-amp
EC3106.4	Design and analyse oscillators and multivibrator circuits using op-amp
EC3106.5	Design and analyse the various application of 555 timer
EC3106.6	Analyse the performance of oscillators and multivibrators using PSPICE.

Course Name: **Digital Communications Lab**	
Course Code: **EC3107**	
EC3107.1	Able to understand basic theories of Digital communication system in practical.
EC3107.2	Able to design and implement different modulation and demodulation techniques.
EC3107.3	Able to analyze digital modulation techniques
EC3107.4	Able to identify and describe different techniques in modern digital communications, in particular in source coding
EC3107.5	Able to perform channel coding.
EC3107.6	Able to detect and correct errors using LBC,Binary Cyclic codes & detect dual bit errors in Convolution codes

Course Name: **Digital System Design Using HDL**	
Course Code: **EC3105**	
EC3105.1	Interpret the importance of EDA tools and its flow for VLSI designs
EC3105.2	Model logic gates ,half adder, full adder ,various digital blocks by using modern tools with HDL
EC3105.3	Construct verilog HDL models for combinational and sequential circuits using gate level, behavioural level and dataflow level
EC3105.4	Build CMOS circuits using Verilog switch level programming
EC3105.5	Apply design rule checks and timing parameters to digital circuits and model the state machines
EC3105.6	Construct verilog HDL models for combinational circuits using gate level, behavioural level and dataflow level

Course Name: **Mini Project**	
Course Code: **EC3109**	
EC3109.1	Work on proposed engineering solution as per industry need
EC3109.2	Customize various tools and techniques needed for project development.
EC3109.3	Understand significance of safe and ethical practices during project.
EC3109.4	Work in a team with healthy working environment

Course Name: **Microprocessor and Microcontrollers**	
Course Code: **EC3102**	
EC3102.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors
EC3102.2	To be able to understand the addressing modes of microprocessors
EC3102.3	To be able to understand the micro controller capability
EC3102.4	To be able to program MP&MC
EC3102.5	To be able to interface MP & MC with other electronic devices
EC3102.6	To be able to understand the micro controller working

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Course Name: **Microprocessor and Microcontrollers - Lab**	
Course Code: **EC3108**	
EC3108.1	The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers
EC3108.2	Explain 80x86/80x51instruction set and gain the knowledge how assembly language works
EC3108.3	The student will learn hardware and software interaction and integration.
EC3108.4	To apply the concepts in the design of microprocessor/microcontroller based systems in real time applications
EC3108.5	Make use of standard test and measurement equipment to evaluate digital interfaces.
EC3108.6	To apply the concepts in the design of microprocessor based systems in real time applications

Year/Sem: III B.Tech II SEM

Course Name: **VLSI Design**	
Course Code: **EC3202**	
C3204.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
C3204.2	Apply the design Rules and draw layout of a given logic circuit
C3204.3	Design MOSFET based logic circuit. Design basic building blocks in Analog IC design.
C3204.4	Analyze the behaviour of amplifier circuits with various loads
C3204.5	Design various CMOS logic circuits for design of Combinational logic circuits.
C3204.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS

Course Name: **Digital Signal Processing**	
Course Code: **EC3203**	
EC3203.1	Apply the difference equations concept in the analyzation of Discrete time systems
EC3203.2	Able to apply the FFT algorithm for solving the DFT of a given signal
EC3203.3	Student can able to design a Digital filter (IIR) from the given specifications and Realize the IIR Structures.

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EC3203.4	Design a Digital filter (FIR) from the given specifications and Realize the FIR Structures.
EC3203.5	Use the Multiple Processing concepts in various applications Such as Design of phase shifters, Interfacing of digital systems.
EC3203.6	Able to learn the architecture of DSP Processor and addressing modes.

Course Name: **Cellular and Mobile Communication**	
Course Code: **EC3204**	
EC3204.1	Introduction to Cellular Mobile System, Cellular Concepts
EC3204.2	Types of interferences, Co-channel Interference Reduction Factor, non-co-channel interference-different types.
EC3204.3	Frequency management And Channel Assignment, Numbering and grouping
EC3204.4	Cell Coverage For Signal , phase difference between direct and reflected paths
EC3204.5	TRAFFIC Concept of Handof, types of handoff, soft and hard hand offs,
EC3204.6	Digital Cellular Networks, GSM architecture, TDMA, CDMA, OFDMA

Course Name: **Data Mining**	
Course Code: **EC3205**	
EC3205.1	Design a data warehouse system
EC3205.2	Perform Design Analysis with OLAP Tools
EC3205.3	Apply Suitable Pre-Processing and visualization Techniques for data analysis
EC3205.4	Apply Frequent Pattern and association rule mining techniques for data analysis
EC3205.6	Apply Suitable Pre-Processing and visualization Techniques for analysis
Course Name: **VLSI Lab**	
Course Code: **EC3207**	
EC3204.1	Understand the physical design process of Digital Integrated Circuits.
EC3204.2	Describe procedure for designing of programmable circuits.
EC3204.3	Demonstrate the ability to use various EDA tools for digital system design
EC3204.4	Demonstrate the ability to use various Mentor Graphics Software for digital system design
EC3204.5	Implement various combinational and sequential circuits using VHDL on FPGA.
EC3204.6	Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Course Name: Digital Signal Processing Lab	
Course Code: EC3208	
EC3208.1	Carryout basic signal processing operations
EC3208.2	Design and Implement the FIR and IIR Filters using MATLAB
EC3208.3	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
EC3208.4	Analyze the architecture of a DSP Processor
EC3208.5	Design and Implement the FIR and IIR Filters in DSP Processor for

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	performing filtering operation over real-time signals
EC3208.6	Design a DSP system for various applications of DSP

Course Name: **Internet of Things**	
Course Code: **EC3206**	
EC3206.1	Explain in a concise manner how the general Internet as well as Internet of Things work
EC3206.2	Understand constraints and opportunities of wireless and mobile networks for Internet of Things.
EC3206.3	Use basic sensing and measurement and tools to determine the real-time performance of network of devices.
EC3206.4	Apply knowledge of security aspects for data acquiring, and authentication.
EC3206.5	Develop prototype models for various applications using IoT technology.
EC3206.6	Use basic sensing and measurement and tools

Course Name: **Wired and Wireless Trasmission Devices**	
Course Code: **EC3201**	
EC3201.1	Describe the principles of wireless communications networking and cellular system design concepts
EC3201.2	Distinguish various multiple access schemes used in wireless communications
EC3201.3	Explain wireless wide area network and their performance analysis
EC3201.4	Define equalizer and classify the various diversity techniques
EC3201.5	Compare existing and emerging wireless standards
EC3201.6	Explain wireless wide area network

Year/Sem: IV B.Tech I SEM

Course Name: **Digital Image Processing**	
Course Code **EC4102**	
EC4102.1	Know the fundamentals of a digital image processing; representation of digital images in transform domain; and various mathematical transforms necessary for image processing.
EC4102.2	Learn and implement various Intensity transformations and spatial filtering methods in image enhancement and image restoration process.
EC4102.3	To know Image Restoration and Reconstruction process by using different mathematical approaches.

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EC4102.4	To understand compressing images by using different mathematical approaches.
EC4102.5	To know image segmentation by the detection of point, line and edges in images, edge linking through local/global processing.
EC4102.6	To Analyze pseudo and full color image processing techniques

Course Name: **Embedded Systems**	
Course Code: **EC4106**	
EC4106.1	Understand the design process of an embedded system
EC4106.2	Understand typical embedded System & its components
EC4106.3	Understand embedded firmware design approaches
EC4106.4	Learn the basics of OS and RTOS
EC4106.5	Learn the basics of hardware design
EC4106.6	Learn the basics of software design

Course Name: **Radar Systems**	
Course Code: **EC4101**	
EC4101.1	Demonstrate and understanding of the factors affecting the radar performance using Radar Range Equation
EC4101.2	Analyze the principle of FM-CW radar and apply it in FM- CW Altimeter
EC4101.3	Distinguish between a MTI Radar and a Pulse Doppler Radar based on their Working principle.
EC4101.4	List the different methods used for tracking targets.
EC4101.5	Demonstrate an understanding of the importance of Matched Filter Receivers in Radars
EC4101.6	List different types of Radar Receivers and their application in real time scenario

Course Name: **TV Engineering**	
Course Code: **EC4105**	
EC4105.1	Compare Digital TV transmission standards and performance parameters
EC4105.2	Analyse channel coding, errors, interferences and modulation techniques for Digital TV
EC4105.3	Make use of RF amplifiers
EC4105.4	Identify Transmission lines for Digital TV
EC4105.5	Test for a Digital TV Transmitter
EC4105.6	modules and systems for Digital TV

Course Name: **Microwave Engineering & Optical Lab**	
Course Code: **EC4107**	
EC4107.1	Understand the significance of microwaves and microwave transmission lines

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EC4107.2	Analyze the characteristics of microwave tubes and compare them
EC4107.3	Be able to list and explain the various microwave solid state devices
EC4107.4	Can set up a microwave bench for measuring microwave parameters
EC4107.5	Verify frequency range of Radar
EC4107.6	Verify Virtual Height of Light

Course Name: **Computer Networks**	
Course Code: **EC4103**	
EC4103.1	Apply the concepts of Computer Networks and Networks Models for Data Communication.
EC4103.2.	Analyze networking architecture and infrastructure for wired and wireless link
EC4103.3.	Design, calculate, and apply subnet masks and routing addresses to fulfill networking requirements
EC4103.4	Analyze issues of routing and congestion mechanism for independent and internetworking networks for wired and wireless link.
EC4103.5	Analyze internal workings of the Internet and of a number of common Internet applications
EC4103.6	Protocols (DNS, SMTP, FTP, HTTP, WWW, Security and Cryptography).

Course Name: **Optical Communications**	
Course Code: **EC4104**	
EC4104.1	Illustrate the structure and fabrication methods of Optical fibers
EC4104.2	Analyze the channel impairments: losses and dispersion
EC4104.3	Analyze the Optical sources (LED and LASER) and detectors (PIN and Avalanche Photo diode).
EC4104.4	Apply design considerations to analog and digital fiber optic systems
EC4104.5	Analyze the components of fiber optic networks: Couplers, multiplexers, switches and filters.
EC4104.6	Couplers, multiplexers, switches and filters.

Course Name: Digital Signal Processing Lab	
Course Code: EC4108	
EC4108.1	Carryout basic signal processing operations
EC4108.2	Design and Implement the FIR and IIR Filters using MATLAB
EC4108.3	Demonstrate their abilities towards MATLAB based implementation of various DSP systems

EC4108.4	Analyze the architecture of a DSP Processor
EC4108.5	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
EC4108.6	Design a DSP system for various applications of DSP

Year/Sem: IV B.Tech II SEM

Course Name: **Wireless Sensors and Networks**	
Course Code: **EC4204**	
EC4204.1	Adapt the basic concepts of wireless sensor networks, sensing, computing and communication tasks
EC4204.2	Explain the architectures, features, and performance for wireless sensor network systems and platforms
EC4204.3	Describe and explain radio standards and communication protocols adopted in wireless sensor networks
EC4204.4	Illustrate allocation of addresses and management
EC4204.5	Able to apply appropriate algorithms to improve existing or to develop new wireless sensor network applications
EC4204.6	Use of names in wireless sensor networks

Course Name: **Project**	
Course Code: **EC4206**	
EC4206.1	Work on proposed engineering solution as per industry need
EC4206.2	Customize various tools and techniques needed for project development.
EC4206.3	Understand significance of safe and ethical practices during project.
EC4206.4	Work in a team with healthy working environment
EC4206.5	Develop skill to present project related activities effectively to peers and mentors.
EC4206.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Seminar**	
Course Code: **EC4205**	
EC4205.1	Work on proposed engineering solution as per industry need
EC4205.2	Customize various tools and techniques needed for project development.

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EC4205.3	Understand significance of safe and ethical practices during project.
EC4205.4	Work in a team with healthy working environment
EC4205.5	Develop skill to present project related activities effectively to peers and mentors.
EC4205.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Satellite Communications**	
Course Code: **EC4203**	
EC4203.1	Work on proposed engineering solution as per industry need
EC4203.2	Customize various tools and techniques needed for project development.
EC4203.3	Understand significance of safe and ethical practices during project.
EC4203.4	Work in a team with healthy working environment
EC4203.5	Develop skill to present project related activities effectively to peers and mentors.
EC4203.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Cellular and Mobile Communications**	
Course Code: **EC4201**	
EC4201.1	Introduction to Cellular Mobile System, Cellular Concepts
EC4201.2	Types of interferences, Co-channel Interference Reduction Factor, non-co-channel interference-different types.
EC4201.3	Frequency management And Channel Assignment, Numbering and grouping
EC4201.4	Cell Coverage For Signal , phase difference between direct and reflected paths
EC4201.5	TRAFFIC Concept of Handof, types of handoff, soft and hard hand offs,
EC4201.6	Digital Cellular Networks, GSM architecture, TDMA, CDMA, OFDMA

Course Name: **Electronic Measurements and Instrumentation**	
Course Code: **EC4202**	
EC4202.1	Select the instrument to be used based on the requirements.
EC4202.2	Understand and analyze different signal generators and analyzers.
EC4202.3	Understand the design of oscilloscopes for different applications
EC4202.4	Understand the design of Digital oscilloscopes for different applications
EC4202.5	Design and derive the different bridges
EC4202.6	Design different transducers for measurement of different parameters

Department of Electronics and Communication Engineering

Course Outcomes

Regulation R19/16

Year/Sem: II B.Tech I SEM

Course Name: **Electronic Devices and Circuits**	
Course Code: **EC2101**	
EC2101.1	Apply the basic concepts of semiconductor physics.
EC2101.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EC2101.3	Know the construction, working principle of rectifiers with Filters
EC2101.4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
EC2101.5	Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
EC2101.6	Without filters with relevant expressions and necessary comparisons

Course Name: **Switching Theory and Logic Design**	
Course Code: **EC2102**	
EC2102.1	Classify different number systems and apply to generate various codes
EC2102.2	Use the concept of Boolean algebra in minimization of switching functions
EC2102.3	Design different types of combinational logic circuits.
EC2102.4	Apply knowledge of flip-flops in designing of Registers and counters
EC2102.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
EC2102.6	Design different types of Sequential logic circuits.

Course Name: **Signals and Systems**	
Course Code: **EC2103**	
EC2103.1	Differentiate the classification of signals as well as systems operations on signals and signal approximation.
EC2103.2	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals using Fourier series
EC2103.3	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals Using Fourier transform.
EC2103.4	Able to learn sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
EC2103.5	Define and evaluate the concept of convolution and filters such as LPF, HPF,BPF ,correlation functions.
EC2103.6	Analyse the spectral characteristics of continuous-time periodic Signals only

Course Name: MEFA	
Course Code: EC2106	
EC2106.1	To adopt the Managerial Economic concepts for decision making and forward planning. Also know law of demand and its exceptions, to use different forecasting

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	methods for predicting demand for various products and services.
EC2106.2	To assess the functional relationship between Production and factors of production and list out various costs associated with production and able to compute breakeven point to illustrate the various uses of breakeven analysis.
EC2106.3	To outline the different types of business organizations and provide a framework for analyzing money in its functions as a medium of exchange.
EC2106.4	To adopt the principles of accounting to record, classify and summarize various transactions in books of accounts for preparation of final accounts
EC2106.5	To implement various techniques for assessing the financial position of the business.
EC2106.6	To outline the different types of business organizations and provide a framework

Course Name: **Random Variables and Stochastic Processes**	
Course Code: **EC2104**	
EC2104.1	Able to Identify random variables and Define and manipulate distribution and densityfunctions.
EC2104.2	Able to Compute various operations like expectations, variances, etc. from probability density functions and probability distribution functions.
EC2104.3	Able to Characterize probability density and distribution function for multiple random variables
EC2104.4	Able to perform operations on Multiple random variables
EC2104.5	Explain the concept of random process, differentiate between stochastic and ergodic processes
EC2104.6	Able to Characterize probability density and distribution function

Course Name: OOPS through Java	
Course Code: **EC2105**	
EC2105.1	Identify classes, objects, members of a class and the relationship among them needed for as pacific problem
EC2105.2	Implement programs to distinguish different forms of inheritance
EC2105.3	Create packages and to reuse them
EC2105.4	Develop programs using Exception Handling mechanism
EC2105.5	Develop multithreaded application using synchronization concept
EC2105.6	Identify members of a class and the relationship among them

Course Name: Electronic Devices and Circuits Lab	
Course Code: **EC2107**	
EC2107.1	Ability to analyze PN junctions in semiconductor devices under various conditions.
EC2107.2	Ability to analyzeZener in semiconductor devices under various conditions.
EC2107.3	Ability to design and analyze simple rectifiers and voltage regulators using diodes
EC2107.4	Ability to design and analyze simple BJT and FET circuits.
EC2107.5	Know the CRO and CRO uses

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EC2107.6	Ability to design and amplify the BJT and FET

Course Name: Switching Theory and Logic Design–Lab	
Course Code: **EC2108**	
EC2108.1	Test the operation of different logic gates using relevant IC's.
EC2108.2	Examine the operation of different combinational logic circuits.
EC2108.3	Apply the concept of Boolean algebra or k-maps to reduce and Construct logic circuit for given function
EC2108.4	Analyse the Truth tables of different Flip-Flops.
EC2108.5	Design of registers using sequential logic circuits.
EC2108.6	Design of Synchronous and Asynchronous counters using Flip-Flops

Course Name: Constitution of India	
Course Code: **EC2109**	
EC2109.1	Understand historical background of the constitution making and its importance for building a democratic India.
EC2109.2	Understand the function of Union Government and its Administration Secretariat, LokSabha, RajyaSabha,
EC2109.3	The Supreme Court and High Court: Powers and Functions;
EC2109.4	Understand the structure of state government & Central Government
EC2109.5	Analyze the decentralization of power between central, state and local self-government
EC2109.6	Union Government of its Administration Secretariat

Year/Sem: II B.Tech II SEM

Course Name: Electronic Circuit Analysis	
Course Code: **EC2201**	
EC2201.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.

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EC2201.2	Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT.
EC2201.3	Know the feedback amplifiers and feedback amplifier topologies
EC2201.4	Derive the expressions for feedback amplifiers Gain and impedance of input and output
EC2201.5	Derive the expressions for frequency ofoscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stabilityconcept.
EC2201.6	Know the classification of the power and tuned amplifiers and their analysis with performance comparison.

Course Name: Computer Architecture and Organization	
Course Code: **EC2205**	
EC2205.1	Understand the functional architecture of computing systems
EC2205.2	Identify compare and assess, issues related to bus,memory,Control and I/O functions
EC2205.3	Correlate and analyze the operations carried out in Processing Unit
EC2205.4	Design Solutions in the area of computer Architecture
EC2205.5	Design and verify memory organizations
EC2205.6	Identify compare and assess, issues related to bus, memory

Course Name: Analog Communications	
Course Code: **EC2204**	
EC2204.1	Understand modulation and demodulation Techniques of Amplitude modulation.
EC2204.2	Applying modulation and demodulation Techniques to DSB & SS
EC2204.3	Learn the basic concepts of Frequency modulation and also modulation and demodulation Techniques.
EC2204.4	Able to explain the principles of Radio Transmitters and Receivers.
EC2204.5	Analyse the Noise performance of AM, DSB, SSB and FM and Understand the generation and demodulation of pulse analog modulation techniques.
EC2204.6	Analyse Understand the generation and demodulation of pulse analog modulation techniques.

Course Name: Linear control Systems	
Course Code: **EC2202**	
EC2202.1	Explain the concepts of feedback and its advantages to various control systems
EC2202.2	Analyze the performance metrics to design the control system in time-domain
EC2202.3	Find the stability analysis for control systems
EC2202.4	Draw the root locus for control systems
EC2202.5	Analyze the performance metrics to design the control system in frequency-domain

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EC2202.6	Analyze the performance metrics to design the control system

Course Name: Management and Organizational Behaviour	
Course Code: **EC2206**	
EC2206.1	After completion of the Course the student will acquire the knowledge on management, Functions, global leadership and organizational structure.
EC2206.2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments
EC2206.3	The learner is able to think in strategically through contemporary management practices.
EC2206.4	The learner may also know about the contemporary practices in concept
EC2206.5	The learner can develop positive attitude through personality development and can equip with motivational theories.
EC2206.6	The concepts of functional management that is HRM and Marketing of new product developments

Course Name: Electronic Circuit Analysis Lab	
Course Code: **EC2207**	
EC2207.1	Determination of fT for transistor
EC2207.2	Design different types of Amplifier and Oscillator circuits
EC2207.3	Simulate different types of Amplifier and Oscillator circuits using software tool
EC2207.4	Test different types of Amplifiers and Oscillator circuits using hardware.
EC2207.5	Design the power amplifiers using software and hard ware to
EC2207.6	Simulate different types of Amplifier circuits using software tool

Course Name: Analog Communications Lab	
Course Code: **EC2208**	
EC2208.1	Analyze the concepts, write and simulate the concepts of AM and AM Demodulation process in Communication.
EC2208.2	Know the origin and simulation of FM and FM-Demodulation process in communication
EC2208.3	Acquaint with AM and FM basic functionalities
EC2208.4	Discriminate the AM and FM functionalities
EC2208.5	Interpret with various angle modulation and demodulation systems
EC2208.6	Write and simulate the concepts of AM and AM Demodulation process in Communication.

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Course Name: Electromagnetic Waves and Transmission Lines	
Course Code: **EC2203**	
EC2203.1	Acquire knowledge on various types of transmission lines, derive transmission-line equations from a circuit model in terms of primary and secondary constants
EC2203.2	Derive and Calculate the expressions for input impedance of transmission lines, reflection coefficient, VSWR etc. using smith chart
EC2203.3.	Determine E and H using various laws and applications of electric & magnetic fields
EC2203.4	Apply the Maxwell equations to analyze the time varying behaviour of EM waves
EC2203.5	Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media
EC2203.6	Derive and Calculate the expressions for input impedance of transmission lines

Year/Sem: III B.Tech I SEM

Course Name: Linear IC Applications	
Course Code	**EC3102**
EC3102.1	Describe the characteristics of operational amplifiers.
EC3102.2	Design the various linear and non-linear applications of op-amp.
EC3102.3	Design the Active filters using Operational Amplifier
EC3102.4	Describe the Op-Amp and internal Circuitry: 555 Timer, PLL
EC3102.5	Discuss the Applications of Operational amplifier: 555 Timer, PLL
EC3102.6	Use the Op-Amp in A to D & D to A Converters

Course Name: Digital Communications	
Course Code: **EC3104**	
EC3104.1	Define and Determine the performance of pulse digital modulation techniques such as PCM,DPCM,DM,ADM.
EC3104.2	Elaborate the principles of digital modulation techniques like ASK, FSK, PSK, DPSK, and QPSK.
EC3104.3	Determine the probability of error for digital modulation schemes such as FSK,ASK, BPSK

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EC3104.4	Determine the probability of error for digital modulation schemes such as BPSK, BFSK, and QPSK.
EC3104.5	Understand the concept of digital information over the channel, Analyze different source coding techniques Shanon-Fano coding, Huffman coding etc.
EC3104.6	Able to Compute and analyze different error control coding schemes along with different domain approaches.

Course Name: **Digital IC Applications**	
Course Code: **EC3103**	
EC3103.1	Find the analytic functions using C-R equations, the image using conformal mapping and bi-linear transformation
EC3103.2.	Use Cauchy's theorem, Cauchy's integral formula and Cauchy's residues theorem to evaluate complex integration and expansion of complex function using Taylor's and Laurent's series.
EC3103.3	Define Laplace and inverse Laplace transforms of various functions and solve ordinary differential equations using Laplace transform
EC3103.4	A thorough understanding of operational amplifiers with linear integrated circuits
EC3103.5	Understanding of the different families of digital integrated circuits and their characteristics
EC3103.6	Also students will be able to design circuits using operational amplifiers for various applications

Course Name: **Linear IC Applications LAB**	
Course Code: **EC3107**	
EC3107.1	Design and analyse the various linear application of op-amp
EC3107.2	Design and analyse the various non-linear application of op-amp
EC3107.3	Design and analyse filter circuits using op-amp
EC3107.4	Design and analyse oscillators and multivibrator circuits using op-amp
EC3107.5	Design and analyse the various application of 555 timer
EC3107.6	Analyse the performance of oscillators and multivibrators using PSPICE.

Course Name: Antenna and Wave Propagation	
Course Code: EC3105	
EC3105.1	Understand the radiation of electromagnetic waves by antennas.
EC3105.2	Understand the antenna operation through the solution of

	antenna design and analysis problems.
EC3105.3	Analyze basic antennas to determine their performance characteristics.
EC3105.4	Interpret the antenna performance characteristics and understand their importance in antenna engineering design.
EC3105.5	understand of the Radio wave propagation
EC3105.6	Understanding of the Transmission Lines

Course Name: Computer Architecture and Organization	
Course Code:	**EC3101**
EC3101.1	Understand the functional architecture of computing systems
EC3101.2	Identify compare and assess, issues related to bus,memory,Control and I/O functions
EC3101.3	Correlate and analyze the operations carried out in Processing Unit
EC3101.4	Design Solutions in the area of computer Architecture
EC3101.5	Design and verify memory organizations
EC3101.6	Correlate and analyze the operations carried out in Processing

Course Name: **Pulse and Digital Circuits Lab**	
Course Code: **EC3106**	
EC3106.1	will be able generate sinusoidal signals
EC3106.2	will be able generate non-sinusoidal signals
EC3106.3	will be able to understand basic logic gates
EC3106.4	will be able to understand basic logic gates and can design applications
EC3106.5	will be able to analyze various multi vibrator circuits
EC3106.6	will be able to design non sinusoidal oscillator

Course Name: **Digital IC Applications Lab**	
Course Code: **EC3108**	
EC3108.1	Design various applications using op-amp
EC3108.2	Design various applications with 555 timer IC
EC3108.3	Deign various sequential and combinational circuits using Verilog HDL.
EC3108.4	Describe Digital Logic families and their applications.
EC3108.5	Analyze various Combinational And Sequential Circuit Designs.
EC3108.6	Design various Combinational And Sequential Circuits .

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Year/Sem: III B.Tech II SEM

Course Name: **VLSI Design**	
Course Code: **EC3203**	
EC3203.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
EC3203.2	Apply the design Rules and draw layout of a given logic circuit
EC3203.3	Design MOSFET based logic circuit. Design basic building blocks in Analog IC design.
EC3203.4	Analyze the behaviour of amplifier circuits with various loads
EC3203.5	Design various CMOS logic circuits for design of Combinational logic circuits.
EC3203.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS

Course Name: **Digital Signal Processing**	
Course Code: **EC3204**	
EC3204.1	Apply the difference equations concept in the analyzation of Discrete time systems
EC3204.2	Able to apply the FFT algorithm for solving the DFT of a given signal
EC3204.3	Student can able to design a Digital filter (IIR) from the given specifications and Realize the IIR Structures.
EC3204.4	Design a Digital filter (FIR) from the given specifications and Realize the FIR Structures.
EC3204.5	Use the Multirate Processing concepts in various applications Such as Design of phase shifters, Interfacing of digital systems.
EC3204.6	Able to learn the architecture of DSP Processor and addressing modes.

Course Name: **VLSI Lab**	
Course Code: **EC3207**	
EC3207.1	Understand the physical design process of Digital Integrated Circuits.
EC3207.2	Describe procedure for designing of programmable circuits.
EC3207.3	Demonstrate the ability to use various EDA tools for digital

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	system design
EC3207.4	Demonstrate the ability to use various Mentor Graphics Software for digital system design
EC3207.5	Implement various combinational and sequential circuits using VHDL on FPGA.
EC3207.6	Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Course Name: **Digital Communications Lab**	
Course Code: **EC3208**	
EC3208.1	Able to understand basic theories of Digital communication system in practical.
EC3208.2	Able to design and implement different modulation and demodulation techniques.
EC3208.3	Able to analyze digital modulation techniques
EC3208.4	Able to identify and describe different techniques in modern digital communications, in particular in source coding
EC3208.5	Able to perform channel coding.
EC3208.6	Able to detect and correct errors using LBC,Binary Cyclic codes & detect dual bit errors in Convolution codes

Course Name: **Bio-Medical Engineering**	
Course Code: **EC3205**	
EC3205.1	Understand various methods of acquiring bio signals.
EC3205.2	Understand and analyze different biomedical electrodes and sensors used for clinical observation.
EC3205.3	Analyze ECG signal with characteristic feature points.
EC3205.4	Measure heart rate, blood pressure and respiration rate. And also understand various sources of blood flow meters.
EC3205.5	Understand bio-telemetry & instrumentation used for Clinical Laboratory.
EC3205.6	Analyze EEG signal with characteristic feature points.

Course Name: **Micro Wave Engineering**	
Course Code:	**EC3202**
EC3202.1	Explain different types of waveguides and their respective modes of propagation.
EC3202.2	Analyze typical microwave networks using impedance, admittance, transmission and scattering matrix representations.
EC3202.3	Design microwave matching networks using L section, single and double

	stub and quarter wave transformer.
EC3202.4	. Explain working of microwave passive circuits such as isolator, circulator, Directional couplers, attenuators etc.
EC3202.5	Describe and explain working of microwave tubes and solid state devices.
EC3202.6	Perform measurements on microwave devices and networks using power meter and VNA.

Course Name: **Microprocessor and Microcontrollers**	
Course Code: **EC3201**	
EC3201.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors
EC3201.2	To be able to understand the addressing modes of microprocessors
EC3201.3	To be able to understand the micro controller capability
EC3201.4	To be able to program MP&MC
EC3201.5	To be able to interface MP & MC with other electronic devices
EC3201.6	To be able to understand the ARM processor architecture

Course Name: **Microprocessor and Microcontrollers - Lab**	
Course Code: **EC3206**	
EC3206.1	The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers
EC3206.2	Explain 80x86/80x51instruction set and gain the knowledge how assembly language works
EC3206.3	The student will learn hardware and software interaction and integration.
EC3206.4	To apply the concepts in the design of microprocessor/microcontroller based systems in real time applications
EC3206.5	Make use of standard test and measurement equipment to evaluate digital interfaces.
EC3206.6	To understand the KEIL MDK software

Year/Sem: IV B.Tech I SEM

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Course Name: **Digital Image Processing**	
Course Code **EC4102**	
EC4102.1	Know the fundamentals of a digital image processing; representation of digital images in transform domain; and various mathematical transforms necessary for image processing.
EC4102.2	Learn and implement various Intensity transformations and spatial filtering methods in image enhancement and image restoration process.
EC4102.3	To know Image Restoration and Reconstruction process by using different mathematical approaches.
EC4102.4	To understand compressing images by using different mathematical approaches.
EC4102.5	To know image segmentation by the detection of point, line and edges in images, edge linking through local/global processing.
EC4101.6	To Analyze pseudo and full color image processing techniques
Course Name: **Embedded Systems**	
Course Code: **EC4106**	
EC4106.1	Understand the design process of an embedded system
EC4106.2	Understand typical embedded System & its components
EC4106.3	Understand embedded firmware design approaches
EC4106.4	Learn the basics of OS and RTOS
EC4106.5	Learn the basics of hardware design
EC4106.6	Learn the basics of software design

Course Name: **Radar Systems**	
Course Code: **EC4101**	
EC4101.1	Demonstrate and understanding of the factors affecting the radar performance using Radar Range Equation
EC4101.2	Analyze the principle of FM-CW radar and apply it in FM- CW Altimeter
EC4101.3	Distinguish between a MTI Radar and a Pulse Doppler Radar based on their Working principle.
EC4101.4	List the different methods used for tracking targets.
EC4101.5	Demonstrate an understanding of the importance of Matched Filter Receivers in Radars
EC4101.6	List different types of Radar Receivers and their application in real time scenario

Course Name: **TV Engineering**	
Course Code: **EC4105**	
EC4105.1	Compare Digital TV transmission standards and performance parameters
EC4105.2	Analyse channel coding, errors, interferences and modulation techniques for Digital TV
EC4105.3	Make use of RF amplifiers
EC4105.4	Identify Transmission lines for Digital TV
EC4105.5	Test for a Digital TV Transmitter
EC4105.6	modules and systems for Digital TV

Course Name: **Microwave Engineering & Optical Lab**	
Course Code: **EC4107**	
EC4107.1	Understand the significance of microwaves and microwave transmission lines
EC4107.2	Analyze the characteristics of microwave tubes and compare them
EC4107.3	Be able to list and explain the various microwave solid state devices
EC4107.4	Can set up a microwave bench for measuring microwave parameters
EC4107.5	Verify frequency range of Radar
EC4107.6	Verify Virtual Height of Light

Course Name: **Computer Networks**	
Course Code: **EC4103**	
EC4103.1	Apply the concepts of Computer Networks and Networks Models for Data Communication.
EC4103.2.	Analyze networking architecture and infrastructure for wired and wireless link
EC4103.3.	Design, calculate, and apply subnet masks and routing addresses to fulfill networking requirements
EC4103.4	Analyze issues of routing and congestion mechanism for independent and internetworking networks for wired and wireless link.
EC4103.5	Analyze internal workings of the Internet and of a number of common Internet applications
EC4103.6	Protocols (DNS, SMTP, FTP, HTTP, WWW, Security and Cryptography).

Course Name: **Optical Communications**	
Course Code: **EC4104**	
EC4104.1	Illustrate the structure and fabrication methods of Optical fibers
EC4104.2	Analyze the channel impairments: losses and dispersion
EC4104.3	Analyze the Optical sources (LED and LASER) and detectors (PIN and Avalanche Photo diode).
EC4104.4	Apply design considerations to analog and digital fiber optic systems
EC4104.5	Analyze the components of fiber optic networks: Couplers, multiplexers, switches and filters.
EC4104.6	Couplers, multiplexers, switches and filters.

Course Name: Digital Signal Processing Lab	
Course Code: EC3208	

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EC3208.1	Carryout basic signal processing operations
EC3208.2	Design and Implement the FIR and IIR Filters using MATLAB
EC3208.3	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
EC3208.4	Analyze the architecture of a DSP Processor
EC3208.5	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
EC3208.6	Design a DSP system for various applications of DSP

Year/Sem: IV B.Tech II SEM

Course Name: **Wireless Sensors and Networks**	
Course Code: **EC4204**	
EC4204.1	Adapt the basic concepts of wireless sensor networks, sensing, computing and communication tasks
EC4204.2	Explain the architectures, features, and performance for wireless sensor network systems and platforms
EC4204.3	Describe and explain radio standards and communication protocols adopted in wireless sensor networks
EC4204.4	Illustrate allocation of addresses and management
EC4204.5	Able to apply appropriate algorithms to improve existing or to develop new wireless sensor network applications
EC4204.6	Use of names in wireless sensor networks

Course Name: **Project**	
Course Code: **EC4201**	
EC4201.1	Work on proposed engineering solution as per industry need
EC4201.2	Customize various tools and techniques needed for project development.
EC4201.3	Understand significance of safe and ethical practices during project.
EC4201.4	Work in a team with healthy working environment
EC4201.5	Develop skill to present project related activities effectively to peers and mentors.
EC4201.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

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Course Name: **Seminar**	
Course Code: **EC4201**	
EC4201.1	Work on proposed engineering solution as per industry need
EC4201.2	Customize various tools and techniques needed for project development.
EC4201.3	Understand significance of safe and ethical practices during project.
EC4201.4	Work in a team with healthy working environment
EC4201.5	Develop skill to present project related activities effectively to peers and mentors.
EC4201.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Satellite Communications**	
Course Code: **EC4201**	
EC4201.1	Work on proposed engineering solution as per industry need
EC4201.2	Customize various tools and techniques needed for project development.
EC4201.3	Understand significance of safe and ethical practices during project.
EC4201.4	Work in a team with healthy working environment
EC4201.5	Develop skill to present project related activities effectively to peers and mentors.
EC4201.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Cellular and Mobile Communication**	
Course Code: **EC3204**	
EC3204.1	Introduction to Cellular Mobile System, Cellular Concepts
EC3204.2	Types of interferences, Co-channel Interference Reduction Factor, non-co-channel interference-different types.
EC3204.3	Frequency management And Channel Assignment, Numbering and grouping
EC3204.4	Cell Coverage For Signal , phase difference between direct and reflected paths
EC3204.5	TRAFFIC Concept of Handof, types of handoff, soft and hard hand offs,
EC3204.6	Digital Cellular Networks, GSM architecture, TDMA, CDMA, OFDMA

Course Name: **Electronic Measurements and Instrumentation**	
Course Code: **EC3105**	
EC3105.1	Select the instrument to be used based on the requirements.
EC3105.2	Understand and analyze different signal generators and analyzers.
EC3105.3	Understand the design of oscilloscopes for different applications
EC3105.4	Understand the design of Digital oscilloscopes for different applications
EC3105.5	Design and derive the different bridges
EC3105.6	Design different transducers for measurement of different parameters

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Department of Electronics and Communication Engineering

Course Outcomes

Regulation R16

Year/Sem: II B.Tech I SEM

Course Name: **Electronic Devices and Circuits**	
Course Code: **EC2101**	
EC2101.1	Apply the basic concepts of semiconductor physics.
EC2101.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EC2101.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons
EC2101.4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
EC2101.5	Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
EC2101.6	Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations

Course Name: **Switching Theory and Logic Design**	
Course Code: **EC2102**	
EC2102.1	Classify different number systems and apply to generate various codes
EC2102.2	Use the concept of Boolean algebra in minimization of switching functions
EC2102.3	Design different types of combinational logic circuits.
EC2102.4	Apply knowledge of flip-flops in designing of Registers and counters
EC2102.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
EC2102.6	Produce innovative designs by modifying the traditional design techniques.

Course Name: **Signals and Systems**	
Course Code: **EC2103**	
EC2103.1	Differentiate the classification of signals as well as systems operations on signals and signal approximation.
EC2103.2	Analyse the spectral characteristics of continuous-time periodic and a periodic signals using Fourier series
EC2103.3	Analyse the spectral characteristics of continuous-time periodic and a periodic signals Using Fourier transform.
EC2103.4	Able to learn sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
EC2103.5	Define and evaluate the concept of convolution and filters such as LPF, HPF, BPF, correlation functions.
EC2103.6	Apply Laplace-transform to analyze continuous--time signals and systems and z-transform to analyze discrete-time signals and systems.

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Course Name: **Managerial Economics & Financial Analysis**	
Course Code: EC2106	
EC2106.1	To adopt the Managerial Economic concepts for decision making and forward planning. Also know law of demand and its exceptions, to use different forecasting methods for predicting demand for various products and services.
EC2106.2	To assess the functional relationship between Production and factors of production and list out various costs associated with production and able to compute breakeven point to illustrate the various uses of breakeven analysis.
EC2106.3	To outline the different types of business organizations and provide a framework for analyzing money in its functions as a medium of exchange.
EC2106.4	To adopt the principles of accounting to record, classify and summarize various transactions in books of accounts for preparation of final accounts
EC2106.5	To implement various techniques for assessing the financial position of the business.
EC2106.6	To implement various techniques for assessing the financial grades of the business.

Course Name: **Random Variables and Stochastic Processes**	
Course Code: **EC2105**	
EC2105.1	Able to Identify random variables and Define and manipulate distribution and density functions.
EC2105.2	Able to Compute various operations like expectations, variances, etc. from probability density functions and probability distribution functions.
EC2105.3	Able to Characterize probability density and distribution function for multiple random variables
EC2105.4	Able to perform operations on Multiple random variables
EC2105.5	Explain the concept of random process, differentiate between stochastic and ergodic processes
EC2105.6	Illustrate the concept of random processes and determine covariance and spectral density of stationary random processes, Analyze the LTI systems with random inputs and understand the concept of noise

Course Name: **Network Analysis**	
Course Code: **EC2104**	
EC1204.1	Gain the knowledge on basic network elements.
EC1204.2	Will analyze the RLC circuit's behaviour in detailed.
EC1204.3	Analyze the performance of periodic waveforms
EC1204.4	Gain the knowledge in characteristics of two port network parameters (Z, Y, ABCD, h&g).
EC1204.5	Analyze the filter design concepts in real world applications
EC1204.6	Cascading of two port networks, series connection of two port networks,

Course Name: Networks & Electrical Technology Lab

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Course Code: **EC1208**	
EC1208.1	Determine and predetermine the performance of DC machines and transformers
EC1208.2	Control the DC shunt machines.
EC1208.3	Compute the performance of1-phasetransformer
EC1208.4	Perform tests on 3-phase induction motor and alternator to determine their performance characteristics.
EC1208.5	predetermine the efficiency and regulation of transformers and assess their performance
EC1208.6	Understand the significance of regulation of an alternators

Course Name: Electronic Devices and Circuits Lab	
Course Code: **EC2107**	
EC2107.1	Ability to analyze PN junctions in semiconductor devices under various conditions.
EC2107.2	Ability to analyze Zener in semiconductor devices under various conditions.
EC2107.3	Ability to design and analyze simple rectifiers and voltage regulators using diodes
EC2107.4	Ability to design and analyze simple BJT and FET circuits.
EC2107.5	Know the CRO and CRO uses
EC2107.6	Ability to design and amplify the BJT and FET

Year/Sem: II B.Tech II SEM

Course Name: Electronic Circuit Analysis	
Course Code: **EC2201**	
EC2201.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
EC2201.2	Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT.
EC2201.3	Know the feedback amplifiers and feedback amplifier topologies
EC2201.4	Derive the expressions for feedback amplifiers Gain and impedance of input and output
EC2201.5	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept.
EC2201.6	Know the classification of the power and tuned amplifiers and their analysis with performance comparison.

Course Name: Pulse and Digital Circuits	
Course Code: **EC2205**	
EC2205.1	Understand and analyze the responses of first order RC low pass and high pass filters for standard inputs.
EC2205.2	Understand the transfer characteristics of clipping circuits and the response of

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	clamping circuits for sinusoidal and square wave signals.
EC2205.3	understand the operation, analysis and design of multivibrators using BJTs
EC2205.4	understand the operation of Miller and Bootstrap sweep circuits
EC2205.5	understand the operation of TTL, ECL,NMOS and CMOS logic families
EC2205.6	understand the operation of CMOS logic families

Course Name: Analog Communications	
Course Code: **EC2204**	
EC2204.1	Understand modulation and demodulation Techniques of Amplitude modulation.
EC2204.2	Applying modulation and demodulation Techniques to DSB & SS
EC2204.3	Learn the basic concepts of Frequency modulation and also modulation and demodulation Techniques.
EC2204.4	Able to explain the principles of Radio Transmitters and Receivers.
EC2204.5	Analyse the Noise performance of AM, DSB, SSB and FM and Understand the generation and demodulation of pulse analog modulation techniques.
EC2204.6	Analyse Understand the generation and demodulation of pulse analog modulation techniques.

Course Name: Electromagnetic Waves and Transmission Lines	
Course Code: **EC2203**	
EC2203.1	Acquire knowledge on various types of transmission lines, derive transmission-line equations from a circuit model in terms of primary and secondary constants
EC2203.2	Derive and Calculate the expressions for input impedance of transmission lines, reflection coefficient, VSWR etc. using smith chart
EC2203.3	Determine E and H using various laws and applications of electric & magnetic fields
EC2203.4	Apply the Maxwell equations to analyze the time varying behaviour of EM waves
EC2203.5	Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media
EC2203.6	. Calculate Brewster angle, critical angle and total internal reflection

Course Name: Control Systems	
Course Code: **EC2202**	
EC2202.1	Explain the concepts of feedback and its advantages to various control

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	systems
EC2202.2	Analyze the performance metrics to design the control system in time-domain
EC2202.3	Find the stability analysis for control systems
EC2202.4	Draw the root locus for control systems
EC2202.5	Analyze the performance metrics to design the control system in frequency-domain
EC2202.6	Analyze the state space approach for the analysis of control systems

Course Name: Management Science	
Course Code: **EC2206**	
EC2206.1	After completion of the Course the student will acquire the knowledge on management, Functions, global leadership and organizational structure.
EC2206.2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments
EC2206.3	The learner is able to think in strategically through contemporary management practices.
EC2206.4	The learner may also know about the contemporary practices in concept
EC2206.5	The learner can develop positive attitude through personality development and can equip with motivational theories.
EC2206.6	The student can attain the group performance and grievance handling in managing the organizational culture.

Course Name: Electronic Circuit Analysis Lab	
Course Code: **EC2207**	
EC2207.1	Determination of fT for transistor
EC2207.2	Design different types of Amplifier and Oscillator circuits
EC2207.3	Simulate different types of Amplifier and Oscillator circuits using software tool
EC2207.4	Test different types of Amplifiers and Oscillator circuits using hardware.
EC2207.5	Design the power amplifiers using software and hard ware to
EC2207.6	Design the Tuned amplifiers to find the factor using software and hard ware to

Course Name: Analog Communications Lab	
Course Code: **EC2208**	

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EC2208.1	Analyze the concepts, write and simulate the concepts of AM and AM Demodulation process in Communication.
EC2208.2	Know the origin and simulation of FM and FM-Demodulation process in communication
EC2208.3	Acquaint with AM and FM basic functionalities
EC2208.4	Discriminate the AM and FM functionalities
EC2208.5	Interpret with various angle modulation and demodulation systems
EC2208.6	Create the writing and simulation environments in PWM, PPM, Mixer and ring modulation

Year/Sem: III B.Tech I SEM

Course Name: Linear IC Applications	
Course Code	**EC3102**
EC3102.1	Describe the characteristics of operational amplifiers.
EC3102.2	Design the various linear and non-linear applications of op-amp.
EC3102.3	Design the Active filters using Operational Amplifier
EC3102.4	Describe the Op-Amp and internal Circuitry: 555 Timer, PLL
EC3102.5	Discuss the Applications of Operational amplifier: 555 Timer, PLL
EC3102.6	Use the Op-Amp in A to D & D to A Converters

Course Name: Digital Communications	
Course Code: **EC3104**	
EC3104.1	Define and Determine the performance of pulse digital modulation techniques such as PCM,DPCM,DM,ADM.
EC3104.2	Elaborate the principles of digital modulation techniques like ASK, FSK, PSK, DPSK, and QPSK.
EC3104.3	Determine the probability of error for digital modulation schemes such as FSK,ASK, BPSK
EC3104.4	Determine the probability of error for digital modulation schemes such as BPSK, BFSK, and QPSK.
EC3104.5	Understand the concept of digital information over the channel, Analyze different source coding techniques Shanon-Fano coding, Huffman coding etc.
EC3104.6	Able to Compute and analyze different error control coding schemes along with different domain approaches.

Course Name: **Digital IC Applications**	
Course Code: **EC3103**	
EC3103.1	Find the analytic functions using C-R equations, the image using conformal mapping and bi-linear transformation
EC3103.2.	Use Cauchy's theorem, Cauchy's integral formula and Cauchy's residues theorem to evaluate complex integration and expansion of complex function

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	using Taylor's and Laurent's series.
EC3103.3	Define Laplace and inverse Laplace transforms of various functions and solve ordinary differential equations using Laplace transform
EC3103.4	A thorough understanding of operational amplifiers with linear integrated circuits
EC3103.5	Understanding of the different families of digital integrated circuits and their characteristics
EC3103.6	Also students will be able to design circuits using operational amplifiers for various applications

Course Name: **Linear IC Applications LAB**	
Course Code: **EC3107**	
EC3107.1	Design and analyse the various linear application of op-amp
EC3107.2	Design and analyse the various non-linear application of op-amp
EC3107.3	Design and analyse filter circuits using op-amp
EC3107.4	Design and analyse oscillators and multivibrator circuits using op-amp
EC3107.5	Design and analyse the various application of 555 timer
EC3107.6	Analyse the performance of oscillators and multivibrators using PSPICE.

Course Name: Antenna and Wave Propagation	
Course Code: EC3105	
EC3105.1	Understand the radiation of electromagnetic waves by antennas.
EC3105.2	Understand the antenna operation through the solution of antenna design and analysis problems.
EC3105.3	Analyze basic antennas to determine their performance characteristics.
EC3105.4	Interpret the antenna performance characteristics and understand their importance in antenna engineering design.
EC3105.5	understand of the Radio wave propagation
EC3105.6	Understanding of the Transmission Lines

Course Name: Computer Architecture and Organization	
Course Code:	**EC3101**
EC3101.1	Understand the functional architecture of computing systems
EC3101.2	Identify compare and assess, issues related to bus,memory,Control and I/O functions
EC3101.3	Correlate and analyze the operations carried out in Processing Unit

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EC3101.4	Design Solutions in the area of computer Architecture
EC3101.5	Design and verify memory organizations
EC3101.6	Correlate and analyze the operations carried out in Processing

Course Name: **Pulse and Digital Circuits Lab**	
Course Code: **EC3106**	
EC3106.1	will be able generate sinusoidal signals
EC3106.2	will be able generate non-sinusoidal signals
EC3106.3	will be able to understand basic logic gates
EC3106.4	will be able to understand basic logic gates and can design applications
EC3106.5	will be able to analyze various multi vibrator circuits
EC3106.6	will be able to design non sinusoidal oscillator

Course Name: **Digital IC Applications Lab**	
Course Code: **EC3108**	
EC3108.1	Design various applications using op-amp
EC3108.2	Design various applications with 555 timer IC
EC3108.3	Deign various sequential and combinational circuits using Verilog HDL.
EC3108.4	Describe Digital Logic families and their applications.
EC3108.5	Analyze various Combinational And Sequential Circuit Designs.
EC3108.6	Design various Combinational And Sequential Circuits .

Year/Sem: III B.Tech II SEM

Course Name: **VLSI Design**	
Course Code: **EC3203**	
EC3203.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
EC3203.2	Apply the design Rules and draw layout of a given logic circuit
EC3203.3	Design MOSFET based logic circuit. Design basic building blocks in Analog IC design.
EC3203.4	Analyze the behaviour of amplifier circuits with various loads
EC3203.5	Design various CMOS logic circuits for design of Combinational logic circuits.
EC3203.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS

Course Name: **Digital Signal Processing**	
Course Code: **EC3204**	
EC3204.1	Apply the difference equations concept in the analyzation of Discrete time

	systems
EC3204.2	Able to apply the FFT algorithm for solving the DFT of a given signal
EC3204.3	Student can able to design a Digital filter (IIR) from the given specifications and Realize the IIR Structures.
EC3204.4	Design a Digital filter (FIR) from the given specifications and Realize the FIR Structures.
EC3204.5	Use the Multirate Processing concepts in various applications Such as Design of phase shifters, Interfacing of digital systems.
EC3204.6	Able to learn the architecture of DSP Processor and addressing modes.

Course Name: **VLSI Lab**	
Course Code: **EC3207**	
EC3207.1	Understand the physical design process of Digital Integrated Circuits.
EC3207.2	Describe procedure for designing of programmable circuits.
EC3207.3	Demonstrate the ability to use various EDA tools for digital system design
EC3207.4	Demonstrate the ability to use various Mentor Graphics Software for digital system design
EC3207.5	Implement various combinational and sequential circuits using VHDL on FPGA.
EC3207.6	Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Course Name: **Digital Communications Lab**	
Course Code: **EC3208**	
EC3208.1	Able to understand basic theories of Digital communication system in practical.
EC3208.2	Able to design and implement different modulation and demodulation techniques.
EC3208.3	Able to analyze digital modulation techniques
EC3208.4	Able to identify and describe different techniques in modern digital communications, in particular in source coding
EC3208.5	Able to perform channel coding.
EC3208.6	Able to detect and correct errors using LBC,Binary Cyclic codes & detect dual bit errors in Convolution codes

Course Name: **Bio-Medical Engineering**	
Course Code: **EC3205**	
EC3205.1	Understand various methods of acquiring bio signals.
EC3205.2	Understand and analyze different biomedical electrodes and sensors used for clinical observation.
EC3205.3	Analyze ECG signal with characteristic feature points.
EC3205.4	Measure heart rate, blood pressure and respiration rate. And also understand various sources of blood flow meters.
EC3205.5	Understand bio-telemetry & instrumentation used for Clinical Laboratory.
EC3205.6	Analyze EEG signal with characteristic feature points.

Course Name: **Micro Wave Engineering**	
Course Code:	**EC3202**
EC3202.1	Explain different types of waveguides and their respective modes of propagation.
EC3202.2	Analyze typical microwave networks using impedance, admittance, transmission and scattering matrix representations.
EC3202.3	Design microwave matching networks using L section, single and double stub and quarter wave transformer.
EC3202.4	. Explain working of microwave passive circuits such as isolator, circulator, Directional couplers, attenuators etc.
EC3202.5	Describe and explain working of microwave tubes and solid state devices.
EC3202.6	Perform measurements on microwave devices and networks using power meter and VNA.

Course Name: **Microprocessor and Microcontrollers**	
Course Code: **EC3201**	
EC3201.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors
EC3201.2	To be able to understand the addressing modes of microprocessors
EC3201.3	To be able to understand the micro controller capability
EC3201.4	To be able to program MP&MC
EC3201.5	To be able to interface MP & MC with other electronic devices
EC3201.6	To be able to understand the ARM processor architecture

Course Name: **Microprocessor and Microcontrollers - Lab**	
Course Code: **EC3206**	

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EC3206.1	The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers
EC3206.2	Explain 80x86/80x51instruction set and gain the knowledge how assembly language works
EC3206.3	The student will learn hardware and software interaction and integration.
EC3206.4	To apply the concepts in the design of microprocessor/microcontroller based systems in real time applications
EC3206.5	Make use of standard test and measurement equipment to evaluate digital interfaces.
EC3206.6	To understand the KEIL MDK software

Year/Sem: IV B.Tech I SEM

Course Name: **Digital Image Processing**	
Course Code **EC4102**	
EC4102.1	Know the fundamentals of a digital image processing; representation of digital images in transform domain; and various mathematical transforms necessary for image processing.
EC4102.2	Learn and implement various Intensity transformations and spatial filtering methods in image enhancement and image restoration process.
EC4102.3	To know Image Restoration and Reconstruction process by using different mathematical approaches.
EC4102.4	To understand compressing images by using different mathematical approaches.
EC4102.5	To know image segmentation by the detection of point, line and edges in images, edge linking through local/global processing.
EC4102.6	To Analyze pseudo and full color image processing techniques

Course Name: **Embedded Systems**	
Course Code: **EC4106**	
EC4106.1	Understand the design process of an embedded system
EC4106.2	Understand typical embedded System & its components
EC4106.3	Understand embedded firmware design approaches
EC4106.4	Learn the basics of OS and RTOS
EC4106.5	Learn the basics of hardware design
EC4106.6	Learn the basics of software design

Course Name: **Radar Systems**	
Course Code: **EC4101**	
EC4101.1	Demonstrate and understanding of the factors affecting the radar performance using Radar Range Equation
EC4101.2	Analyze the principle of FM-CW radar and apply it in FM- CW Altimeter
EC4101.3	Distinguish between a MTI Radar and a Pulse Doppler Radar based on their

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	Working principle.
EC4101.4	List the different methods used for tracking targets.
EC4101.5	Demonstrate an understanding of the importance of Matched Filter Receivers in Radars
EC4101.6	List different types of Radar Receivers and their application in real time scenario

Course Name: **TV Engineering**	
Course Code: **EC4105**	
EC4105.1	Compare Digital TV transmission standards and performance parameters
EC4105.2	Analyse channel coding, errors, interferences and modulation techniques for Digital TV
EC4105.3	Make use of RF amplifiers
EC4105.4	Identify Transmission lines for Digital TV
EC4105.5	Test for a Digital TV Transmitter
EC4105.6	modules and systems for Digital TV

Course Name: **Microwave Engineering & Optical Lab**	
Course Code: **EC4107**	
EC4107.1	Understand the significance of microwaves and microwave transmission lines
EC4107.2	Analyze the characteristics of microwave tubes and compare them
EC4107.3	Be able to list and explain the various microwave solid state devices
EC4107.4	Can set up a microwave bench for measuring microwave parameters
EC4107.5	Verify frequency range of Radar
EC4107.6	Verify Virtual Height of Light

Course Name: **Computer Networks**	
Course Code: **EC4103**	
EC4103.1	Apply the concepts of Computer Networks and Networks Models for Data Communication.
EC4103.2.	Analyze networking architecture and infrastructure for wired and wireless link
EC4103.3.	Design, calculate, and apply subnet masks and routing addresses to fulfill networking requirements
EC4103.4	Analyze issues of routing and congestion mechanism for independent and internetworking networks for wired and wireless link.
EC4103.5	Analyze internal workings of the Internet and of a number of common Internet applications
EC4103.6	Protocols (DNS, SMTP, FTP, HTTP, WWW, Security and Cryptography).

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Course Name: **Optical Communications**	
Course Code: **EC4104**	
EC4104.1	Illustrate the structure and fabrication methods of Optical fibers
EC4104.2	Analyze the channel impairments: losses and dispersion
EC4104.3	Analyze the Optical sources (LED and LASER) and detectors (PIN and Avalanche Photo diode).
EC4104.4	Apply design considerations to analog and digital fiber optic systems
EC4104.5	Analyze the components of fiber optic networks: Couplers, multiplexers, switches and filters.
EC4104.6	Couplers, multiplexers, switches and filters.

Course Name: **Digital Signal Processing Lab**	
Course Code: EC4108	
EC4108.1	Carryout basic signal processing operations
EC4108.2	Design and Implement the FIR and IIR Filters using MATLAB
EC4108.3	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
EC4108.4	Analyze the architecture of a DSP Processor
EC4108.5	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
EC4108.6	Design a DSP system for various applications of DSP

Year/Sem: IV B.Tech II SEM

Course Name: **Project**	
Course Code: **EC4206**	
EC4206.1	Work on proposed engineering solution as per industry need
EC4206.2	Customize various tools and techniques needed for project development.
EC4206.3	Understand significance of safe and ethical practices during project.
EC4206.4	Work in a team with healthy working environment
EC4206.5	Develop skill to present project related activities effectively to peers and mentors.
EC4206.6	Develop skill to innovate the developed project and convert it in form of

product for industrial / societal need.

Course Name: **Seminar**	
Course Code: **EC4205**	
EC4205.1	Work on proposed engineering solution as per industry need
EC4205.2	Customize various tools and techniques needed for project development.
EC4205.3	Understand significance of safe and ethical practices during project.
EC4205.4	Work in a team with healthy working environment
EC4205.5	Develop skill to present project related activities effectively to peers and mentors.
EC4205.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Satellite Communications**	
Course Code: **EC4203**	
EC4203.1	Work on proposed engineering solution as per industry need
EC4203.2	Customize various tools and techniques needed for project development.
EC4203.3	Understand significance of safe and ethical practices during project.
EC4203.4	Work in a team with healthy working environment
EC4203.5	Develop skill to present project related activities effectively to peers and mentors.
EC4203.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Cellular and Mobile Communications**	
Course Code: **EC4201**	
EC4201.1	Introduction to Cellular Mobile System, Cellular Concepts
EC4201.2	Types of interferences, Co-channel Interference Reduction Factor, non-co-channel interference-different types.
EC4201.3	Frequency management And Channel Assignment, Numbering and grouping
EC4201.4	Cell Coverage For Signal , phase difference between direct and reflected paths
EC4201.5	TRAFFIC Concept of Handof, types of handoff, soft and hard hand offs,
EC4201.6	Digital Cellular Networks, GSM architecture, TDMA, CDMA, OFDMA

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Course Name: **Electronic Measurements and Instrumentation**	
Course Code: **EC4202**	
EC4202.1	Select the instrument to be used based on the requirements.
EC4202.2	Understand and analyze different signal generators and analyzers.
EC4202.3	Understand the design of oscilloscopes for different applications
EC4202.4	Understand the design of Digital oscilloscopes for different applications
EC4202.5	Design and derive the different bridges
EC4202.6	Design different transducers for measurement of different parameters

Course Name: **Operating Systems**	
Course Code:**EC4204**	
EC4204.1	Describe various generations of Operating System and functions of Operating System
EC4204.2	Describe the concept of program, process and thread and analyze various CPU Scheduling algorithms
EC4204.3	Solve Inter Process Communication problems using Mathematical Equations by various methods.
EC4204.4	Compare various Memory Management Schemes
EC4204.5	especially paging and Segmentation
EC4204.6	Outline File Systems in Operating System like UNIX/Linux and Windows

Department of Electronics and Communication Engineering

Course Outcomes

Regulation R16/13

Year/Sem: II B.Tech I SEM

Course Name: **Electronic Devices and Circuits**	
Course Code: **EC2101**	
EC2101.1	Apply the basic concepts of semiconductor physics.
EC2101.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EC2101.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons
EC2101.4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
EC2101.5	Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
EC2101.6	Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations

Course Name: **Switching Theory and Logic Design**	
Course Code: **EC2102**	
EC2102.1	Classify different number systems and apply to generate various codes
EC2102.2	Use the concept of Boolean algebra in minimization of switching functions
EC2102.3	Design different types of combinational logic circuits.
EC2102.4	Apply knowledge of flip-flops in designing of Registers and counters
EC2102.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
EC2102.6	Produce innovative designs by modifying the traditional design techniques.

Course Name: **Signals and Systems**	
Course Code: **EC2103**	
EC2103.1	Differentiate the classification of signals as well as systems operations on signals and signal approximation.
EC2103.2	Analyse the spectral characteristics of continuous-time periodic and a periodic signals using Fourier series
EC2103.3	Analyse the spectral characteristics of continuous-time periodic and a periodic signals Using Fourier transform.
EC2103.4	Able to learn sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
EC2103.5	Define and evaluate the concept of convolution and filters such as LPF, HPF, BPF, correlation functions.
EC2103.6	Apply Laplace-transform to analyze continuous--time signals and systems and z-transform to analyze discrete-time signals and systems.

Course Name: **Managerial Economics & Financial Analysis**	
Course Code: EC2106	
EC2106.1	To adopt the Managerial Economic concepts for decision making and forward planning. Also know law of demand and its exceptions, to use different forecasting methods for predicting demand for various products and services.
EC2106.2	To assess the functional relationship between Production and factors of production and list out various costs associated with production and able to compute breakeven point to illustrate the various uses of breakeven analysis.
EC2106.3	To outline the different types of business organizations and provide a framework for analyzing money in its functions as a medium of exchange.
EC2106.4	To adopt the principles of accounting to record, classify and summarize various transactions in books of accounts for preparation of final accounts
EC2106.5	To implement various techniques for assessing the financial position of the business.
EC2106.6	To implement various techniques for assessing the financial grades of the business.

Course Name: **Random Variables and Stochastic Processes**	
Course Code: **EC2105**	
EC2105.1	Able to Identify random variables and Define and manipulate distribution and density functions.
EC2105.2	Able to Compute various operations like expectations, variances, etc. from probability density functions and probability distribution functions.
EC2105.3	Able to Characterize probability density and distribution function for multiple random variables
EC2105.4	Able to perform operations on Multiple random variables
EC2105.5	Explain the concept of random process, differentiate between stochastic and ergodic processes
EC2105.6	Illustrate the concept of random processes and determine covariance and spectral density of stationary random processes, Analyze the LTI systems with random inputs and understand the concept of noise

Course Name: **Network Analysis**	
Course Code: **EC2104**	
EC1204.1	Gain the knowledge on basic network elements.
EC1204.2	Will analyze the RLC circuit's behaviour in detailed.
EC1204.3	Analyze the performance of periodic waveforms
EC1204.4	Gain the knowledge in characteristics of two port network parameters (Z, Y, ABCD, h&g).
EC1204.5	Analyze the filter design concepts in real world applications
EC1204.6	Cascading of two port networks, series connection of two port networks,

Course Name: Networks & Electrical Technology Lab

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Course Code: **EC1208**	
EC1208.1	Determine and predetermine the performance of DC machines and transformers
EC1208.2	Control the DC shunt machines.
EC1208.3	Compute the performance of1-phasetransformer
EC1208.4	Perform tests on 3-phase induction motor and alternator to determine their performance characteristics.
EC1208.5	predetermine the efficiency and regulation of transformers and assess their performance
EC1208.6	Understand the significance of regulation of an alternators

Course Name: Electronic Devices and Circuits Lab	
Course Code: **EC2107**	
EC2107.1	Ability to analyze PN junctions in semiconductor devices under various conditions.
EC2107.2	Ability to analyze Zener in semiconductor devices under various conditions.
EC2107.3	Ability to design and analyze simple rectifiers and voltage regulators using diodes
EC2107.4	Ability to design and analyze simple BJT and FET circuits.
EC2107.5	Know the CRO and CRO uses
EC2107.6	Ability to design and amplify the BJT and FET

Year/Sem: II B.Tech II SEM

Course Name: Electronic Circuit Analysis	
Course Code: **EC2201**	
EC2201.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
EC2201.2	Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT.
EC2201.3	Know the feedback amplifiers and feedback amplifier topologies
EC2201.4	Derive the expressions for feedback amplifiers Gain and impedance of input and output
EC2201.5	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept.
EC2201.6	Know the classification of the power and tuned amplifiers and their analysis with performance comparison.

Course Name: Pulse and Digital Circuits	
Course Code: **EC2205**	
EC2205.1	Understand and analyze the responses of first order RC low pass and high pass filters for standard inputs.

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EC2205.2	Understand the transfer characteristics of clipping circuits and the response of clamping circuits for sinusoidal and square wave signals.
EC2205.3	understand the operation, analysis and design of multivibrators using BJTs
EC2205.4	understand the operation of Miller and Bootstrap sweep circuits
EC2205.5	understand the operation of TTL, ECL,NMOS and CMOS logic families
EC2205.6	understand the operation of CMOS logic families

Course Name: Analog Communications	
Course Code: **EC2204**	
EC2204.1	Understand modulation and demodulation Techniques of Amplitude modulation.
EC2204.2	Applying modulation and demodulation Techniques to DSB & SS
EC2204.3	Learn the basic concepts of Frequency modulation and also modulation and demodulation Techniques.
EC2204.4	Able to explain the principles of Radio Transmitters and Receivers.
EC2204.5	Analyse the Noise performance of AM, DSB, SSB and FM and Understand the generation and demodulation of pulse analog modulation techniques.
EC2204.6	Analyse Understand the generation and demodulation of pulse analog modulation techniques.

Course Name: Electromagnetic Waves and Transmission Lines	
Course Code: **EC2203**	
EC2203.1	Acquire knowledge on various types of transmission lines, derive transmission-line equations from a circuit model in terms of primary and secondary constants
EC2203.2	Derive and Calculate the expressions for input impedance of transmission lines, reflection coefficient, VSWR etc. using smith chart
EC2203.3	Determine E and H using various laws and applications of electric & magnetic fields
EC2203.4	Apply the Maxwell equations to analyze the time varying behaviour of EM waves
EC2203.5	Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media
EC2203.6	. Calculate Brewster angle, critical angle and total internal reflection

Course Name: Control Systems	
Course Code: **EC2202**	

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EC2202.1	Explain the concepts of feedback and its advantages to various control systems
EC2202.2	Analyze the performance metrics to design the control system in time-domain
EC2202.3	Find the stability analysis for control systems
EC2202.4	Draw the root locus for control systems
EC2202.5	Analyze the performance metrics to design the control system in frequency-domain
EC2202.6	Analyze the state space approach for the analysis of control systems

Course Name: Management Science	
Course Code: **EC2206**	
EC2206.1	After completion of the Course the student will acquire the knowledge on management, Functions, global leadership and organizational structure.
EC2206.2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments
EC2206.3	The learner is able to think in strategically through contemporary management practices.
EC2206.4	The learner may also know about the contemporary practices in concept
EC2206.5	The learner can develop positive attitude through personality development and can equip with motivational theories.
EC2206.6	The student can attain the group performance and grievance handling in managing the organizational culture.

Course Name: Electronic Circuit Analysis Lab	
Course Code: **EC2207**	
EC2207.1	Determination of fT for transistor
EC2207.2	Design different types of Amplifier and Oscillator circuits
EC2207.3	Simulate different types of Amplifier and Oscillator circuits using software tool
EC2207.4	Test different types of Amplifiers and Oscillator circuits using hardware.
EC2207.5	Design the power amplifiers using software and hard ware to
EC2207.6	Design the Tuned amplifiers to find the factor using software and hard ware to

Course Name: Analog Communications Lab

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Course Code: **EC2208**	
EC2208.1	Analyze the concepts, write and simulate the concepts of AM and AM Demodulation process in Communication.
EC2208.2	Know the origin and simulation of FM and FM-Demodulation process in communication
EC2208.3	Acquaint with AM and FM basic functionalities
EC2208.4	Discriminate the AM and FM functionalities
EC2208.5	Interpret with various angle modulation and demodulation systems
EC2208.6	Create the writing and simulation environments in PWM, PPM, Mixer and ring modulation

Year/Sem: III B.Tech I SEM

Course Name: Linear IC Applications	
Course Code	**EC3102**
EC3102.1	Describe the characteristics of operational amplifiers.
EC3102.2	Design the various linear and non-linear applications of op-amp.
EC3102.3	Design the Active filters using Operational Amplifier
EC3102.4	Describe the Op-Amp and internal Circuitry: 555 Timer, PLL
EC3102.5	Discuss the Applications of Operational amplifier: 555 Timer, PLL
EC3102.6	Use the Op-Amp in A to D & D to A Converters

Course Name: Digital Communications	
Course Code: **EC3104**	
EC3104.1	Define and Determine the performance of pulse digital modulation techniques such as PCM,DPCM,DM,ADM.
EC3104.2	Elaborate the principles of digital modulation techniques like ASK, FSK, PSK, DPSK, and QPSK.
EC3104.3	Determine the probability of error for digital modulation schemes such as FSK,ASK, BPSK
EC3104.4	Determine the probability of error for digital modulation schemes such as BPSK, BFSK, and QPSK.
EC3104.5	Understand the concept of digital information over the channel, Analyze different source coding techniques Shanon-Fano coding, Huffman coding etc.
EC3104.6	Able to Compute and analyze different error control coding schemes along with different domain approaches.

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Course Name: **Digital IC Applications**	
Course Code: **EC3103**	
EC3103.1	Find the analytic functions using C-R equations, the image using conformal mapping and bi-linear transformation
EC3103.2.	Use Cauchy's theorem, Cauchy's integral formula and Cauchy's residues theorem to evaluate complex integration and expansion of complex function using Taylor's and Laurent's series.
EC3103.3	Define Laplace and inverse Laplace transforms of various functions and solve ordinary differential equations using Laplace transform
EC3103.4	A thorough understanding of operational amplifiers with linear integrated circuits
EC3103.5	Understanding of the different families of digital integrated circuits and their characteristics
EC3103.6	Also students will be able to design circuits using operational amplifiers for various applications

Course Name: **Linear IC Applications LAB**	
Course Code: **EC3107**	
EC3107.1	Design and analyse the various linear application of op-amp
EC3107.2	Design and analyse the various non-linear application of op-amp
EC3107.3	Design and analyse filter circuits using op-amp
EC3107.4	Design and analyse oscillators and multivibrator circuits using op-amp
EC3107.5	Design and analyse the various application of 555 timer
EC3107.6	Analyse the performance of oscillators and multivibrators using PSPICE.

Course Name: Antenna and Wave Propagation	
Course Code: EC3105	
EC3105.1	Understand the radiation of electromagnetic waves by antennas.
EC3105.2	Understand the antenna operation through the solution of antenna design and analysis problems.
EC3105.3	Analyze basic antennas to determine their performance characteristics.
EC3105.4	Interpret the antenna performance characteristics and understand their importance in antenna engineering design.
EC3105.5	understand of the Radio wave propagation
EC3105.6	Understanding of the Transmission Lines

Course Name: Computer Architecture and Organization	
Course Code:	**EC3101**

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EC3101.1	Understand the functional architecture of computing systems
EC3101.2	Identify compare and assess, issues related to bus,memory,Control and I/O functions
EC3101.3	Correlate and analyze the operations carried out in Processing Unit
EC3101.4	Design Solutions in the area of computer Architecture
EC3101.5	Design and verify memory organizations
EC3101.6	Correlate and analyze the operations carried out in Processing

Course Name: **Pulse and Digital Circuits Lab**	
Course Code: **EC3106**	
EC3106.1	will be able generate sinusoidal signals
EC3106.2	will be able generate non-sinusoidal signals
EC3106.3	will be able to understand basic logic gates
EC3106.4	will be able to understand basic logic gates and can design applications
EC3106.5	will be able to analyze various multi vibrator circuits
EC3106.6	will be able to design non sinusoidal oscillator

Course Name: **Digital IC Applications Lab**	
Course Code: **EC3108**	
EC3108.1	Design various applications using op-amp
EC3108.2	Design various applications with 555 timer IC
EC3108.3	Deign various sequential and combinational circuits using Verilog HDL.
EC3108.4	Describe Digital Logic families and their applications.
EC3108.5	Analyze various Combinational And Sequential Circuit Designs.
EC3108.6	Design various Combinational And Sequential Circuits .

Year/Sem: III B.Tech II SEM

Course Name: **VLSI Design**	
Course Code: **EC3203**	
EC3203.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
EC3203.2	Apply the design Rules and draw layout of a given logic circuit

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EC3203.3	Design MOSFET based logic circuit. Design basic building blocks in Analog IC design.
EC3203.4	Analyze the behaviour of amplifier circuits with various loads
EC3203.5	Design various CMOS logic circuits for design of Combinational logic circuits.
EC3203.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS

Course Name: **Digital Signal Processing**	
Course Code: **EC3204**	
EC3204.1	Apply the difference equations concept in the analyzation of Discrete time systems
EC3204.2	Able to apply the FFT algorithm for solving the DFT of a given signal
EC3204.3	Student can able to design a Digital filter (IIR) from the given specifications and Realize the IIR Structures.
EC3204.4	Design a Digital filter (FIR) from the given specifications and Realize the FIR Structures.
EC3204.5	Use the Multirate Processing concepts in various applications Such as Design of phase shifters, Interfacing of digital systems.
EC3204.6	Able to learn the architecture of DSP Processor and addressing modes.

Course Name: **VLSI Lab**	
Course Code: **EC3207**	
EC3207.1	Understand the physical design process of Digital Integrated Circuits.
EC3207.2	Describe procedure for designing of programmable circuits.
EC3207.3	Demonstrate the ability to use various EDA tools for digital system design
EC3207.4	Demonstrate the ability to use various Mentor Graphics Software for digital system design
EC3207.5	Implement various combinational and sequential circuits using VHDL on FPGA.
EC3207.6	Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Course Name: **Digital Communications Lab**	
Course Code: **EC3208**	

EC3208.1	Able to understand basic theories of Digital communication system in practical.
EC3208.2	Able to design and implement different modulation and demodulation techniques.
EC3208.3	Able to analyze digital modulation techniques
EC3208.4	Able to identify and describe different techniques in modern digital communications, in particular in source coding
EC3208.5	Able to perform channel coding.
EC3208.6	Able to detect and correct errors using LBC,Binary Cyclic codes & detect dual bit errors in Convolution codes

Course Name: **Bio-Medical Engineering**	
Course Code: **EC3205**	
EC3205.1	Understand various methods of acquiring bio signals.
EC3205.2	Understand and analyze different biomedical electrodes and sensors used for clinical observation.
EC3205.3	Analyze ECG signal with characteristic feature points.
EC3205.4	Measure heart rate, blood pressure and respiration rate. And also understand various sources of blood flow meters.
EC3205.5	Understand bio-telemetry & instrumentation used for Clinical Laboratory.
EC3205.6	Analyze EEG signal with characteristic feature points.

Course Name: **Micro Wave Engineering**	
Course Code:	**EC3202**
EC3202.1	Explain different types of waveguides and their respective modes of propagation.
EC3202.2	Analyze typical microwave networks using impedance, admittance, transmission and scattering matrix representations.
EC3202.3	Design microwave matching networks using L section, single and double stub and quarter wave transformer.
EC3202.4	. Explain working of microwave passive circuits such as isolator, circulator, Directional couplers, attenuators etc.
EC3202.5	Describe and explain working of microwave tubes and solid state devices.
EC3202.6	Perform measurements on microwave devices and networks using power meter and VNA.

Course Name: **Microprocessor and Microcontrollers**	
Course Code: **EC3201**	
EC3201.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors
EC3201.2	To be able to understand the addressing modes of microprocessors

EC3201.3	To be able to understand the micro controller capability
EC3201.4	To be able to program MP&MC
EC3201.5	To be able to interface MP & MC with other electronic devices
EC3201.6	To be able to understand the ARM processor architecture

Course Name: **Microprocessor and Microcontrollers - Lab**	
Course Code: **EC3206**	
EC3206.1	The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers
EC3206.2	Explain 80x86/80x51instruction set and gain the knowledge how assembly language works
EC3206.3	The student will learn hardware and software interaction and integration.
EC3206.4	To apply the concepts in the design of microprocessor/microcontroller based systems in real time applications
EC3206.5	Make use of standard test and measurement equipment to evaluate digital interfaces.
EC3206.6	To understand the KEIL MDK software

Year/Sem: IV B.Tech I SEM

Course Name: **VLSI Design**	
Course Code: **EC4102**	
EC4102.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
EC4102.2	Apply the design Rules and draw layout of a given logic circuit
EC4102.3	Design MOSFET based logic circuit. Design basic building blocks in Analog IC design.
EC4102.4	Analyze the behaviour of amplifier circuits with various loads
EC4102.5	Design various CMOS logic circuits for design of Combinational logic circuits.
EC4102.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS

Course Name: **Computer Networks**
Course Code: **EC4103**

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EC4103.1	Apply the concepts of Computer Networks and Networks Models for Data Communication.
EC4103.2.	Analyze networking architecture and infrastructure for wired and wireless link
EC4103.3.	Design, calculate, and apply subnet masks and routing addresses to fulfill networking requirements
EC4103.4	Analyze issues of routing and congestion mechanism for independent and internetworking networks for wired and wireless link.
EC4103.5	Analyze internal workings of the Internet and of a number of common Internet applications
EC4103.6	Protocols (DNS, SMTP, FTP, HTTP, WWW, Security and Cryptography).

Course Name: **Digital Image Processing**	
Course Code **EC4103**	
EC4103.1	Know the fundamentals of a digital image processing; representation of digital images in transform domain; and various mathematical transforms necessary for image processing.
EC4103.2	Learn and implement various Intensity transformations and spatial filtering methods in image enhancement and image restoration process.
EC4103.3	To know Image Restoration and Reconstruction process by using different mathematical approaches.
EC4103.4	To understand compressing images by using different mathematical approaches.
EC4103.5	To know image segmentation by the detection of point, line and edges in images, edge linking through local/global processing.
EC4103.6	To Analyze pseudo and full color image processing techniques

Course Name: Computer Architecture and Organization	
Course Code:	**EC4104**
EC4104.1	Understand the functional architecture of computing systems
EC4104.2	Identify compare and assess, issues related to bus,memory,Control and I/O functions
EC4104.3	Correlate and analyze the operations carried out in Processing Unit
EC4104.4	Design Solutions in the area of computer Architecture
EC4104.5	Design and verify memory organizations
EC4104.6	Correlate and analyze the operations carried out in Processing

Course Name: **Radar Systems**	
Course Code: **EC4105**	
EC4105.1	Demonstrate and understanding of the factors affecting the radar performance using Radar Range Equation
EC4105.2	Analyze the principle of FM-CW radar and apply it in FM- CW Altimeter
EC4105.3	Distinguish between a MTI Radar and a Pulse Doppler Radar based on their

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	Working principle.
EC4105.4	List the different methods used for tracking targets.
EC4105.5	Demonstrate an understanding of the importance of Matched Filter Receivers in Radars
EC4105.6	List different types of Radar Receivers and their application in real time scenario

Course Name: **Optical Communications**	
Course Code: **EC4106**	
EC4106.1	Illustrate the structure and fabrication methods of Optical fibers
EC4106.2	Analyze the channel impairments: losses and dispersion
EC4106.3	Analyze the Optical sources (LED and LASER) and detectors (PIN and Avalanche Photo diode).
EC4106.4	Apply design considerations to analog and digital fiber optic systems
EC4106.5	Analyze the components of fiber optic networks: Couplers, multiplexers, switches and filters.
EC4106.6	Couplers, multiplexers, switches and filters.

Course Name: **VLSI Lab**	
Course Code: **EC4107**	
EC4107.1	Understand the physical design process of Digital Integrated Circuits.
EC4107.2	Describe procedure for designing of programmable circuits.
EC4107.3	Demonstrate the ability to use various EDA tools for digital system design
EC4107.4	Demonstrate the ability to use various Mentor Graphics Software for digital system design
EC4107.5	Implement various combinational and sequential circuits using VHDL on FPGA.
EC4107.6	Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Course Name: **Microwave Engineering Lab**	
Course Code: **EC4108**	
EC4108.1	Understand the significance of microwaves and microwave transmission lines
EC4108.2	Analyze the characteristics of microwave tubes and compare them
EC4108.3	Be able to list and explain the various microwave solid state devices
EC4108.4	Can set up a microwave bench for measuring microwave parameters
EC4108.5	Verify frequency range of Radar
EC4108.6	Verify Virtual Height of Light

Year/Sem: IV B.Tech II SEM

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Course Name: **Project and Seminar**	
Course Code: **EC4201**	
EC4201.1	Work on proposed engineering solution as per industry need
EC4201.2	Customize various tools and techniques needed for project development.
EC4201.3	Understand significance of safe and ethical practices during project.
EC4201.4	Work in a team with healthy working environment
EC4201.5	Develop skill to present project related activities effectively to peers and mentors.
EC4201.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Satellite Communications**	
Course Code: **EC4203**	
EC4203.1	Work on proposed engineering solution as per industry need
EC4203.2	Customize various tools and techniques needed for project development.
EC4203.3	Understand significance of safe and ethical practices during project.
EC4203.4	Work in a team with healthy working environment
EC4203.5	Develop skill to present project related activities effectively to peers and mentors.
EC4203.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.

Course Name: **Cellular and Mobile Communication**	
Course Code: **EC4201**	
EC4201.1	Introduction to Cellular Mobile System, Cellular Concepts
EC4201.2	Types of interferences, Co-channel Interference Reduction Factor, non-co-channel interference-different types.
EC4201.3	Frequency management And Channel Assignment, Numbering and grouping
EC4201.4	Cell Coverage For Signal , phase difference between direct and reflected paths
EC4201.5	TRAFFIC Concept of Handof, types of handoff, soft and hard hand offs,
EC4201.6	Digital Cellular Networks, GSM architecture, TDMA, CDMA, OFDMA

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Course Name: **Electronic Measurements and Instrumentation**	
Course Code: **EC4202**	
EC4202.1	Select the instrument to be used based on the requirements.
EC4202.2	Understand and analyze different signal generators and analyzers.
EC4202.3	Understand the design of oscilloscopes for different applications
EC4202.4	Understand the design of Digital oscilloscopes for different applications
EC4202.5	Design and derive the different bridges
EC4202.6	Design different transducers for measurement of different parameters

Course Name: **Low Power IC Design**	
Course Code: **EC4204**	
EC4204.1	Capability to recognize advanced issues in VLSI systems, specific to the deep-submicron silicon technologies.
EC4204.2	Students able to understand deep submicron CMOS technology and digital CMOS design styles.
EC4204.3	To design chips used for battery-powered systems and high-performance circuits
EC4204.4	Sources of power dissipation – Physics of power dissipation in MOSFET devices: The MIS structure, long channel MOSFET,
EC4204.5	Transistor Network Restructuring, Transistor Network Partitioning and Reorganization - Special Latches and Flip-flops
EC4204.6	Reducing power in sense amplifier circuits, method for achieving low core voltages from a single supply.

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Department Of Computer Science and Engineering
Course Outcomes

Year/Sem: II B.Tech I Sem   **A.Y: 2022-23**

Course Name: Mathematics III	
Course Code: CSE2101	
CSE2101.1	State and prove vector Line , Surface and volume integral Theorems. State and prove Stokes and Green's theorems.
CSE2101.2	Derive Laplace transform standard functions. Deduce inverse Laplace transform functions.
CSE2101.3	Explain about Periodic functions , even and odd functions. Explain about Half range sine and cosine series. Explain Fourier transforms. State and prove Fourier integral theorem and problems.
CSE2101.4	Explain Fourier Transforms. State and prove Fourier integral theorem and problems.
CSE2101.5	Explain By eliminating Orbitary constants and Orbitary functions. Derive Legrangies equation and problems.
CSE2101.6	Derive solutions of linear P.D.E with constant coefficients and problems. Explain method of separation of variables and wave & heat equations.

Course Name: Object Oriented Programming through C++	
Course Code: CSE2102	
CSE2102.1	Classify object oriented programming and procedural programming
CSD2102.2	Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation
CSD2102.3	Inheritance and Polymorphism
CSD2102.4	Build C++ classes using appropriate encapsulation and design principles
CSD2102.5	Apply object oriented or non-object oriented techniques to solve bigger computing
CSD2102.6	File I/O, exception handling

Course Name: Operating Systems	
Course Code: CSE2103	
CSE2103.1	Describe various generations of Operating System and functions of Operating System
CSE2103.2	Describe the concept of program, process and thread and analyze various CPU Scheduling algorithms
CSE2103.3	Solve Inter Process Communication problems using Mathematical Equations by various methods.
CSE2103.4	Compare various Memory Management Schemes
CSE2103.5	especially paging and Segmentation
CSE2103.6	Outline File Systems in Operating System like UNIX/Linux and Windows

Course Name: Software Engineering	
Course Code: CSE2104	
CSE2104.1	Ability to transform an Object-Oriented Design into high quality, executable code.
CSE2104.2	Skills to design, implement, and execute test cases at the Unit and Integration level.
CSE2104.3	Prepare SRS document, design document, test cases and software configuration management and risk management related document.
CSE2104.4	Develop function oriented and object oriented software design using tools like rational rose.
CSE2104.5	Use modern engineering tools necessary for software project management, estimations, time management and software reuse.
CSE2104.6	Generate test cases for software testing.

Course Name: Mathematical Foundations of Computer Science	
Course Code: CSE2105	
CSE2105.1	Demonstrate skills in solving mathematical problems
CSE2105.2	Comprehend mathematical principles and logic
CSE2105.3	Demonstrate knowledge of mathematical modelling
CSE2105.4	Proficiency in using mathematical software
CSE2105.5	Manipulate and analyze data numerically and/or graphically using appropriate Software
CSE2105.6	Communicate effectively mathematical ideas/results verbally or in writing

Course Name: Object Oriented Programming through C++ Lab	
Course Code: CSE2106	
CSE2106.1	Apply the various OOPs concepts with the help of programs
CSE2106.2	Write a program implementing Friend Function
CSE2106.3	Write a program to Overload Unary, and Binary Operators as Member Function, and Non Member Function
CSE2106.4	Write a C++ program Multiple level Inheritance
CSE2106.5	Write a C++ program Hierarchical Inheritance
CSE2106.6	Write a Program for Exception Handling Divide by zero

Course Name: Operating Systems Lab	
Course Code: CSE2107	
CSE2107.1	To use Unix utilities and perform basic shell control of the utilities
CSE2107.2	To use the Unix file system
CSE2107.3	To use the file access control
CSE2107.4	To use of an operating system to develop software
CSE2107.5	Students will be able to use Linux environment efficiently
CSE2107.6	Solve problems using bash for shell scripting

Course Name: Software Engineering Lab	
Course Code: CSE2108	
CSE2108.1	By the end of this lab the student is able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project.
CSE2108.2	Prepare SRS document, design document, test cases and software configuration management and risk management related document.
CSE2108.3	Develop function oriented and object oriented software design using tools like rational rose.
CSE2108.4	Use modern engineering tools necessary for software project management, estimations, time management and software reuse.
CSE2108.5	Generate test cases for software testing
CSE2108.6	Will have experience and/or awareness of testing problems and will be able to develop a simple testing report.

Course Name: APPLICATIONS OF PYTHON-NUMPY LAB	
Course Code: CSE2109	
CSE2109.1	Explain how data is collected ,managed and stored for processing
CSE2109.2	Understand the working of various numerical techniques, different descriptive measures of Statistics to solve the engineering problems.
CSE2109.3	Understand how to apply some linear algebra operations to n-dimensional arrays
CSE2109.4	Use NumPy perform common data wrangling and computational tasks in Python
CSE2109.5	Understand the correlation and regression to solve the engineering problems
CSE2109.6	Utilise NumPy arrays to store and perform operations on data sets

Year/Sem: II B.Tech II Sem

Course Name: Probability and Statistics	
Course Code: CSE2201	
CSE2201.1	Explain the concepts of data science and its importance
CSE2201.2	Learn characteristics and through Correlation and regression tools
CSE2201.3	Write the concepts of probability and their applications
CSE2201.4	Apply discrete and continuous probability distributions
CSE2201.5	Explain the components of classical hypothesis test
CSE2201.6	To learn statistical inferential methods based on small and large sampling test

Course Name: Database Management Systems	
Course Code: CSE2202	
CSE2202.1	Describe a relational database and object-oriented database
CSE2202.2	Create, maintain and manipulate a relational database using SQL
CSE2202.3	Describe ER model and normalization for database design
CSE2202.4	Examine issues in data storage and query processing and can formulate appropriate solutions
CSE2202.5	Outline the role and issues in management of data such as efficiency, privacy, security.
CSE2202.6	Outline the role and issues in management of data such as ethical responsibility, and strategic advantage.

Course Name: Formal Languages and Automata Theory	
Course Code: CSE2203	
CSE2203.1	Classify machines by their power to recognize languages.
CSE2203.2	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy
CSE2203.3	Employ finite state machines to solve problems in computing
CSE2203.4	Illustrate deterministic machines
CSE2203.5	Illustrate non-deterministic machines
CSE2203.6	Quote the hierarchy of problems arising in the computer science

Course Name: Java Programming	
Course Code: CSE2204	
CSE2204.1	Able to realize the concept of object oriented programming & java programming constructs.
CSE2204.2	Able to describe the basic concepts of java such as operators,classes,objects.
CSE2204.3	Able to described the basic concept of java such as inheritance,packages,enumeration and various keywords.
CSE2204.4	Apply the concept of exception handling and Input/Output operations.
CSE2204.5	Able to design the application of java & java applet.
CSE2204.6	Able to Analyze & Design the concept of Event Handling and Abstract Window ToolKit.

Course Name: Managerial Economics and Financial Accountancy	
Course Code: CSE2205	
CSE2205.1	The Student is enhanced with the knowledge of estimating the Supply Demand and demand elasticises for a product.
CSE 2205.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs
CSE 2205.3	The Students is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units regarding Product & Services
CSE2205.4	They can understand the knowledge of formation of the company and company business cycle.
CSE2205.5	The Learner is able to prepare accounts, Ledger then Financial Statements and the usage of various Accounting tools for Analysis.
CSE2205.6	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for business decision making.

Course Name: Database Management Systems Lab	
Course Code: CSE2206	
CSE2206.1	Utilize SQL to execute queries for creating database and performing data manipulation operations
CSE2206.2	Examine integrity constraints to build efficient databases
CSE2206.3	Apply Queries using Advanced Concepts of SQL
CSE2206.4	Build PL/SQL programs including stored procedures, functions, cursors and triggers
CSE2206.5	Build PL/SQL programs including functions.
CSE2206.6	Build PL/SQL programs including cursors and triggers

Course Name: R Programming Lab	
Course Code: CSE2207	
CSE2207.1	Access online resources for R and import new function packages into the R workspace
CSE2207.2	Import, review, manipulate and summarize data-sets in R
CSE2207.3	Explore data-sets to create testable hypotheses
CSE2207.4	Identify appropriate statistical tests
CSE2207.5	Perform appropriate statistical tests using R
CSE2207.6	Create and edit visualizations with R

Course Name: Java Programming Lab	
Course Code: CSE2208	
CSE2208.1	Evaluate default value of all primitive data type, Operations, Expressions, Control-flow, Strings
CSE2208.2	Determine Class, Objects, Methods, Inheritance.
CSE2208.3	Exception, Runtime Polymorphism.
CSE2208.4	User defined Exception handling mechanism.
CSE2208.5	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
CSE2208.6	Construct Threads, Event Handling, implement packages, developing applets

Course Name: APPLICATIONS OF PYTHON-PANDAS LAB	
Course Code: CSE2209	
CSE2209.1	Use Pandas to create and manipulate data structures like Series and Data f rames Work with arrays ,queries and data frames
CSE2209.2	Query Data Frame structures for cleaning and processing and manipulating files
CSE2209.3	Understand best practice for creating basic charts
CSE2209.4	Describe how to index and "type" Pandas Series and Dataframes.
CSE2209.5	Create histograms and scatter plots for basic exploratory data analysis
CSE2209.6	Use Pandas to create and manipulate data structures like Series and Data frames

Year/Sem: III B.Tech I Sem

Course Name: Computer Networks	
Course Code :CSE3101	
CSE3101.1	Demonstrate different network models for networking links OSI, TCP/IP, B-ISDN, N-BISDN and get knowledge about various communication techniques, methods and protocol standards.
CSE3101.2	Discuss different transmission media and different switching networks.
CSE3101.3	Analyze data link layer services
CSE3101.4	functions and protocols like HDLC and PPP.
CSE3101.5	Compare and Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
CSE3101.6	Determine application layer services and client server protocols working with the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc.

Course Name: Design and Analysis of Algorithms	
Course Code: CSE3102	
CSE3102.1	Analyze the performance of a given algorithm, denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms.
CSE3102.2	List and describe various algorithmic approaches and Solve problems using divide and conquer &greedy Method.
CSE3102.3	Synthesize efficient algorithms dynamic programming approaches to solve in common engineering design situations.
CSE3102.4	Organize important algorithmic design paradigms and methods of analysis: backtracking, branch and bound algorithmic approaches
CSE3102.5	Demonstrate NP- Completeness theory ,lower bound theory and String Matching.

Course Name: Data Warehousing and Data Mining	
Course Code: CSE3103	
CSE3103.1	Illustrate the importance of Data Warehousing, Data Mining and its functionalities and Design schema for real time data warehousing applications.
CSE3103.2	Demonstrate on various Data Preprocessing Techniques viz. data cleaning, data integration, data transformation and data reduction and Process raw data to make it suitable for various data mining algorithms.
CSE3103.3	Choose appropriate classification technique to perform classification.
CSE3103.4	Choose Model building and evaluation .
CSE3103.5	Make use of association rule mining techniques viz. Apriori and FP Growth algorithms and analyze on frequent itemsets generation.
CSE3103.6	Identify and apply various clustering algorithm (with open source tools), interpret, evaluate and report the result.

Course Name: Digital logic design	
Course Code: CSE3104	
CSE3104.1	An ability to define different number systems, binary addition and subtraction, 2's
CSE3104.2	An ability to understand the different switching algebra theorems and apply them for logic functions.
CSE3104.3	An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.
CSE3104.4	Students will be able to design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays.
CSE3104.5	Students will be able to design various sequential circuits starting from flip-flop to registers
CSE3104.6	Students will be able to design various sequential circuits starting from flip-flop to counters

Course Name: SOFTWARE PROJECT MANAGEMENT	
Course Code: CSE3105	
CSE3105.1	Apply the process to be followed in the software development life-cycle models
CSE3105.2	Apply the concepts of project management & planning
CSE3105.3	Implement the project plans through managing people, communications and change
CSE3105.4	Conduct activities necessary to successfully complete and close the Software projects
CSE3105.5	Implement communication, modelling
CSE3105.6	construction & deployment practices in software development

Course Name: Data Warehousing and Data Mining Lab	
Course Code: CSE3106	
CSE3106.1	Design a data mart or data warehouse for any organization
CSE3106.2	Extract knowledge using data mining techniques
CSE3106.3	Extract enlist various algorithms used in information analysis of Data Mining Techniques
CSE3106.4	Demonstrate the working of algorithms for data mining tasks such as association rule mining, classification for realistic data
CSE3106.5	Implement and Analyze on knowledge flow application on data sets
CSE3106.6	Apply the suitable visualization techniques to output analytical results

Course Name: Computer Networks Lab	
Course Code: CSE3107	
CSE3107.1	Know how reliable data communication is achieved through data link layer.
CSE3107.2	Suggest appropriate routing algorithm for the network
CSE3107.3	Provide internet connection to the system
CSE3107.4	its installation.
CSE3107.5	Work on various network management tools
CSE3107.6	understand the layered architecture

Course Name: SOC(Animation design)	
Course Code: CSE3108	
CSE3108.1	learn various tools of digital 2-D animation
CSE3108.2	Understand production pipeline to create 2-D animation.
CSE3108.3	Apply the tools to create 2D animation for films and videos
CSE3108.4	Apply the tools to create videos
CSE3108.5	Understand different styles and treatment of content in 3D model creation
CSE3108.6	apply tools to create effective 3D modelling texturing and lighting

Year/Sem: III B.Tech II Sem

Course Name: Machine Learning	
Course Code: CSE3201	
CSE3201.1	Explain the fundamental usage of the concept Machine Learning system
CSE3201.2	Demonstrate on various regression Technique
CSE3201.3	Analyze the Ensemble Learning Methods
CSE3201.4	Illustrate the Clustering Techniques and Dimensionality Reduction Models in Machine Learning
CSE3201.5	Clustering, K-Means, Limits of K-Means, Using Clustering for Image Segmentation
CSE3201.6	Discuss the Neural Network Models and Fundamentals concepts of Deep Learning

Course Name: Compiler Design	
Course Code: CSE3202	
SE3202.1	Demonstrate phases in the design of compiler
CSE3202.2	Organize Syntax Analysis, Top Down and LL(1) grammars
CSE3202.3	Design Bottom Up Parsing
CSE3202.4	Construction of LR parsers
CSE3202.5	Analyze synthesized, inherited attributes and syntax directed translation schemes
CSE3202.6	Determine algorithms to generate code for a target machine

Course Name: Cryptography and Network Security	
Course Code: CSE3203	
CSE3203.1	Explain different security threats and countermeasures and foundation course of cryptography mathematics.
CSE3203.2	Classify the basic principles of symmetric key algorithms and operations of some symmetric key algorithms and asymmetric key cryptography.
CSE3203.3	Revise the basic principles of Public key algorithms and Working operations of some Asymmetric key algorithms such as RSA, ECC and some more.
CSE3203.4	Apply methods for authentication, access control, intrusion detection and prevention.
CSE3203.5	Design applications of hash algorithms, digital signatures and key management techniques.
CSE3203.6	Determine the knowledge of Application layer, Transport layer and Network layer security Protocols such as PGP, S/MIME, SSL,TSL, and IPsec .

Course Name: Object Oriented Analysis and Design	
Course Code: CSE3204	
CSE3204.1	Analyze the nature of complex system and its solutions.
CSE3204.2	Illustrate & relate the conceptual model of the UML, identify & design the classes and relationships.
CSE3204.3	Analyze&Design Class and Object Diagrams that represent Static Aspects of a Software System.
CSE3204.4	Apply basic and Advanced Structural Modeling Concepts for designing real time applications.
CSE3204.5	Analyze& Design behavioral aspects of a Software System using Use Case, Interaction and Activity Diagrams.
CSE3204.6	Analyze& Apply techniques of State Chart Diagrams and Implementation Diagrams to model behavioral aspects and Runtime environment of Software Systems.

Course Name: Microprocessor and Microcontrollers	
Course Code: CSE3205	
CSE3205.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors
CSE3205.2	To be able to understand the addressing modes of microprocessors
CSE3205.3	To be able to understand the micro controller capability
CSE3205.4	To be able to program MP&MC
CSE3205.5	To be able to interface MP & MC with other electronic devices
CSE3205.6	To be able to understand the ARM processor architecture

Course Name: Machine Learning using Python Lab	
Course Code: CSE3206	
CSE3206.1	Implement procedures for the machine learning algorithms
CSE3206.2	Design and Develop Python programs for various Learning algorithms
CSE3206.3	Apply appropriate data sets to the Machine Learning algorithms
CSE3206.4	Develop Machine Learning algorithms to solve real world problems
CSE3206.5	Develop a program for Bias, Variance, Remove duplicates , Cross Validation
CSE3206.6	Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.

Course Name: Compiler Design Lab	
Course Code: CSE3207	
CSE3207.1	Design simple lexical analyzers
CSE3207.2	Determine predictive parsing table for a CFG
CSE3207.3	Apply Lex
CSE3207.4	Apply Yacc tools
CSE3207.5	Examine LR parser and generating SLR Parsing table
CSE3207.6	Relate Intermediate code generation for subset C language

Course Name: Cryptography and Network Security Lab	
Course Code: CSE3208	
CSE3208.1	Apply the knowledge of symmetric cryptography to implement encryption and decryption using Ceaser Cipher, Substitution Cipher, Hill Cipher .
CSE3208.2	Demonstrate the different algorithms like DES, BlowFish, and Rijndael, encrypt the text "Hello world" using Blowfish Algorithm.
CSE3208.3	Analyze and implement public key algorithms like RSA, Diffie-Hellman Key Exchange mechanism, the message digest of a text using the SHA-1 algorithm.
CSE3208.4	Identify basic security attacks and services.
CSE3208.5	Use symmetric and asymmetric key algorithms for cryptography.
CSE3208.6	Demonstrate the network security system using open source tools.

Course Name: MEAN STACK TECHNOLOGIES MODULE-1	
Course Code: CSE3209	
CSE3209.1	Develop professional web pages of an application using HTML elements like lists, navigation, tables, various form elements, embedded media.
CSE3209.2	Develop professional web pages of an application using images, audio, video and CSS Styles.
CSE3209.3	Utilize JavaScript for developing interactive HTML web pages and validate form data
CSE3209.4	Build a basic web server using Node.js and also working with Node Package Manager.
CSE3209.5	Build a web server using Express.js
CSE3209.6	Make use of Typescript to optimize JavaScript code by using the concept of strict type checking.

Course Name: Employability skills-II	
Course Code: CSE3210	
CSE3210.1	Solve various Basic Mathematics problems by following different methods
CSE3210.2	Follow strategies in minimizing time consumption in problem solving
CSE3210.3	Apply shortcut methods to solve problems
CSE3210.4	Confidently solve any mathematical problems
CSE3210.5	utilize these mathematical skills both in their professional as well as personal life
CSE3210.6	Analyze, summarize and present information in quantitative forms including table, graphs and formulas

Year/Sem: IV B.Tech I Sem

Course Name: Cryptography and Network Security	
Course Code:CSE4101	
CSE4101.1	Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory
CSE4101.2	Compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
CSE4101.3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes.
CSE4101.4	Apply different digital signature algorithms to achieve authentication and create secure applications
CSE4101.5	Apply network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP
CSE4101.6	Apply the knowledge of cryptographic utilities and authentication mechanisms to design secure applications

Course Name: UML & Design Patterns	
Course Code: CSE4102	
CSE4102.1	Illustrate software design with UML diagrams
CSE4102.2	Design software applications using OO concepts
CSE4102.3	Identify various scenarios based on software requirements
CSE4102.4	Apply UML based software design into patterns
CSE4102.5	Based design using design patterns
CSE4102.6	▢ Illustrate the various testing methodologies for OO software

Course Name: Machine Learning	
Course Code: CSE4103	
CSE4103.1	Identify machine learning techniques suitable for a given problem
CSE4103.2	Solve the problems using various machine learning techniques
CSE4103.3	Apply Dimensionality reduction techniques
CSE4103.4	Design application using machine learning techniques
CSE4103.5	Discuss the Neural Network Models
CSE4103.6	Fundamentals concepts of Deep Learning

Course Name: Embedded Systems	
Course Code: CSE4104	
CSE4104.1	Understand the design process of an embedded system
CSE4104.2	Understand typical embedded System
CSE4104.3	Understand its components
CSE4104.4	Understand embedded firmware design approaches
CSE4104.5	Learn the basics of OS
CSE4104.6	Learn the basics of RTOS

Course Name: Mobile computing	
Course Code: CSE4105	
CSE4105.1	Interpret Wireless local area networks (WLAN): MAC design principles, 802.11 WIFI
CSE4105.2	Discuss fundamental challenges in mobile communications and potential Techniques in GSM
CSE4105.3	Demonstrate Mobile IP in Network layer
CSE4105.4	Demonstrate Mobile IP in Network layer
CSE4105.5	Illustrate different data delivery methods and synchronization protocols
CSE4105.6	Develop applications that are mobile-device specific and demonstrate current Practice in mobile computing contexts

Course Name: Cyber Security & Forensics	
Course Code: CSE4106	
CSE4106.1	Enumerate the computer forensics fundamentals
CSE4106.2	Describe the types of computer forensics technology
CSE4106.3	Analyze various computer forensics systems
CSE4106.4	Illustrate the methods for data recovery
CSE4106.5	evidence collection and data seizure
CSE4106.6	Identify the Role of CERT-In Security

Course Name: UML Lab	
Course Code: CSE4107	
CSE4107.1	Know the syntax of different UML diagrams
CSE4107.2	Create use case documents that capture requirements for a software system
CSE4107.3	Create class diagrams that model both the domain model and design model of a software
CSE4107.4	system
CSE4107.5	Create interaction diagrams that model the dynamic aspects of a software system
CSE4107.6	Write code that builds a software system

Year/Sem: IV B.Tech II Sem

Course Name: Management and organizational Behaviour	
Course Code: CS4201	
CS4201.1	After completion of the Course the student will acquire the knowledge on management functions, global leadership and organizational structure
CS4201.2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments
CS4201.3	The learner is able to think in strategically through contemporary management practices
CS4201.4	The learner can develop positive attitude through personality development.
CS4201.5	Can equip with motivational theories
CS4201.6	The student can attain the group performance and grievance handling in managing the organizational culture

Course Name: ENTERPRENEURSHIP	
Course Code: CSE4202	
CSE4202.1	Up on completing this course
CSE4202.2	Students are able to gain the competency of preparing business plans
CSE4202.3	Get the awareness on industrial policies
CSE4202.4	Study the impact of launching small business
CSE4202.5	Understand the recourse planning
CSE4202.6	Market selection for start ups

Course Name: DEVOPS	
Course Code: CSE4203	
CSE4203.1	Enumerate the principles of continuous development and deployment, automation of configuration management.
CSE4203.2	Enumerate the principles of inter-team collaboration, and IT service agility.
CSE4203.3	Describe DevOps & DevSecOps methodologies and their key concepts
CSE4203.4	Illustrate the types of version control systems, continuous integration tools.
CSE4203.5	Illustrate the types of continuous monitoring tools, and cloud models.
CSE4203.6	Set up complete private infrastructure using version control systems and CI/CD tools.

Department Of Computer Science and Engineering
Course Outcomes

Year/Sem: II B.Tech I Sem   **A.Y: 2021-22**

Course Name: Mathematics III	
Course Code: CSE2101	
CSE2101.1	State and prove vector Line , Surface and volume integral Theorems. State and prove Stokes and Green's theorems.
CSE2101.2	Derive Laplace transform standard functions. Deduce inverse Laplace transform functions.
CSE2101.3	Explain about Periodic functions , even and odd functions. Explain about Half range sine and cosine series. Explain Fourier transforms. State and prove Fourier integral theorem and problems.
CSE2101.4	Explain Fourier Transforms. State and prove Fourier integral theorem and problems.
CSE2101.5	Explain By eliminating Orbitary constants and Orbitary functions. Derive Legrangies equation and problems.
CSE2101.6	Derive solutions of linear P.D.E with constant coefficents and problems. Explain method of separation of variables and wave & heat equations.

Course Name: Object Oriented Programming through C++	
Course Code: CSE2102	
CSE2102.1	Classify object oriented programming and procedural programming
CSD2102.2	Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation
CSD2102.3	Inheritance and Polymorphism
CSD2102.4	Build C++ classes using appropriate encapsulation and design principles
CSD2102.5	Apply object oriented or non-object oriented techniques to solve bigger computing
CSD2102.6	File I/O, exception handling

Course Name: Operating Systems	
Course Code: CSE2103	
CSE2103.1	Describe various generations of Operating System and functions of Operating System
CSE2103.2	Describe the concept of program, process and thread and analyze various CPU Scheduling algorithms
CSE2103.3	Solve Inter Process Communication problems using Mathematical Equations by various methods.
CSE2103.4	Compare various Memory Management Schemes
CSE2103.5	especially paging and Segmentation
CSE2103.6	Outline File Systems in Operating System like UNIX/Linux and Windows

Course Name: Software Engineering	
Course Code: CSE2104	
CSE2104.1	Ability to transform an Object-Oriented Design into high quality, executable code.
CSE2104.2	Skills to design, implement, and execute test cases at the Unit and Integration level.
CSE2104.3	Prepare SRS document, design document, test cases and software configuration management and risk management related document.
CSE2104.4	Develop function oriented and object oriented software design using tools like rational rose.
CSE2104.5	Use modern engineering tools necessary for software project management, estimations, time management and software reuse.
CSE2104.6	Generate test cases for software testing.

Course Name: **Mathematical Foundations of Computer Science**	
Course Code: CSE2105	
CSE2105.1	Demonstrate skills in solving mathematical problems
CSE2105.2	Comprehend mathematical principles and logic
CSE2105.3	Demonstrate knowledge of mathematical modelling
CSE2105.4	Proficiency in using mathematical software
CSE2105.5	Manipulate and analyze data numerically and/or graphically using appropriate Software
CSE2105.6	Communicate effectively mathematical ideas/results verbally or in writing

Course Name: Object Oriented Programming through C++ Lab	
Course Code: CSE2106	
CSE2106.1	Apply the various OOPs concepts with the help of programs
CSE2106.2	Write a program implementing Friend Function
CSE2106.3	Write a program to Overload Unary, and Binary Operators as Member Function, and Non Member Function
CSE2106.4	Write a C++ program Multiple level Inheritance
CSE2106.5	Write a C++ program Hierarchical Inheritance
CSE2106.6	Write a Program for Exception Handling Divide by zero

Course Name: Operating Systems Lab	
Course Code: CSE2107	
CSE2107.1	To use Unix utilities and perform basic shell control of the utilities
CSE2107.2	To use the Unix file system
CSE2107.3	To use the file access control
CSE2107.4	To use of an operating system to develop software
CSE2107.5	Students will be able to use Linux environment efficiently
CSE2107.6	Solve problems using bash for shell scripting

Course Name: Software Engineering Lab	
Course Code: CSE2108	
CSE2108.1	By the end of this lab the student is able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project.
CSE2108.2	Prepare SRS document, design document, test cases and software configuration management and risk management related document.
CSE2108.3	Develop function oriented and object oriented software design using tools like rational rose.
CSE2108.4	Use modern engineering tools necessary for software project management, estimations, time management and software reuse.
CSE2108.5	Generate test cases for software testing
CSE2108.6	Will have experience and/or awareness of testing problems and will be able to develop a simple testing report.

Course Name: APPLICATIONS OF PYTHON-NUMPY LAB	
Course Code: CSE2109	
CSE2109.1	Explain how data is collected ,managed and stored for processing
CSE2109.2	Understand the working of various numerical techniques, different descriptive measures of Statistics to solve the engineering problems.
CSE2109.3	Understand how to apply some linear algebra operations to n-dimensional arrays
CSE2109.4	Use NumPy perform common data wrangling and computational tasks in Python
CSE2109.5	Understand the correlation and regression to solve the engineering problems
CSE2109.6	Utilise NumPy arrays to store and perform operations on data sets

Year/Sem: II B.Tech II Sem

Course Name: Probability and Statistics	
Course Code: CSE2201	
CSE2201.1	Explain the concepts of data science and its importance
CSE2201.2	Learn characteristics and through Correlation and regression tools
CSE2201.3	Write the concepts of probability and their applications
CSE2201.4	Apply discrete and continuous probability distributions
CSE2201.5	Explain the components of classical hypothesis test
CSE2201.6	To learn statistical inferential methods based on small and large sampling test

Course Name: Database Management Systems	
Course Code: CSE2202	
CSE2202.1	Describe a relational database and object-oriented database
CSE2202.2	Create, maintain and manipulate a relational database using SQL
CSE2202.3	Describe ER model and normalization for database design
CSE2202.4	Examine issues in data storage and query processing and can formulate appropriate solutions
CSE2202.5	Outline the role and issues in management of data such as efficiency, privacy, security.
CSE2202.6	Outline the role and issues in management of data such as ethical responsibility, and strategic advantage.

Course Name: Formal Languages and Automata Theory	
Course Code: CSE2203	
CSE2203.1	Classify machines by their power to recognize languages.
CSE2203.2	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy
CSE2203.3	Employ finite state machines to solve problems in computing
CSE2203.4	Illustrate deterministic machines
CSE2203.5	Illustrate non-deterministic machines
CSE2203.6	Quote the hierarchy of problems arising in the computer science

Course Name: Java Programming	
Course Code: CSE2204	
CSE2204.1	Able to realize the concept of object oriented programming & java programming constructs.
CSE2204.2	Able to describe the basic concepts of java such as operators,classes,objects.
CSE2204.3	Able to described the basic concept of java such as inheritance,packages,enumeration and various keywords.
CSE2204.4	Apply the concept of exception handling and Input/Output operations.
CSE2204.5	Able to design the application of java & java applet.
CSE2204.6	Able to Analyze & Design the concept of Event Handling and Abstract Window ToolKit.

Course Name: Managerial Economics and Financial Accountancy	
Course Code: CSE2205	
CSE2205.1	The Student is enhanced with the knowledge of estimating the Supply Demand and demand elasticises for a product.
CSE 2205.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs
CSE 2205.3	The Students is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units regarding Product & Services
CSE2205.4	They can understand the knowledge of formation of the company and company business cycle.
CSE2205.5	The Learner is able to prepare accounts, Ledger then Financial Statements and the usage of various Accounting tools for Analysis.
CSE2205.6	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for business decision making.

Course Name: Database Management Systems Lab	
Course Code: CSE2206	
CSE2206.1	Utilize SQL to execute queries for creating database and performing data manipulation operations
CSE2206.2	Examine integrity constraints to build efficient databases
CSE2206.3	Apply Queries using Advanced Concepts of SQL
CSE2206.4	Build PL/SQL programs including stored procedures, functions, cursors and triggers
CSE2206.5	Build PL/SQL programs including functions.
CSE2206.6	Build PL/SQL programs including cursors and triggers

Course Name: R Programming Lab	
Course Code: CSE2207	
CSE2207.1	Access online resources for R and import new function packages into the R workspace
CSE2207.2	Import, review, manipulate and summarize data-sets in R
CSE2207.3	Explore data-sets to create testable hypotheses
CSE2207.4	Identify appropriate statistical tests
CSE2207.5	Perform appropriate statistical tests using R
CSE2207.6	Create and edit visualizations with R

Course Name: Java Programming Lab	
Course Code: CSE2208	
CSE2208.1	Evaluate default value of all primitive data type, Operations, Expressions, Control-flow, Strings
CSE2208.2	Determine Class, Objects, Methods, Inheritance.
CSE2208.3	Exception, Runtime Polymorphism.
CSE2208.4	User defined Exception handling mechanism.
CSE2208.5	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
CSE2208.6	Construct Threads, Event Handling, implement packages, developing applets

Course Name: **APPLICATIONS OF PYTHON-PANDAS LAB**	
Course Code: CSE2209	Use Pandas to create and manipulate data structures like Series and Data f rames
CSE2209.1	Work with arrays ,queries and data frames
CSE2209.2	Query Data Frame structures for cleaning and processing and manipulating files
CSE2209.3	Understand best practice for creating basic charts
CSE2209.4	Describe how to index and "type" Pandas Series and Data frames.
CSE2209.5	Create histograms and scatter plots for basic exploratory data analysis
CSE2209.6	Use Pandas to create and manipulate data structures like Series and Data frames

Year/Sem: III B.Tech I Sem

Course Name: Data Warehousing and Data Mining	
Course Code :CSE3101	
CSE3101.1	Design a Data warehouse system
CSE3101.2	Perform business analysis with OLAP tools
CSE3101.3	Apply suitable pre-processing and visualization techniques for data analysis
CSE3101.4	Apply frequent pattern and association rule mining techniques for data analysis
CSE3101.5	Apply appropriate classification techniques for data analysis
CSE3101.6	Apply appropriate clustering techniques for data analysis

Course Name: Computer Networks	
Course Code: CSE3102	
CSE3102.1	Illustrate the OSI and TCP reference model
CSE3102.2	Illustrate the OSI and IP reference model
CSE3102.3	Analyze MAC layer protocols and LAN technologies
CSE3102.4	Design applications using internet protocols
CSE3102.5	Implement routing and congestion control algorithms
CSE3102.6	Develop application layer protocols

Course Name: Compiler Design	
Course Code: CSE3103	
CSE3103.1	Design, develop, and implement a compiler for any language
CSE3103.2	Use LEX and YACC tools for developing a scanner and a parser
CSE3103.3	Design and implement LL and LR parsers
CSE3103.4	Design algorithms to perform code optimization
CSE3103.5	Design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity
CSE3103.6	Apply algorithms to generate machine code

Course Name: Artificial Intelligence	
Course Code: CSE3104	
CSE3104.1	Outline problems that are amenable to solution by AI methods
CSE3104.2	Which AI methods may be suited to solving a given problem
CSE3104.3	Apply the language/framework of different AI methods for a given problem
CSE3104.4	Implement basic AI algorithms- standard search algorithms or dynamic programming
CSE3104.5	Design and carry out an empirical evaluation of different algorithms on problem formalization
CSE3104.6	State the conclusions that the evaluation supports

Course Name:ADVANCED DATA STRUCTURES	
Course Code: CSE3105	
CSE3105.1	Illustrate several sub-quadratic sorting algorithms.
CSE3105.2	Demonstrate recursive methods
CSE3105.3	Apply advanced data structures such as balanced search trees
CSE3105.4	Apply advanced data structures such as hash tables
CSE3105.5	Apply advanced data structures such as priority queues
CSE3105.6	disjoint set union/find data structure

Course Name: Computer Networks Lab	
Course Code: CSE3106	
CSE3106.1	Apply the basics of Physical layer in real time applications
CSE3106.2	Apply data link layer concepts, design issues, and protocols
CSE3106.3	Apply Network layer routing protocols and IP addressing
CSE3106.4	Apply Network layer IP addressing
CSE3106.5	Implement the functions of Application layer
CSE3106.6	Presentation layer paradigms and Protocols

Course Name: AI Tools & Techniques Lab	
Course Code: CSE3107	
CSE3107.1	Identify problems that are amenable to solution by AI methods
CSE3107.2	Identify appropriate AI methods to solve a given problem
CSE3107.3	Use language/framework of different AI methods for solving problems
CSE3107.4	Implement basic AI algorithms
CSE3107.5	Design and carry out an empirical evaluation of different algorithms on problem formalization
CSE3107.6	State the conclusions that the evaluation supports

Course Name: Data Mining Lab	
Course Code: CSE3108	
CSE3108.1	Extend the functionality of R by using add-on packages
CSE3108.2	Examine data from files and other sources and perform various data manipulation tasks on them
CSE3108.3	Code statistical functions in R
CSE3108.4	Use R Graphics and Tables to visualize results
CSE3108.5	various statistical operations on data
CSE3108.6	Apply the knowledge of R gained to data Analytics for real life applications

Year/Sem: III B.Tech II Sem

Course Name: Web Technologies	
Course Code: CSE3201	
CSE3201.1	Illustrate the basic concepts of HTML and CSS & apply those concepts to design static web pages
CSE3201.2	Identify and understand various concepts related to dynamic web pages and validate them using JavaScript
CSE3201.3	Outline the concepts of Extensible markup language & AJAX
CSE3201.4	Develop web Applications using Scripting Languages & Frameworks
CSE3201.5	Create and deploy secure web applications using PHP and RUBY
CSE3201.6	Create usable database driven web applications using PHP and RUBY

Course Name: Distributed Systems	
Course Code: CSE3202	
CSE3202.1	Elucidate the foundations and issues of distributed systems
CSE3202.2	Illustrate the various synchronization issues and global state for distributed systems
CSE3202.3	Illustrate the Mutual Exclusion and Deadlock detection algorithms in distributed systems
CSE3202.4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems
CSE3202.5	Describe the features of peer-to-peer shared memory systems
CSE3202.6	Describe the features of distributed shared memory systems

Course Name: Design and Analysis of Algorithms	
Course Code: CSE3203	
CSE3203.1	Describe asymptotic notation used for denoting performance of algorithms
CSE3203.2	Analyze the performance of a given algorithm and denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms
CSE3203.3	List and describe various algorithmic approaches
CSE3203.4	Solve problems using divide and conquer, greedy, dynamic programming, backtracking and branch and bound algorithmic approaches
CSE3203.5	Apply graph search algorithms to real world problems
CSE3203.6	Demonstrate an understanding of NP- Completeness theory and lower bound theory

Course Name: principles of communication	
Course Code: CSE3204	
CSE3204.1	Analyze the performance of analog modulation schemes in time and frequency domains.
CSE3204.2	Analyze the performance of angle modulated signals.
CSE3204.3	Characterize analog signals in time domain as random processes and noise
CSE3204.4	Characterize the influence of channel on analog modulated signals
CSE3204.5	Determine the performance of analog communication systems in terms of SNR
CSE3204.6	Analyze pulse amplitude modulation, pulse position modulation, pulse code modulation and TDM systems.

Course Name: Managerial Economics and Financial Accountancy	
Course Code: CSE3206	
CSE3206.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
CSE3206.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
CSE3206.3	The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units.
CSE3206.4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis.
CSE3206.5	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
CSE3206.6	Capital budgeting techniques for decision making.

Course Name: Web Technologies Lab	
Course Code: CSE3207	
CSE3207.1	Analyze and apply the role of languages like HTML, CSS, XML
CSE3207.2	Review JavaScript, PHP and protocols in the workings of the web and web applications
CSE3207.3	Apply Web Application Terminologies, Internet Tools
CSE3207.4	E – Commerce and other web services
CSE3207.5	Develop and Analyze dynamic Web Applications using PHP & MySql
CSE3207.6	Install & Use Frameworks

Year/Sem: IV B.Tech I Sem

Course Name: Cryptography and Network Security	
Course Code:CSE4101	
CSE4101.1	To be familiarity with information security awareness and a clear understanding of its importance.
CSE4101.2	To master fundamentals of secret and public cryptography
CSE4101.3	To master protocols for security services
CSE4101.4	To be familiar with network security threats and countermeasures
CSE4101.5	To be familiar with network security designs using available secure solutions (such as PGP)
CSE4101.6	To be familiar with network security designs using available secure solutions(SSL, IPSec, etc)

Course Name: Software Architecture & Design Patterns	
Course Code: CSE4102	
CSE4102.1	To understand interrelationships, principles and guidelines governing architecture and evolution over time.
CSE4102.2	To understand various architectural styles of software systems.
CSE4102.3	To understand design patterns.
CSE4102.4	their underlying object oriented concepts.
CSE4102.5	To understand implementation of design patterns and providing solutions to real world software design problems.
CSE4102.6	To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.

Course Name: Web Technologies	
Course Code: CSE4103	
CSE4103.1	Analyze a web page and identify its elements and attributes.
CSE4103.2	Create web pages using XHTML and Cascading Styles sheets.
CSE4103.3	Build dynamic web pages.
CSE4103.4	Build web applications using PHP.
CSE4103.5	Programming through PERL and Ruby
CSE4103.6	Write simple client-side scripts using AJAX

Course Name: Managerial Economics and Financial Analysis	
Course Code: CSE4104	
CSE4104.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
CSE4104.2	knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
CSE4104.3	One is also ready to understand the nature of different markets and Price Output determination
CSE4104.4	under various market conditions and also to have the knowledge of different Business Units
CSE4104.5	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis and to evaluate various investment project proposals
CSE4104.6	Capital budgeting techniques for decision making.

Course Name: Mobile Computing	
Course Code: CSE4105	
CSE4105.1	Able to think and develop new mobile application.
CSE4105.2	Able to take any new technical issue related to this new paradigm.
CSE4105.3	come up with a solution(s).
CSE4105.4	Able to develop new ad hoc network applications algorithms/protocols.
CSE4105.5	Able to develop new ad hoc algorithms/protocols
CSE4105.6	Able to understand & develop any existing or new protocol related to mobile environment

Course Name: Software Project Management	
Course Code: CSE4106	
CSE4106.1	To match organizational needs to the most effective software development model
CSE4106.2	To understand the basic concepts and issues of software project management
CSE4106.3	To effectively Planning the software projects
CSE4106.4	To implement the project plans through managing people, communications and change
CSE4106.5	To select and employ mechanisms for tracking the software projects
CSE4106.6	To conduct activities necessary to successfully complete and close the Software projects

Course Name: Software Architecture& Design Patterns Lab	
Course Code: CSE4107	
CSE4107.1	Design of the Use Case View. Risk Analysis.
CSE4107.2	implementation of the software architecture of a Weather Mapping System (WMS).
CSE4107.3	Implementation will take place in Java.
CSE4107.4	Implementation will take place C++
CSE4107.5	Each lab assignment consists of a theoretical part and a practical part, which are defined in specific lab assignment statements
CSE4107.6	Using UML design Iterator Design pattern

Course Name: Web Technologies Lab	
Course Code: CSE4108	
CSE4108.1	Students will be able to develop static web sites using XHTML and Java Scripts
CSE4108.2	To implement XML and XSLT for web applications
CSE4108.3	Develop Dynamic web content using Java Servlets
CSE4108.4	Develop Dynamic web content using JSP
CSE4108.5	To develop JDBC connections.
CSE4108.6	implement a complete Dynamic web application

Year/Sem: IV B.Tech II Sem

Course Name: Distributed Systems	
Course Code: CS4201	
CS4201.1	Develop a familiarity with distributed file systems.
CS4201.2	Describe important characteristics of distributed systems
CS4201.3	The salient architectural features of such systems.
CS4201.4	Describe the features and applications of important standard protocols which are used in distributed systems.
CS4201.5	Gaining practical experience of inter-process communication in a distributed environment
CS4201.6	Gaining practical experience of inter-process communication

Course Name: Management Science	
Course Code: CS4202	
CSE4202.1	After completion of the Course the student will acquire the knowledge on management functions,
CSE4202.2	Global leadership.
CSE4202.3	After completion of the Course the student will acquire the knowledge on organizational behaviour.
CSE4202.4	Will familiarize with the concepts of project management.
CSE4202.5	Will familiarize with the concepts of strategic management.
CSE4202.6	Will familiarize with the concepts of functional management.

Course Name: Machine Learning	
Course Code: CS4203	
CSE4203.1	Recognize the characteristics of machine learning that make it useful to real-world ☐Problems.
CSE4203.2	Characterize machine learning algorithms as supervised, semi-supervised, and Unsupervised.
CSE4203.3	Have heard of a few machine learning toolboxes.
CSE4203.4	Be able to use support vector machines.
CSE4203.5	Be able to use regularized regression algorithms.
CSE4203.6	Understand the concept behind neural networks for learning non-linear functions.

Course Name: Artificial Neural Networks	
Course Code: CS4204	
CSE4204.1	This course has been designed to offer as a graduate-level/ final year undergraduate level elective subject to the students of any branch of engineering/ science, having basic foundations of matrix algebra,
CSE4204.2	calculus and preferably (not essential) with a basic knowledge of optimization
CSE4204.3	Students and researchers desirous of working on pattern recognition and classification, regression and interpolation from sparse observations;
CSE4204.4	control and optimization are expected to find this course useful. The course covers theories and usage of artificial neural networks (ANN) for problems pertaining to classification (supervised/ unsupervised) and regression.
CSE4204.5	The course starts with some mathematical foundations and the structures of artificial neurons, which mimics biological neurons in a grossly scaled down version.
CSE4204.6	The course introduces perceptrons, discusses its capabilities and limitations as a pattern classifier and later develops concepts of multilayer perceptrons with back propagation learning.

Department Of Computer Science and Engineering
Course Outcomes

Year/Sem: II B.Tech I Sem   **A.Y: 2020-21**

Course Name: Mathematical Foundations of Computer Science	
Course Code: CSE2101	
CSE2101.1	Demonstrate skills in solving mathematical problems
CSE2101.2	Comprehend mathematical principles and logic
CSE2101.3	Demonstrate knowledge of mathematical modeling .
CSE2101.4	proficiency in using mathematical software
CSE2101.5	Manipulate and analyze data numerically and/or graphically using appropriate Software
CSE2101.6	Communicate effectively mathematical ideas/results verbally or in writing

Course Name: Software Engineering	
Course Code: CSE2102	
CSE2102.1	Ability to transform an Object-Oriented Design into high quality
CSD2102.2	Ability to transform an Object-Oriented Design into executable code
CSD2102.3	Skills to design, implement, and execute test cases at the Unit TEST.
CSD2102.4	Skills to design, implement, and execute test cases at the Integration level
CSD2102.5	Compare conventional
CSD2102.6	agile software methods

Course Name: Python Programming	
Course Code: CSE2103	
CSE2103.1	Develop essential programming skills in computer programming concepts like data types, containers
CSE2103.2	Apply the basics of programming in the Python language
CSE2103.3	Solve coding tasks related conditional execution.
CSE2103.4	Solve coding tasks related loops.
CSE2103.5	Solve coding tasks related to the fundamental notions.
CSE2103.6	Techniques used in object-oriented programming

Course Name: Data Structures	
Course Code: CSE2104	
CSE2104.1	Summarize the properties, interfaces, and behaviors of basic abstract data types
CSE2104.2	Discuss the computational efficiency of the principal algorithms for sorting
CSE2104.3	Discuss the computational efficiency of the principal algorithms for searching
CSE2104.4	Use arrays, records, linked structures, stacks, queues, trees,
CSE2104.5	Graphs in writing programs
CSE2104.6	Demonstrate different methods for traversing trees

Course Name: Object Oriented Programming through C++	
Course Code: CSE2105	
CSE2105.1	Classify object oriented programming and procedural programming
CSE2105.2	Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation,
CSE2105.3	Apply C++ features such as inheritance and polymorphism, file I/O, exception handling
CSE2105.4	Build C++ classes using appropriate encapsulation
CSE2105.5	Build C++ classes using appropriate design principles
CSE2105.6	Apply object oriented or non-object oriented techniques to solve bigger computing problems

Course Name: Computer Organization	
Course Code: CSE2106	
CSE2106.1	Develop a detailed understanding of computer systems
CSE2106.2	Cite different number systems, binary addition and subtraction, standard, floating-point, and micro operations
CSE2106.3	Develop a detailed understanding of architecture
CSE2106.4	Functionality of central processing unit
CSE2106.5	Exemplify in a better way the I/O and memory organization
CSE2106.6	Illustrate concepts of parallel processing, pipelining and inter processor communication

Course Name: Python Programming Lab	
Course Code: CSE2107	
CSE2107.1	Write, Test and Debug Python Programs
CSE2107.2	Use Conditionals
CSE2107.3	Loops for Python Programs
CSE2107.4	Use functions and represent Compound data using Lists,
CSE2107.5	Use functions and represent Compound data using Tuples and Dictionaries
CSE2107.6	Use various applications using python

Course Name: Data Structures through C++ Lab	
Course Code: CSE2108	
CSE2108.1	Use various applications using python .
CSE2108.2	Use basic data structures such as arrays.
CSE2108.3	Use basic data structures such as linked list
CSE2108.4	Programs to demonstrate fundamental algorithmic problems including Tree Traversals.
CSE2108.5	Graph traversals, and shortest paths.
CSE2108.6	Use various searching and sorting algorithms.

Year/Sem: II B.Tech II Sem

Course Name: Probability and Statistics	
Course Code: CSE2201	
CSE2201.1	Classify the concepts of data science and its importance (L4) or (L2)
CSE2201.2	Interpret the association of characteristics and through correlation and regression tools (L4)
CSE2201.3	Make use of the concepts of probability and their applications (L3)
CSE2201.4	Apply discrete and continuous probability distributions (L3)
CSE2201.5	Design the components of a classical hypothesis test (L6)
CSE2201.6	Infer the statistical inferential methods based on small and large sampling tests (L4)

Course Name: Java Programming	
Course Code: CSE2202	
CSE2202.1	Able to realize the concept of Object Oriented Programming & Java Programming Constructs
CSE2202.2	Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords
CSE2202.3	Apply the concept of exception handling and Input/ Output operations
CSE2202.4	Able to design the applications of Java & Java applet
CSE2202.5	Able to Analyze & Design the concept of Event Handling
CSE2202.6	Able to Analyze & Design the concept of Abstract Window Toolkit

Course Name: Operating Systems	
Course Code: CSE2203	
CSE2203.1	Describe various generations of Operating System and functions of Operating System
CSE2203.2	Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance
CSE2203.3	Solve Inter Process Communication problems using Mathematical Equations by various methods
CSE2203.4	Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques
CSE2203.5	Outline File Systems in Operating System like UNIX/Linux .
CSE2203.6	Outline File Systems in Operating System like Windows .

Course Name: Database Management Systems	
Course Code: CSE2204	
CSE2204.1	Describe a relational database and object-oriented database
CSE2204.2	Create, maintain and manipulate a relational database using SQL
CSE2204.3	Describe ER model and normalization for database design
CSE2204.4	Examine issues in data storage and query processing and can formulate appropriate solutions
CSE2204.5	Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility
CSE2204.6	Outline the role and issues in management of data such as strategic advantage.

Course Name: Formal Languages and Automata Theory	
Course Code: CSE2205	
CSE2205.1	Classify machines by their power to recognize languages.
CSE 2205.2	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy
CSE 2205.3	Employ finite state machines to solve problems in computing
CSE2205.4	Illustrate deterministic machines
CSE2205.5	Illustrate non-deterministic machines
CSE2205.6	Quote the hierarchy of problems arising in the computer science

Course Name: Java Programming Lab	
Course Code: CSE2206	
CSE2206.1	Evaluate default value of all primitive data type, Operations, Expressions, Control-flow, Strings
CSE2206.2	Determine Class, Objects, Methods, Inheritance, Exception,
CSE2206.3	Determine Runtime Polymorphism, User defined Exception handling mechanism
CSE2206.4	Illustrating simple inheritance, multi-level inheritance,
CSE2206.5	Illustrating Exception handling mechanism
CSE2206.6	Construct Threads, Event Handling, implement packages, developing applets

Course Name: UNIX Operating System Lab	
Course Code: CSE2207	
CSE2207.1	To use Unix utilities and perform basic shell control of the utilities
CSE2207.2	To use the Unix file system.
CSE2207.3	To use the file access control.
CSE2207.4	To use of an operating system to develop software
CSE2207.5	Students will be able to use Linux environment efficiently
CSE2207.6	Solve problems using bash for shell scripting

Course Name: Database Management Systems Lab	
Course Code: CSE2208	
CSE2208.1	Utilize SQL to execute queries for creating database.
CSE2208.2	Performing data manipulation operations.
CSE2208.3	Examine integrity constraints to build efficient databases
CSE2208.4	Apply Queries using Advanced Concepts of SQL
CSE2208.5	Build PL/SQL programs including stored procedures,
CSE2208.6	Build PL/SQL programs including functions, cursors and triggers

Year/Sem: III B.Tech I Sem

Course Name: Compiler Design	
Course Code :CSE3101	
CSE3101.1	Acquire knowledge in different phases and passes of Compiler, and specifying different types of tokens by lexical analyzer, and also able to use the Compiler tools like LEX, YACC, etc.
CSE3101.2	Parser and its types i.e. Top-down and Bottom-up parsers.
CSE3101.3	Construction of LL, SLR..
CSE3101.4	Construction of LALR parse table.
CSE3101.5	Syntax directed translation, synthesized and inherited attributes
CSE3101.6	Techniques for code optimization

Course Name: Unix Programming	
Course Code: CSE3102	
CSE3102.1	Documentation will demonstrate good organization and readability.
CSE3102.2	File processing projects will require data organization, problem solving and research.
CSE3102.3	Scripts and programs will demonstrate simple effective user interfaces.
CSE3102.4	Scripts and programs will demonstrate effective use of structured programming.
CSE3102.5	Scripts and programs will be accompanied by printed output demonstrating completion of a test plan.
CSE3102.6	Testing will demonstrate both black and glass box testing strategies

Course Name: Object Oriented Analysis and Design using UML	
Course Code: CSE3103	
CSE3103.1	Ability to find solutions to the complex problems using object oriented approach
CSE3103.2	Represent classes, responsibilities.
CSE3103.3	Represent states using UML notation
CSE3103.4	Identify classes and responsibilities of the problem domain
CSE3103.5	Analyze and design solutions to problems using object oriented approach
CSE3103.6	Study the notations of Unified Modeling Language

Course Name: Database Management Systems	
Course Code: CSE3104	
CSE3104.1	Describe a relational database and object-oriented database
CSE3104.2	Create, maintain and manipulate a relational database using SQL
CSE3104.3	Describe ER model and normalization f or database design
CSE3104.4	Examine issues in data storage and query processing and can formulate appropriate solutions.
CSE3104.5	Understand the role and issues in management of data such as efficiency, privacy,security, ethical responsibility, and strategic advantage.
CSE3104.6	Design and build database system for a given real world problem

Course Name: Operating Systems	
Course Code: CSE3105	
CSE3105.1	Design various Scheduling algorithms
CSE3105.2	Apply the principles of concurrency
CSE3105.3	Design deadlock, prevention and avoidance algorithms
CSE3105.4	Compare and contrast various memory management schemes
CSE3105.5	Design and Implement a prototype file systems.
CSE3105.6	Perform administrative tasks on Linux Servers

Course Name: Unified Modeling Lab	
Course Code: CSE3106	
CSE3106.1	Understand the Case studies and design the Model.
CSE3106.2	Understand how design patterns solve design problems.
CSE3106.3	Develop design solutions using creational patterns.
CSE3106.4	Construct UML diagrams for static view and dynamic view of the system.
CSE3106.5	Generate creational patterns by applicable patterns for given context.
CSE3106.6	Create refined model for given Scenario using structural patterns.

Course Name: Operating System & Linux Programming Lab	
Course Code: CSE3107	
CSE3107.1	To use Unix utilities and perform basic shell control of the utilities
CSE3107.2	To use the Unix file system and file access control.
CSE3107.3	To use of an operating system to develop software
CSE3107.4	Students will be able to use Linux environment efficiently
CSE3107.5	Solve problems using bash for shell scripting
CSE3107.6	Will be able to implement algorithms to solve data mining problems using weka tool

Course Name: Database Management System Lab	
Course Code: CSE3108	
CSE3108.1	Understand, appreciate and effectively explain the underlying concepts of database technologies
CSE3108.2	Design and implement a database schema for a given problem-domain
CSE3108.3	Normalize a database. Design and build a GUI application using a 4GL
CSE3108.4	Populate and query a database using SQL DML/DDL commands.
CSE3108.5	Declare and enforce integrity constraints on a database using a state-of-the-artRDBMS
CSE3108.6	Programming PL/SQL including stored procedures, stored functions, cursors, packages

Course Name: Computer Networks	
Course Code: CSE3201	
CSE3201.1	Understand OSI and TCP/IP models☐
CSE3201.2	Analyze MAC layer protocols and LAN technologies
CSE3201.3	Design applications using internet protocols
CSE3201.4	Understand routing
CSE3201.5	congestion control algorithms
CSE3201.6	Understand how internet works

Course Name: Data Warehousing and Mining	
Course Code: CSE3202	
SE3202.1	Understand stages in building a Data Warehouse
CSE3202.2	Understand the need and importance of preprocessing techniques
CSE3202.3	Understand the need and importance of Similarity.
CSE3202.4	Understand the need and importance of dissimilarity techniques.
CSE3202.5	Analyze and evaluate performance of algorithms for Association Rules.
CSE3202.6	Analyze Classification and Clustering algorithms

Course Name: Design and Analysis of Algorithms	
Course Code: CSE3203	
CSE3203.1	Argue the correctness of algorithms using inductive proofs and invariants.
CSE3203.2	Analyze worst-case running times of algorithms using asymptotic analysis.
CSE3203.3	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it.
CSE3203.4	Recite algorithms that employ this paradigm. Synthesize divide-and conquer algorithms. Derive and solve recurrences describing the performance of divide and- conquer algorithms.
CSE3203.5	Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic programming algorithms, and analyze them.
CSE3203.6	Describe the greedy paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.

Course Name: Software Testing Methodologies	
Course Code: CSE3204	
CSE3204.1	Understand the basic testing procedures.☐
CSE3204.2	Able to support in generating test cases and test suites.
CSE3204.3	Able to test the applications manually by applying different testing methods
CSE3204.4	Able to test the applications manually by applying automation tools
CSE3204.5	Apply tools to resolve the problems in Real time environment.
CSE3204.6	Acts as the reference for software testing techniques and strategies.

Course Name: Cyber Security	
Course Code: CSE3205	
CSE3205.1	Cyber Security architecture principles
CSE3205.2	Identifying System and application security threats and vulnerabilities
CSE3205.3	Identifying different classes of attacks
CSE3205.4	Cyber Security incidents to apply appropriate response
CSE3205.5	Describing risk management processes and practices
CSE3205.6	Evaluation of decision making outcomes of Cyber Security scenarios

Course Name: Network Programming Lab	
Course Code: CSE3206	
CSE3206.1	Understand and explain the basic concepts of Grid Computing;
CSE3206.2	Explain the advantages of using Grid Computing within a given environment;
CSE3206.3	Prepare for any upcoming Grid deployments and be able to get started with a potentially available Grid setup.
CSE3206.4	Discuss some of the enabling technologies e.g. high-speed links and storage area networks.
CSE3206.5	Build computer grids
CSE3206.6	To Design reliable servers using both TCP and UDP sockets

Course Name: Software Testing Lab	
Course Code: CSE3207	
CSE3207.1	Find practical solutions to the problems
CSE3207.2	Solve specific problems alone or in teams
CSE3207.3	Manage a project from beginning to end
CSE3207.4	Work independently as well as in teams
CSE3207.5	Define, formulate and analyze a problem
CSE3207.6	Demonstrate the working of software testing tools with c language.

Course Name: DATA WARE HOUSING AND DATA MINING LAB	
Course Code: CSE3208	
CSE3208.1	The data mining process and important issues around data cleaning,.
CSE3208.2	pre-processing and integration
CSE3208.3	The principle algorithms and techniques used in data mining, such as clustering
CSE3208.4	association mining, classification and prediction..
CSE3208.5	Exposure to real life data sets for analysis and prediction.
CSE3208.6	Learning performance evaluation of data mining algorithms in a supervised and an unsupervised setting.

Year/Sem: IV B.Tech I Sem

Course Name: Cryptography and Network Security	
Course Code:CSE4101	
CSE4101.1	To be familiarity with information security awareness and a clear understanding of its importance.
CSE4101.2	To master fundamentals of secret and public cryptography
CSE4101.3	To master protocols for security services
CSE4101.4	To be familiar with network security threats and countermeasures
CSE4101.5	To be familiar with network security designs using available secure solutions (such as PGP)
CSE4101.6	To be familiar with network security designs using available secure solutions(SSL, IPSec, etc)

Course Name: Software Architecture & Design Patterns	
Course Code: CSE4102	
CSE4102.1	To understand interrelationships, principles and guidelines governing architecture and evolution over time.
CSE4102.2	To understand various architectural styles of software systems.
CSE4102.3	To understand design patterns.
CSE4102.4	To understand object oriented concepts.
CSE4102.5	To understand implementation of design patterns and providing solutions to real world software design problems.
CSE4102.6	To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.

Course Name: Web Technologies	
Course Code: CSE4103	
CSE4103.1	Analyze a web page and identify its elements and attributes.
CSE4103.2	Create web pages using XHTML and Cascading Styles sheets.
CSE4103.3	Build dynamic web pages.
CSE4103.4	Build web applications using PHP.
CSE4103.5	Programming through PERL and Ruby
CSE4103.6	Write simple client-side scripts using AJAX

Course Name: Managerial Economics and Financial Analysis	
Course Code: CSE4104	
CSE4104.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
CSE4104.2	knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
CSE4104.3	One is also ready to understand the nature of different markets and Price Output determination
CSE4104.4	under various market conditions and also to have the knowledge of different Business Units
CSE4104.5	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis and to evaluate various investment project proposals
CSE4104.6	Capital budgeting techniques for decision making.

Course Name: Mobile Computing	
Course Code: CSE4105	
CSE4105.1	Able to think and develop new mobile application.
CSE4105.2	Able to take any new technical issue related to this new paradigm.
CSE4105.3	come up with a solution(s).
CSE4105.4	Able to develop new ad hoc network applications algorithms/protocols.
CSE4105.5	Able to develop new ad hoc algorithms/protocols
CSE4105.6	Able to understand & develop any existing or new protocol related to mobile environment

Course Name: Software Project Management	
Course Code: CSE4106	
CSE4106.1	To match organizational needs to the most effective software development model
CSE4106.2	To understand the basic concepts and issues of software project management
CSE4106.3	To effectively Planning the software projects
CSE4106.4	To implement the project plans through managing people, communications and change
CSE4106.5	To select and employ mechanisms for tracking the software projects
CSE4106.6	To conduct activities necessary to successfully complete and close the Software projects

Course Name: Software Architecture& Design Patterns Lab	
Course Code: CSE4107	
CSE4107.1	Design of the Use Case View. Risk Analysis.
CSE4107.2	Implementation of the software architecture of a Weather Mapping System (WMS).
CSE4107.3	Implementation will take place in Java.
CSE4107.4	Implementation will take place C++
CSE4107.5	Each lab assignment consists of a theoretical part and a practical part, which are defined in specific lab assignment statements
CSE4107.6	Using UML design Iterator Design pattern

Course Name: Web Technologies Lab	
Course Code: CSE4108	
CSE4108.1	Students will be able to develop static web sites using XHTML and Java Scripts
CSE4108.2	To implement XML and XSLT for web applications
CSE4108.3	Develop Dynamic web content using Java Servlets
CSE4108.4	Develop Dynamic web content using JSP
CSE4108.5	To develop JDBC connections.
CSE4108.6	implement a complete Dynamic web application

Year/Sem: IV B.Tech II Sem

Course Name: Distributed Systems	
Course Code: CS4201	
CS4201.1	Develop a familiarity with distributed file systems.
CS4201.2	Describe important characteristics of distributed systems
CS4201.3	The salient architectural features of such systems.
CS4201.4	Describe the features and applications of important standard protocols which are used in distributed systems.
CS4201.5	Gaining practical experience of inter-process communication in a distributed environment
CS4201.6	Gaining practical experience of inter-process communication

Course Name: Management Science	
Course Code: CS4202	
CSE4202.1	After completion of the Course the student will acquire the knowledge on management functions,
CSE4202.2	Global leadership.
CSE4202.3	After completion of the Course the student will acquire the knowledge on organizational behaviour.
CSE4202.4	Will familiarize with the concepts of project management.
CSE4202.5	Will familiarize with the concepts of strategic management.
CSE4202.6	Will familiarize with the concepts of functional management.

Course Name: Machine Learning	
Course Code: CS4203	
CSE4203.1	Recognize the characteristics of machine learning that make it useful to real-world □Problems.
CSE4203.2	Characterize machine learning algorithms as supervised, semi-supervised, and Unsupervised.
CSE4203.3	Have heard of a few machine learning toolboxes.
CSE4203.4	Be able to use support vector machines.
CSE4203.5	Be able to use regularized regression algorithms.
CSE4203.6	Understand the concept behind neural networks for learning non-linear functions.

Course Name: Artificial Neural Networks	
Course Code: CS4204	
CSE4204.1	This course has been designed to offer as a graduate-level/ final year undergraduate level elective subject to the students of any branch of engineering/ science, having basic foundations of matrix algebra,
CSE4204.2	calculus and preferably (not essential) with a basic knowledge of optimization
CSE4204.3	Students and researchers desirous of working on pattern recognition and classification, regression and interpolation from sparse observations;
CSE4204.4	control and optimization are expected to find this course useful. The course covers theories and usage of artificial neural networks (ANN) for problems pertaining to classification (supervised/ unsupervised) and regression.
CSE4204.5	The course starts with some mathematical foundations and the structures of artificial neurons, which mimics biological neurons in a grossly scaled down version.
CSE4204.6	The course introduces perceptrons, discusses its capabilities and limitations as a pattern classifier and later develops concepts of multilayer perceptrons with back propagation learning.

Department Of Computer Science and Engineering
Course Outcomes

Year/Sem: II B.Tech I Sem   **A.Y: 2019-20**

Course Name: Statistics with R Programming	
Course Code: CSE2101	
CSE2101.1	List motivation for learning a programming language
CSE2101.2	Access online resources for R and import new function packages into the R workspace
CSE2101.3	Import, review, manipulate and summarize data-sets in R
CSE2101.4	Explore data-sets to create testable hypotheses and identify appropriate statistical tests
CSE2101.5	Perform appropriate statistical tests using R Create and edit visualizations with
CSE2101.6	Use R in their own research,

Course Name: Mathematical Foundations of Computer Science	
Course Code: CSE2102	
CSE2102.1	Student will be able to demonstrate skills in solving mathematical problems
CSD2102.2	Student will be able to comprehend mathematical principles and logic
CSD2102.3	Student will be able to demonstrate knowledge of mathematical modeling and proficiency in using mathematical software
CSD2102.4	Student will be able to manipulate and analyze data numerically and/or graphically using appropriate Software
CSD2102.5	Student will be able to communicate effectively mathematical ideas/results verbally or in writing
CSD2102.6	To introduce the students to the topics and techniques of discrete methods and combinatorial reasoning.

Course Name: Digital Logic Design	
Course Code: CSE2103	
CSE2103.1	An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.
CSE2103.2	An ability to understand the different switching algebra theorems and apply them for logic functions.
CSE2103.3	An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.
CSE2103.4	An ability to define the other minimization methods for any number of

	variables Variable Entered Mapping (VEM)
CSE2103.5	Quine-MeCluskey (QM) Techniques and perform an algorithmic reduction of logic functions
CSE2103.6	To introduce the basic tools for design with combinational and sequential digital logic and state machines.

Course Name: Python Programming	
Course Code: CSE2104	
CSE2104.1	Making Software easily right out of the box.
CSE2104.2	Experience with an interpreted Language.
CSE2104.3	To build software for real needs.
CSE2104.4	Prior Introduction to testing software
CSE2104.5	Demonstrate to Scripting Language
CSE2104.6	Exposure to various problems solving approaches of computer science

Course Name: Data Structures through C++	
Course Code: CSE2105	
CSE2105.1	Distinguish between procedures and object oriented programming.
CSE2105.2	Apply advanced data structure strategies for exploring complex data structures.
CSE2105.3	Compare and contrast various data structures and design techniques in the area of Performance.
CSE2105.4	Implement data structure algorithms through C++. • Incorporate data structures into the applications such as binary search trees, AVL and B Trees
CSE2105.5	Implement all data structures like stacks, queues, trees
CSE2105.6	Implement lists and graphs and compare their Performance and trade offs

Course Name: Computer Graphics	
Course Code: CSE2106	
CSE2106.1	Know and be able to describe the general software architecture of programs that use 3D computer graphics.
CSE2106.2	Know and be able to discuss hardware system architecture for computer graphics.
CSE2106.3	This Includes, but is not limited to: graphics pipeline, frame buffers, and graphic accelerators/co-processors
CSE2106.4	Know and be able to select among models for lighting/shading: Color, ambient light;
CSE2106.5	distant and light with sources;
CSE2106.6	Phong reflection model; and shading (flat, smooth, Gourand, Phong).

Course Name: Data Structures through C++Lab	
Course Code: CSE2107	
CSE2107.1	Be able to design and analyze the time and space efficiency of the data structure
CSE2107.2	Be capable to identity the appropriate data structure for given problem
CSE2107.3	To develop skills to design and analyze simple linear and
CSE2107.4	To develop skills to design and analyze non linear data structures
CSE2107.5	To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
CSE2107.6	To Gain knowledge in practical applications of data structures

Course Name: Python Programming Lab	
Course Code: CSE2108	
CSE2108.1	the student is able to Write, Test
CSE2108.2	the student is able to Use Conditionals
CSE2108.3	the student is able to Debug Python Programs
CSE2108.4	the student is able to Loops for Python Programs
CSE2108.5	Use functions and represent Compound data using Lists, Tuples and Dictionaries
CSE2108.6	Use various applications using python

Year/Sem: II B.Tech II Sem

Course Name: Software Engineering	
Course Code: CSE2201	
CSE2201.1	Define and develop a software project from requirement gathering to implementation
CSE2201.2	Obtain knowledge about principles
CSE2201.3	practices of software engineering
CSE2201.4	Focus on the fundamentals of modeling a software project
CSE2201.5	Obtain knowledge about estimation
CSE2201.6	maintenance of software systems

Course Name: Java Programming	
Course Code: CSE2202	
CSE2202.1	Understand Java programming concepts and utilize Java Graphical User Interface in Program writing.
CSE2202.2	Write, compile, execute and troubleshoot Java programming for networking concepts.
CSE2202.3	Build Java Application for distributed environment.
CSE2202.4	Design applications.
CSE2202.5	Develop multi-tier applications.
CSE2202.6	Identify and Analyze Enterprise applications

Course Name: Advanced Data Structures	
Course Code: CSE2203	
CSE2203.1	Be able to understand and apply amortised analysis on data structures, including binary search trees, mergable heaps, and disjoint sets.
CSE2203.2	Understand the implementation and
CSE2203.3	complexity analysis of fundamental algorithms such as RSA, primality testing, max flow, discrete Fourier transform
CSE2203.4	Have an idea of applications of algorithms in a variety of areas,
CSE2203.5	including linear programming
CSE2203.6	duality, string matching, game-theory

Course Name: Computer Organization	
Course Code: CSE2204	
CSE2204.1	Students can understand the architecture of modern computer.
CSE2204.2	They can analyze the Performance of a computer using performance equation
CSE2204.3	Understanding of different instruction types.
CSE2204.4	Students can calculate the effective address of an operand by addressing modes
CSE2204.5	They can understand how computer stores positive and negative numbers.
CSE2204.6	Understanding of how a computer performs arithmetic operation of positive and negative numbers.

Course Name: Formal Languages and Automata Theory	
Course Code: CSE2205	
CSE2205.1	Classify machines by their power to recognize languages,
CSE 2205.2	Employ finite state machines to solve problems in computing,
CSE 2205.3	Explain deterministic and non-deterministic machines,
CSE2205.4	Comprehend the hierarchy of problems arising in the computer science
CSE2205.5	Introduce the student to the concepts of Theory of computation in computer science
CSE2205.6	The students should acquire insights into the relationship among formal languages, formal Grammars and automat.

Course Name: Principles of Programming Languages	
Course Code: CSE2206	
CSE2206.1	Describe syntax and semantics of programming languages☐
CSE2206.2	Explain data, data types, and basic statements of programming languages
CSE2206.3	Design and implement subprogram constructs, Apply object - oriented,
CSE2206.4	concurrency, and event handling programming constructs
CSE2206.5	Develop programs in Scheme, ML, and Prolog
CSE2206.6	Understand and adopt new programming languages

Course Name: Advanced Data Structures Lab	
Course Code: CSE2207	
CSE2207.1	Implement heap and various tree structure like AVL, Red-black, B and Segment trees
CSE2207.2	Solve the problems such as line segment intersection,
CSE2207.3	Solve the problems such as convex shell and Voronoi diagram
CSE2207.4	To understand heap and various tree structures like AVL, Red-black, B and Segment trees
CSE2207.5	To understand the problems such as line segment intersection,
CSE2207.6	To understand the problems such as convex shell and Voronoi diagram

Course Name: Java Programming Lab	
Course Code: CSE2208	
CSE2208.1	student will be able to write java program for Evaluate default value of all primitive data type
CSE2208.2	Evaluate , Operations, Expressions, Control-flow, Strings
CSE2208.3	Determine Class, Objects, Methods, Inheritance, Exception,
CSE2208.4	Determine Runtime Polymorphism, User defined Exception handling mechanism
CSE2208.5	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
CSE2208.6	Construct Threads, Event Handling, implement packages, developing applets

Year/Sem: III B.Tech I Sem

Course Name: Compiler Design	
Course Code :CSE3101	
CSE3101.1	Acquire knowledge in different phases and passes of Compiler, and specifying different types of tokens by lexical analyzer, and also able to use the Compiler tools like LEX, YACC, etc.
CSE3101.2	Parser and its types i.e. Top-down and Bottom-up parsers.
CSE3101.3	Construction of LL, SLR..
CSE3101.4	Construction of LALR parse table.
CSE3101.5	Syntax directed translation, synthesized and inherited attributes
CSE3101.6	Techniques for code optimization

Course Name: Unix Programming	
Course Code: CSE3102	
CSE3102.1	Documentation will demonstrate good organization and readability.
CSE3102.2	File processing projects will require data organization, problem solving and research.
CSE3102.3	Scripts and programs will demonstrate simple effective user interfaces.
CSE3102.4	Scripts and programs will demonstrate effective use of structured programming.
CSE3102.5	Scripts and programs will be accompanied by printed output demonstrating completion of a test plan.
CSE3102.6	Testing will demonstrate both black and glass box testing strategies

Course Name: Object Oriented Analysis and Design using UML	
Course Code: CSE3103	
CSE3103.1	Ability to find solutions to the complex problems using object oriented approach
CSE3103.2	Represent classes, responsibilities.
CSE3103.3	Represent states using UML notation
CSE3103.4	Identify classes and responsibilities of the problem domain
CSE3103.5	Analyze and design solutions to problems using object oriented approach
CSE3103.6	Study the notations of Unified Modeling Language

Course Name: Database Management Systems	
Course Code: CSE3104	
CSE3104.1	Describe a relational database and object-oriented database
CSE3104.2	Create, maintain and manipulate a relational database using SQL
CSE3104.3	Describe ER model and normalization f or database design
CSE3104.4	Examine issues in data storage and query processing and can formulate appropriate solutions.
CSE3104.5	Understand the role and issues in management of data such as efficiency, privacy,security, ethical responsibility, and strategic advantage.
CSE3104.6	Design and build database system for a given real world problem

Course Name: Operating Systems	
Course Code: CSE3105	
CSE3105.1	Design various Scheduling algorithms
CSE3105.2	Apply the principles of concurrency
CSE3105.3	Design deadlock, prevention and avoidance algorithms
CSE3105.4	Compare and contrast various memory management schemes
CSE3105.5	Design and Implement a prototype file systems.
CSE3105.6	Perform administrative tasks on Linux Servers

Course Name: Unified Modeling Lab	
Course Code: CSE3106	
CSE3106.1	Understand the Case studies and design the Model.
CSE3106.2	Understand how design patterns solve design problems.
CSE3106.3	Develop design solutions using creational patterns.
CSE3106.4	Construct UML diagrams for static view and dynamic view of the system.
CSE3106.5	Generate creational patterns by applicable patterns for given context.
CSE3106.6	Create refined model for given Scenario using structural patterns.

Course Name: Operating System & Linux Programming Lab	
Course Code: CSE3107	
CSE3107.1	To use Unix utilities and perform basic shell control of the utilities
CSE3107.2	To use the Unix file system and file access control.
CSE3107.3	To use of an operating system to develop software
CSE3107.4	Students will be able to use Linux environment efficiently
CSE3107.5	Solve problems using bash for shell scripting
CSE3107.6	Will be able to implement algorithms to solve data mining problems using weka tool

Course Name: Database Management System Lab	
Course Code: CSE3108	
CSE3108.1	Understand, appreciate and effectively explain the underlying concepts of database technologies
CSE3108.2	Design and implement a database schema for a given problem-domain
CSE3108.3	Normalize a database. Design and build a GUI application using a 4GL
CSE3108.4	Populate and query a database using SQL DML/DDL commands.
CSE3108.5	Declare and enforce integrity constraints on a database using a state-of-the-artRDBMS
CSE3108.6	Programming PL/SQL including stored procedures, stored functions, cursors, packages

Year/Sem: III B.Tech II Sem

Course Name: Computer Networks	
Course Code: CSE3201	
CSE3201.1	Understand OSI and TCP/IP models
CSE3201.2	Analyze MAC layer protocols and LAN technologies
CSE3201.3	Design applications using internet protocols
CSE3201.4	Understand routing
CSE3201.5	congestion control algorithms
CSE3201.6	Understand how internet works

Course Name: Data Warehousing and Mining	
Course Code: CSE3202	
SE3202.1	Understand stages in building a Data Warehouse
CSE3202.2	Understand the need and importance of preprocessing techniques
CSE3202.3	Understand the need and importance of Similarity.
CSE3202.4	Understand the need and importance of dissimilarity techniques.
CSE3202.5	Analyze and evaluate performance of algorithms for Association Rules.
CSE3202.6	Analyze Classification and Clustering algorithms

Course Name: Design and Analysis of Algorithms	
Course Code: CSE3203	
CSE3203.1	Argue the correctness of algorithms using inductive proofs and invariants.
CSE3203.2	Analyze worst-case running times of algorithms using asymptotic analysis.
CSE3203.3	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it.
CSE3203.4	Recite algorithms that employ this paradigm. Synthesize divide-and conquer algorithms. Derive and solve recurrences describing the performance of divide and- conquer algorithms.
CSE3203.5	Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic programming algorithms, and analyze them.
CSE3203.6	Describe the greedy paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.

Course Name: Software Testing Methodologies	
Course Code: CSE3204	
CSE3204.1	Understand the basic testing procedures.
CSE3204.2	Able to support in generating test cases and test suites.
CSE3204.3	Able to test the applications manually by applying different testing methods
CSE3204.4	Able to test the applications manually by applying automation tools
CSE3204.5	Apply tools to resolve the problems in Real time environment.
CSE3204.6	Acts as the reference for software testing techniques and strategies.

Course Name: Cyber Security	
Course Code: CSE3205	
CSE3205.1	Cyber Security architecture principles
CSE3205.2	Identifying System and application security threats and vulnerabilities
CSE3205.3	Identifying different classes of attacks
CSE3205.4	Cyber Security incidents to apply appropriate response
CSE3205.5	Describing risk management processes and practices
CSE3205.6	Evaluation of decision making outcomes of Cyber Security scenarios

Course Name: Network Programming Lab	
Course Code: CSE3206	
CSE3206.1	Understand and explain the basic concepts of Grid Computing;
CSE3206.2	Explain the advantages of using Grid Computing within a given environment;
CSE3206.3	Prepare for any upcoming Grid deployments and be able to get started with a potentially available Grid setup.
CSE3206.4	Discuss some of the enabling technologies e.g. high-speed links and storage area networks.
CSE3206.5	Build computer grids
CSE3206.6	To Design reliable servers using both TCP and UDP sockets

Course Name: Software Testing Lab	
Course Code: CSE3207	
CSE3207.1	Find practical solutions to the problems
CSE3207.2	Solve specific problems alone or in teams
CSE3207.3	Manage a project from beginning to end
CSE3207.4	Work independently as well as in teams
CSE3207.5	Define, formulate and analyze a problem
CSE3207.6	Demonstrate the working of software testing tools with c language.

Course Name: DATA WARE HOUSING AND DATA MINING LAB	
Course Code: CSE3208	
CSE3208.1	The data mining process and important issues around data cleaning,.
CSE3208.2	pre-processing and integration
CSE3208.3	The principle algorithms and techniques used in data mining, such as clustering
CSE3208.4	association mining, classification and prediction..
CSE3208.5	Exposure to real life data sets for analysis and prediction.
CSE3208.6	Learning performance evaluation of data mining algorithms in a supervised and an unsupervised setting.

Year/Sem: IV B.Tech I Sem

Course Name: Cryptography and Network Security	
Course Code:CSE4101	
CSE4101.1	To be familiarity with information security awareness and a clear understanding of its importance.
CSE4101.2	To master fundamentals of secret and public cryptography
CSE4101.3	To master protocols for security services
CSE4101.4	To be familiar with network security threats and countermeasures
CSE4101.5	To be familiar with network security designs using available secure solutions (such as PGP)
CSE4101.6	To be familiar with network security designs using available secure solutions(SSL, IPSec, etc)

Course Name: Software Architecture & Design Patterns	
Course Code: CSE4102	
CSE4102.1	To understand interrelationships, principles and guidelines governing architecture and evolution over time.
CSE4102.2	To understand various architectural styles of software systems.
CSE4102.3	To understand design patterns.
CSE4102.4	their underlying object oriented concepts.
CSE4102.5	To understand implementation of design patterns and providing solutions to real world software design problems.
CSE4102.6	To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.

Course Name: Web Technologies	
Course Code: CSE4103	
CSE4103.1	Analyze a web page and identify its elements and attributes.
CSE4103.2	Create web pages using XHTML and Cascading Styles sheets.
CSE4103.3	Build dynamic web pages.
CSE4103.4	Build web applications using PHP.
CSE4103.5	Programming through PERL and Ruby
CSE4103.6	Write simple client-side scripts using AJAX

Course Name: Managerial Economics and Financial Analysis	
Course Code: CSE4104	
CSE4104.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
CSE4104.2	knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
CSE4104.3	One is also ready to understand the nature of different markets and Price Output determination
CSE4104.4	under various market conditions and also to have the knowledge of different Business Units
CSE4104.5	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis and to evaluate various investment project proposals
CSE4104.6	Capital budgeting techniques for decision making.

Course Name: Mobile Computing	
Course Code: CSE4105	
CSE4105.1	Able to think and develop new mobile application.
CSE4105.2	Able to take any new technical issue related to this new paradigm.
CSE4105.3	come up with a solution(s).
CSE4105.4	Able to develop new ad hoc network applications algorithms/protocols.
CSE4105.5	Able to develop new ad hoc algorithms/protocols
CSE4105.6	Able to understand & develop any existing or new protocol related to mobile environment

Course Name: Software Project Management	
Course Code: CSE4106	
CSE4106.1	To match organizational needs to the most effective software development model
CSE4106.2	To understand the basic concepts and issues of software project management
CSE4106.3	To effectively Planning the software projects
CSE4106.4	To implement the project plans through managing people, communications and change
CSE4106.5	To select and employ mechanisms for tracking the software projects
CSE4106.6	To conduct activities necessary to successfully complete and close the Software projects

Course Name: Software Architecture& Design Patterns Lab	
Course Code: CSE4107	
CSE4107.1	Design of the Use Case View. Risk Analysis.
CSE4107.2	Implementation of the software architecture of a Weather Mapping System (WMS).
CSE4107.3	Implementation will take place in Java.
CSE4107.4	Implementation will take place C++
CSE4107.5	Each lab assignment consists of a theoretical part and a practical part, which are defined in specific lab assignment statements
CSE4107.6	Using UML design Iterator Design pattern

Course Name: Web Technologies Lab	
Course Code: CSE4108	
CSE4108.1	Students will be able to develop static web sites using XHTML and Java Scripts
CSE4108.2	To implement XML and XSLT for web applications
CSE4108.3	Develop Dynamic web content using Java Servlets
CSE4108.4	Develop Dynamic web content using JSP
CSE4108.5	To develop JDBC connections.
CSE4108.6	implement a complete Dynamic web application

Year/Sem: IV B.Tech II Sem

Course Name: Distributed Systems	
Course Code: CS4201	
CS4201.1	Develop a familiarity with distributed file systems.
CS4201.2	Describe important characteristics of distributed systems
CS4201.3	The salient architectural features of such systems.
CS4201.4	Describe the features and applications of important standard protocols which are used in distributed systems.
CS4201.5	Gaining practical experience of inter-process communication in a distributed environment
CS4201.6	Gaining practical experience of inter-process communication

Course Name: Management Science	
Course Code: CS4202	
CSE4202.1	After completion of the Course the student will acquire the knowledge on management functions,
CSE4202.2	Global leadership.
CSE4202.3	After completion of the Course the student will acquire the knowledge on organizational behavior.
CSE4202.4	Will familiarize with the concepts of project management.
CSE4202.5	Will familiarize with the concepts of strategic management.
CSE4202.6	Will familiarize with the concepts of functional management.

Course Name: Machine Learning	
Course Code: CS4203	
CSE4203.1	Recognize the characteristics of machine learning that make it useful to real-world Problems.
CSE4203.2	Characterize machine learning algorithms as supervised, semi-supervised, and Unsupervised.
CSE4203.3	Have heard of a few machine learning toolboxes.
CSE4203.4	Be able to use support vector machines.
CSE4203.5	Be able to use regularized regression algorithms.
CSE4203.6	Understand the concept behind neural networks for learning non-linear functions.

Course Name: Artificial Neural Networks	
Course Code: CS4204	
CSE4204.1	This course has been designed to offer as a graduate-level/ final year undergraduate level elective subject to the students of any branch of engineering/ science, having basic foundations of matrix algebra,
CSE4204.2	calculus and preferably (not essential) with a basic knowledge of optimization
CSE4204.3	Students and researchers desirous of working on pattern recognition and classification, regression and interpolation from sparse observations;
CSE4204.4	control and optimization are expected to find this course useful. The course covers theories and usage of artificial neural networks (ANN) for problems pertaining to classification (supervised/ unsupervised) and regression.
CSE4204.5	The course starts with some mathematical foundations and the structures of artificial neurons, which mimics biological neurons in a grossly scaled down version.
CSE4204.6	The course introduces perceptrons, discusses its capabilities and limitations as a pattern classifier and later develops concepts of multilayer perceptrons with back propagation learning.

Department Of Computer Science and Engineering
Course Outcomes
Regulation R20

Year/Sem: II B.Tech I Sem   **A.Y: 2018-19**

Course Name: Statistics with R Programming	
Course Code: CSE2101	
CSE2101.1	List motivation for learning a programming language
CSE2101.2	Access online resources for R and import new function packages into the R workspace
CSE2101.3	Import, review, manipulate and summarize data-sets in R
CSE2101.4	Explore data-sets to create testable hypotheses and identify appropriate statistical tests
CSE2101.5	Perform appropriate statistical tests using R Create and edit visualizations with
CSE2101.6	Use R in their own research,

Course Name: Mathematical Foundations of Computer Science	
Course Code: CSE2102	
CSE2102.1	Student will be able to demonstrate skills in solving mathematical problems
CSD2102.2	Student will be able to comprehend mathematical principles and logic
CSD2102.3	Student will be able to demonstrate knowledge of mathematical modeling and proficiency in using mathematical software
CSD2102.4	Student will be able to manipulate and analyze data numerically and/or graphically using appropriate Software
CSD2102.5	Student will be able to communicate effectively mathematical ideas/results verbally or in writing
CSD2102.6	To introduce the students to the topics and techniques of discrete methods and combinatorial reasoning.

Course Name: Digital Logic Design	
Course Code: CSE2103	
CSE2103.1	An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.
CSE2103.2	An ability to understand the different switching algebra theorems and apply them for logic functions.
CSE2103.3	An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.
CSE2103.4	An ability to define the other minimization methods for any number of variables Variable Entered Mapping (VEM)
CSE2103.5	Quine-MeCluskey (QM) Techniques and perform an algorithmic reduction of logic functions

CSE2103.6	To introduce the basic tools for design with combinational and sequential digital logic and state machines.

Course Name: Python Programming	
Course Code: CSE2104	
CSE2104.1	Making Software easily right out of the box.
CSE2104.2	Experience with an interpreted Language.
CSE2104.3	To build software for real needs.
CSE2104.4	Prior Introduction to testing software
CSE2104.5	Demonstrate to Scripting Language
CSE2104.6	Exposure to various problems solving approaches of computer science

Course Name: Data Structures through C++	
Course Code: CSE2105	
CSE2105.1	Distinguish between procedures and object oriented programming.
CSE2105.2	Apply advanced data structure strategies for exploring complex data structures.
CSE2105.3	Compare and contrast various data structures and design techniques in the area of Performance.
CSE2105.4	Implement data structure algorithms through C++. • Incorporate data structures into the applications such as binary search trees, AVL and B Trees
CSE2105.5	Implement all data structures like stacks, queues, trees
CSE2105.6	Implement lists and graphs and compare their Performance and trade offs

Course Name: Computer Graphics	
Course Code: CSE2106	
CSE2106.1	Know and be able to describe the general software architecture of programs that use 3D computer graphics.
CSE2106.2	Know and be able to discuss hardware system architecture for computer graphics.
CSE2106.3	This Includes, but is not limited to: graphics pipeline, frame buffers, and graphic accelerators/co-processors
CSE2106.4	Know and be able to select among models for lighting/shading: Color, ambient light;
CSE2106.5	distant and light with sources;
CSE2106.6	Phong reflection model; and shading (flat, smooth, Gourand, Phong).

Course Name: Data Structures through C++Lab	
Course Code: CSE2107	
CSE2107.1	Be able to design and analyze the time and space efficiency of the data structure
CSE2107.2	Be capable to identity the appropriate data structure for given problem
CSE2107.3	To develop skills to design and analyze simple linear and
CSE2107.4	To develop skills to design and analyze non linear data structures
CSE2107.5	To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
CSE2107.6	To Gain knowledge in practical applications of data structures

Course Name: Python Programming Lab	
Course Code: CSE2108	
CSE2108.1	The student is able to Write, Test
CSE2108.2	The student is able to Use Conditionals
CSE2108.3	The student is able to Debug Python Programs
CSE2108.4	The student is able to Loops for Python Programs
CSE2108.5	Use functions and represent Compound data using Lists, Tuples and Dictionaries
CSE2108.6	Use various applications using python

Year/Sem: II B.Tech II Sem

Course Name: Software Engineering	
Course Code: CSE2201	
CSE2201.1	Define and develop a software project from requirement gathering to implementation
CSE2201.2	Obtain knowledge about principles
CSE2201.3	practices of software engineering
CSE2201.4	Focus on the fundamentals of modeling a software project
CSE2201.5	Obtain knowledge about estimation
CSE2201.6	maintenance of software systems

Course Name: Java Programming	
Course Code: CSE2202	
CSE2202.1	Understand Java programming concepts and utilize Java Graphical User Interface in Program writing.
CSE2202.2	Write, compile, execute and troubleshoot Java programming for networking concepts.
CSE2202.3	Build Java Application for distributed environment.
CSE2202.4	Design applications.
CSE2202.5	Develop multi-tier applications.
CSE2202.6	Identify and Analyze Enterprise applications

Course Name: Advanced Data Structures	
Course Code: CSE2203	
CSE2203.1	Be able to understand and apply amortised analysis on data structures, including binary search trees, mergable heaps, and disjoint sets.
CSE2203.2	Understand the implementation and
CSE2203.3	complexity analysis of fundamental algorithms such as RSA, primality testing, max flow, discrete Fourier transform
CSE2203.4	Have an idea of applications of algorithms in a variety of areas,
CSE2203.5	including linear programming
CSE2203.6	duality, string matching, game-theory

Course Name: Computer Organization	
Course Code: CSE2204	
CSE2204.1	Students can understand the architecture of modern computer.
CSE2204.2	They can analyze the Performance of a computer using performance equation
CSE2204.3	Understanding of different instruction types.
CSE2204.4	Students can calculate the effective address of an operand by addressing modes
CSE2204.5	They can understand how computer stores positive and negative numbers.
CSE2204.6	Understanding of how a computer performs arithmetic operation of positive and negative numbers.

Course Name: Formal Languages and Automata Theory	
Course Code: CSE2205	
CSE2205.1	Classify machines by their power to recognize languages,
CSE 2205.2	Employ finite state machines to solve problems in computing,
CSE 2205.3	Explain deterministic and non-deterministic machines,
CSE2205.4	Comprehend the hierarchy of problems arising in the computer science
CSE2205.5	Introduce the student to the concepts of Theory of computation in computer science
CSE2205.6	The students should acquire insights into the relationship among formal languages, formal Grammars and automat.

Course Name: Principles of Programming Languages	
Course Code: CSE2206	
CSE2206.1	Describe syntax and semantics of programming languages☐
CSE2206.2	Explain data, data types, and basic statements of programming languages
CSE2206.3	Design and implement subprogram constructs, Apply object - oriented,
CSE2206.4	concurrency, and event handling programming constructs
CSE2206.5	Develop programs in Scheme, ML, and Prolog
CSE2206.6	Understand and adopt new programming languages

Course Name: Advanced Data Structures Lab	
Course Code: CSE2207	
CSE2207.1	Implement heap and various tree structure like AVL, Red-black, B and Segment trees
CSE2207.2	Solve the problems such as line segment intersection,
CSE2207.3	Solve the problems such as convex shell and Voronoi diagram
CSE2207.4	To understand heap and various tree structures like AVL, Red-black, B and Segment trees
CSE2207.5	To understand the problems such as line segment intersection,
CSE2207.6	To understand the problems such as convex shell and Voronoi diagram

Course Name: Java Programming Lab	
Course Code: CSE2208	
CSE2208.1	student will be able to write java program for Evaluate default value of all primitive data type
CSE2208.2	Evaluate , Operations, Expressions, Control-flow, Strings
CSE2208.3	Determine Class, Objects, Methods, Inheritance, Exception,
CSE2208.4	Determine Runtime Polymorphism, User defined Exception handling mechanism
CSE2208.5	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
CSE2208.6	Construct Threads, Event Handling, implement packages, developing applets

Year/Sem: III B.Tech I Sem

Course Name: Compiler Design	
Course Code : CSE3101	
CSE3101.1	Acquire knowledge in different phases and passes of Compiler, and specifying different types of tokens by lexical analyzer, and also able to use the Compiler tools like LEX, YACC, etc.
CSE3101.2	Parser and its types i.e. Top-down and Bottom-up parsers.
CSE3101.3	Construction of LL, SLR..
CSE3101.4	Construction of LALR parse table.
CSE3101.5	Syntax directed translation, synthesized and inherited attributes
CSE3101.6	Techniques for code optimization

Course Name: Unix Programming	
Course Code: CSE3102	
CSE3102.1	Documentation will demonstrate good organization and readability.
CSE3102.2	File processing projects will require data organization, problem solving and research.
CSE3102.3	Scripts and programs will demonstrate simple effective user interfaces.
CSE3102.4	Scripts and programs will demonstrate effective use of structured programming.
CSE3102.5	Scripts and programs will be accompanied by printed output demonstrating completion of a test plan.
CSE3102.6	Testing will demonstrate both black and glass box testing strategies

Course Name: Object Oriented Analysis and Design using UML	
Course Code: CSE3103	
CSE3103.1	Ability to find solutions to the complex problems using object oriented approach
CSE3103.2	Represent classes, responsibilities.
CSE3103.3	Represent states using UML notation
CSE3103.4	Identify classes and responsibilities of the problem domain
CSE3103.5	Analyze and design solutions to problems using object oriented approach
CSE3103.6	Study the notations of Unified Modeling Language

Course Name: Database Management Systems	
Course Code: CSE3104	
CSE3104.1	Describe a relational database and object-oriented database
CSE3104.2	Create, maintain and manipulate a relational database using SQL
CSE3104.3	Describe ER model and normalization f or database design
CSE3104.4	Examine issues in data storage and query processing and can formulate appropriate solutions.
CSE3104.5	Understand the role and issues in management of data such as efficiency, privacy,security, ethical responsibility, and strategic advantage.
CSE3104.6	Design and build database system for a given real world problem

Course Name: Operating Systems	
Course Code: CSE3105	
CSE3105.1	Design various Scheduling algorithms
CSE3105.2	Apply the principles of concurrency
CSE3105.3	Design deadlock, prevention and avoidance algorithms
CSE3105.4	Compare and contrast various memory management schemes
CSE3105.5	Design and Implement a prototype file systems.
CSE3105.6	Perform administrative tasks on Linux Servers

Course Name: Unified Modeling Lab	
Course Code: CSE3106	
CSE3106.1	Understand the Case studies and design the Model.
CSE3106.2	Understand how design patterns solve design problems.
CSE3106.3	Develop design solutions using creational patterns.
CSE3106.4	Construct UML diagrams for static view and dynamic view of the system.
CSE3106.5	Generate creational patterns by applicable patterns for given context.
CSE3106.6	Create refined model for given Scenario using structural patterns.

Course Name: Operating System & Linux Programming Lab	
Course Code: CSE3107	
CSE3107.1	To use Unix utilities and perform basic shell control of the utilities
CSE3107.2	To use the Unix file system and file access control.
CSE3107.3	To use of an operating system to develop software
CSE3107.4	Students will be able to use Linux environment efficiently
CSE3107.5	Solve problems using bash for shell scripting
CSE3107.6	Will be able to implement algorithms to solve data mining problems using weka tool

Course Name: Database Management System Lab	
Course Code: CSE3108	
CSE3108.1	Understand, appreciate and effectively explain the underlying concepts of database technologies
CSE3108.2	Design and implement a database schema for a given problem-domain
CSE3108.3	Normalize a database. Design and build a GUI application using a 4GL
CSE3108.4	Populate and query a database using SQL DML/DDL commands.
CSE3108.5	Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS
CSE3108.6	Programming PL/SQL including stored procedures, stored functions, cursors, packages

Year/Sem: III B.Tech II Sem

Course Name: Computer Networks	
Course Code: CSE3201	
CSE3201.1	Understand OSI and TCP/IP models☐
CSE3201.2	Analyze MAC layer protocols and LAN technologies
CSE3201.3	Design applications using internet protocols
CSE3201.4	Understand routing
CSE3201.5	congestion control algorithms
CSE3201.6	Understand how internet works

Course Name: Data Warehousing and Mining	
Course Code: CSE3202	
CSE3202.1	Understand stages in building a Data Warehouse
CSE3202.2	Understand the need and importance of preprocessing techniques
CSE3202.3	Understand the need and importance of Similarity.
CSE3202.4	Understand the need and importance of dissimilarity techniques.
CSE3202.5	Analyze and evaluate performance of algorithms for Association Rules.
CSE3202.6	Analyze Classification and Clustering algorithms

Course Name: Design and Analysis of Algorithms	
Course Code: CSE3203	
CSE3203.1	Argue the correctness of algorithms using inductive proofs and invariants.
CSE3203.2	Analyze worst-case running times of algorithms using asymptotic analysis.
CSE3203.3	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it.
CSE3203.4	Recite algorithms that employ this paradigm. Synthesize divide-and conquer algorithms. Derive and solve recurrences describing the performance of divide and- conquer algorithms.
CSE3203.5	Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic programming algorithms, and analyze them.
CSE3203.6	Describe the greedy paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.

Course Name: Software Testing Methodologies	
Course Code: CSE3204	
CSE3204.1	Understand the basic testing procedures.☐
CSE3204.2	Able to support in generating test cases and test suites.
CSE3204.3	Able to test the applications manually by applying different testing methods
CSE3204.4	Able to test the applications manually by applying automation tools
CSE3204.5	Apply tools to resolve the problems in Real time environment.
CSE3204.6	Acts as the reference for software testing techniques and strategies.

Course Name: Cyber Security	
Course Code: CSE3205	
CSE3205.1	Cyber Security architecture principles
CSE3205.2	Identifying System and application security threats and vulnerabilities
CSE3205.3	Identifying different classes of attacks
CSE3205.4	Cyber Security incidents to apply appropriate response
CSE3205.5	Describing risk management processes and practices
CSE3205.6	Evaluation of decision making outcomes of Cyber Security scenarios

Course Name: Network Programming Lab	
Course Code: CSE3206	
CSE3206.1	Understand and explain the basic concepts of Grid Computing;
CSE3206.2	Explain the advantages of using Grid Computing within a given environment;
CSE3206.3	Prepare for any upcoming Grid deployments and be able to get started with a potentially available Grid setup.
CSE3206.4	Discuss some of the enabling technologies e.g. high-speed links and storage area networks.
CSE3206.5	Build computer grids
CSE3206.6	To Design reliable servers using both TCP and UDP sockets

Course Name: Software Testing Lab	
Course Code: CSE3207	
CSE3207.1	Find practical solutions to the problems
CSE3207.2	Solve specific problems alone or in teams
CSE3207.3	Manage a project from beginning to end
CSE3207.4	Work independently as well as in teams
CSE3207.5	Define, formulate and analyze a problem
CSE3207.6	Demonstrate the working of software testing tools with c language.

Course Name: DATA WARE HOUSING AND DATA MINING LAB	
Course Code: CSE3208	
CSE3208.1	The data mining process and important issues around data cleaning,.
CSE3208.2	pre-processing and integration
CSE3208.3	The principle algorithms and techniques used in data mining, such as clustering
CSE3208.4	association mining, classification and prediction..
CSE3208.5	Exposure to real life data sets for analysis and prediction.
CSE3208.6	Learning performance evaluation of data mining algorithms in a supervised and an unsupervised setting.

Year/Sem: IV B.Tech I Sem

Course Name: Cryptography and Network security	
Course Code:CSE4101	
CSE4101.1	To be able to individually reason about software security problems
CSE4101.2	Protection techniques on an abstract
CSE4101.3	Protection techniques on a more technically advanced level
CSE4101.4	Be able to individually explain how software exploitation techniques used by adviosaries,functions
CSE4101.5	How to protect against them
CSE4101.6	How to address various software security problems in a secure and controlled environment.

Course Name: UML &Design Patterns	
Course Code: CSE4102	
CSE4102.1	identify the purpose and methods of use of common object-oriented design patterns
CSE4102.2	Select and apply these patterns in their own designs for simple programs
CSE4102.3	represent the data dependencies of a simple program using UML
CSE4102.4	Represent user and programmatic interactions using UML
CSE4102.5	Create design documentation outlining the testable and complete design of a simple program
CSE4102.6	Produce and present documents for the purpose of capturing software requirements and specification

Course Name: Mobile Computing	
Course Code: CSE4103	
CSE4103.1	Able to think and develop new mobile application.
CSE4103.2	Able to take any new technical issue related to this new paradigm
CSE4103.3	come up with a solution(s)
CSE4103.4	Able to develop new adhoc network applications and/or algorithms/protocols
CSE4103.5	Able to understand &develop any existing or new protocol related to mobile environment
CSE4103.6	To understand the database issues in mobile environments &data delivery models.

Course Name: Software Testing Methodologies	
Course Code: CSE4104	
CSE4104.1	Have an ability to apply software testing knowledge and engineering methods.
CSE4104.2	Have an ability to design and conduct a software test process for a software testing project.
CSE4104.3	Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation.
CSE4104.4	Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
CSE4104.5	Have an ability to use various communication methods and skills to communicate with their team mates to conduct their practice-oriented software testing projects.
CSE4104.6	Have ability to uses of software testing methods and modem software testing tools for their testing projects.

Course Name: Hadoop and BigData	
Course Code: CSE4105	
CSE4105.1	Preparing for data summarization, query, and analysis
CSE4105.2	Applying data modeling techniques to large datasets
CSE4105.3	Creating applications for Big Data analytics
CSE4105.4	Building a complete business data analytic solution
CSE4105.5	Derive business benefit from unstructured data
CSE4105.6	Imparting the architectural concepts of Hadoop and introducing map reduce paradigm.

Course Name: UML & Design Patterns Lab	
Course Code: CSE4106	
CSE4106.1	student will be able to Know the syntax of different UML diagrams
CSE4106.2	Create use case documents that capture requirements for a software system
CSE4106.3	Create class diagrams that model both the domain model and design model of a software system
CSE4106.4	Create interaction diagrams that model the dynamic aspects of a software system
CSE4106.5	Write code that builds a software system
CSE4106.6	Develop simple applications

Course Name: Mobile application development lab	
Course Code: CSE4107	
CSE4107.1	Identify various concepts of mobile programming that make it unique from programming for other platforms
CSE4107.2	Critique mobile applications on their design pros and cons
CSE4107.3	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces,
CSE4107.4	Program mobile applications for the Android operating system that use basic
CSE4107.5	advanced phone features
CSE4107.6	Deploy applications to the Android marketplace for distribution

Course Name: Software testing lab	
Course Code: CSE4108	
CSE4108.1	Find practical solutions to the problems
CSE4108.2	Solve specific problems alone or in teams
CSE4108.3	Manage a project from beginning to end
CSE4108.4	Work independently as well as in teams
CSE4108.5	Define, formulate and analyze a problem
CSE4108.6	Demonstrate the working of software testing tools with c language.

Course Name: Hadoop and big data lab	
Course Code: CSE4109	
CSE4109.1	Preparing for data summarization, query, and analysis
CSE4109.2	Applying data modeling techniques to large datasets
CSE4109.3	Creating applications for Big Data analytics
CSE4109.4	Building a complete business data analytic solution
CSE4109.5	Derive business benefit from unstructured data
CSE4109.6	Imparting the architectural concepts of Hadoop and introducing map reduce paradigm.

Year/Sem: IV B.Tech II Sem

Course Name: Cloud Computing	
Course Code: CSE4201	
CS4201.1	Understanding the key dimensions of the challenge of Cloud Computing
CS4201.2	Assessment of the economics, financial, and technological implications for selecting cloud computing for own organization
CS4201.3	Assessing the financial, technological, and organizational capacity of employer's for actively initiating.
CS4201.4	Assessment of own organizations' needs for capacity building
CS4201.5	training in cloud computing-related IT areas
CS4201.6	Installing cloud-based applications.

Course Name: Distributed Systems	
Course Code: CSE4202	
CSE4202.1	Develop a familiarity with distributed file systems.
CSE4202.2	Describe important characteristics of distributed systems
CSE4202.3	Describe the features
CSE4202.4	Gaining practical experience of inter-process communication in a distributed environment
CSE4202.5	The salient architectural features of such systems.
CSE4202.6	Applications of important standard protocols which are used in distributed systems.

Course Name: Human Computer Interaction	
Course Code: CSE4203	
CSE4203.1	Explain the capabilities of both humans and computers from the view point of human information processing.
CSE4203.2	Describe typical human-computer interaction(HCI)models, styles,and various historic HCI paradigms
CSE4203.3	Apply an interactive design process and universal design principles to designing HCI systems.
CSE4203.4	Describe and use HCI design principles, standards and guidelines.
CSE4203.5	Analyze and identify user models, user support, socio-organizational issues, and stakeholder requirements of 1-ICI systems
CSE4203.6	Discuss tasks and dialogs of relevant HCI systems based on task analysis and dialog design

Course Name: Management Science	
Course Code: CSE4204	
CSE4204.1	After completion of the Course the student will acquire the knowledge on management functions
CSE4204.2	After completion of the Course the student will acquire the knowledge on organizational behavior.
CSE4204.3	After completion of the Course the student will acquire the knowledge on global leadership
CSE4204.4	Will familiarize with the concepts of project management
CSE4204.5	Will familiarize with the concepts of functional management
CSE4204.6	Will familiarize with the concepts of strategic management.

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DEPARTMENT OF COMPUTER SCIENCE AND DESIGN
Course Outcomes

Year/Sem: II B.Tech I Sem   **A.Y: 2022-23**

Course Name: Mathematics III	
Course Code: CSD2101	
CSD2101.1	State and prove vector Line , Surface and volume integral Theorems. State and prove Stokes and Green's theorems.
CSD2101.2	Derive Laplace transform standard functions. Deduce inverse Laplace transform functions.
CSD2101.3	Explain about Periodic functions , even and odd functions. Explain about Half range sine and cosine series. Explain Fourier transforms. State and prove Fourier integral theorem and problems.
CSD2101.4	Explain Fourier Transforms. State and prove Fourier integral theorem and problems.
CSD2101.5	Explain By eliminating Orbitary constants and Orbitary functions. Derive Legrangies equation and problems.
CSD2101.6	Derive solutions of linear P.D.E with constant coefficients and problems. Explain method of separation of variables and wave & heat equations.

Course Name: Mathematical Foundations of Computer Science	
Course Code: CSD2102	
CSD2102.1	Demonstrate skills in solving mathematical problems
CSD2102.2	Comprehend mathematical principles and logic
CSD2102.3	Demonstrate knowledge of mathematical modelling
CSD2102.4	Proficiency in using mathematical software
CSD2102.5	Manipulate and analyze data numerically and/or graphically using appropriate Software
CSD2102.6	Communicate effectively mathematical ideas/results verbally or in writing

Course Name: Computer Graphics	
Course Code: CSD2103	
CSD2103.1	Use the principles and commonly used paradigms and techniques of computer graphics
CSD2103.2	Write basic graphics application programs including animation.
CSD2103.3	Design programs to display graphic images to given specifications
CSD2103.3	Design for 2D graphics
CSD2103.4	Create 2D animations using C.
CSD2103.5	Create for 3D animation

Course Name: Multimedia and Application Development	
Course Code: CSD2104	
CSD2104.1	Ability to apply different multimedia development tools to produce web based and standalone user interfaces.
CSD2104.2	Students are able to understand Multimedia projects &Applications.
CSD2104.3	Students are able to utilize the multimedia technologies to develop multimedia project.
CSD2104.4	Can deal with all multimedia facts.
CSD2104.5	All multimedia facts for fulfilment of all day to day multimedia requirements.

Course Name: Database Management Systems	
Course Code: CSD2105	
CSD2105.1	Describe a relational database and object-oriented database
CSD2105.2	Create, maintain and manipulate a relational database using SQL
CSD2105.3	Describe ER model and normalization for database design
CSD2105.4	Examine issues in data storage and query processing and can formulate appropriate solutions
CSD2105.5	Outline the role and issues in management of data such as efficiency, privacy, security.
CSD2105.6	Outline the role and issues in management of data such as ethical responsibility, and strategic advantage.

Course Name: Computer Graphics Lab	
Course Code: CSD2106	
CSD2106.1	Design and develop programs for drawing Computer Graphics primitives.
CSD2106.2	Implement different algorithms for line clipping.
CSD2106.3	Create 2D graphical scenes using C.
CSD2106.4	Create 3D graphical scenes using C.
CSD2106.5	Implement image manipulation and enhancement.
CSD2106.6	Create 2D animations using C.

Course Name: Multimedia and Application Development Lab	
Course Code: CSD2107	
CSD2107.1	Solve various Basic Mathematics problems by following different methods
CSD2107.2	Follow strategies in minimizing time consumption in problem solving
CSD2107.3	Apply shortcut methods to solve problems
CSD2107.4	Confidently solve any mathematical problems
CSD2107.5	utilize these mathematical skills both in their professional as well as personal life
CSD2107.6	Analyze, summarize and present information in quantitative forms including table, graphs and formulas

Course Name: Database Management Systems Lab	
Course Code: CSD2108	
CSD2108.1	Utilize SQL to execute queries for creating database.
CSD2108.2	Utilize SQL to execute queries for performing datamanipulation operations.
CSD2108.3	Examine integrity constraints to build efficient databases.
CSD2108.4	Apply Queries using Advanced Concepts of SQL.
CSD2108.5	Build PLprograms including stored procedures, functions.
CSD2108.6	Build SQL programs including cursors and triggers.

Course Name: Mobile App Development	
Course Code: CSD2109	
CSD2109.1	Identify various concepts of mobile programming that make it unique from programming for other platforms
CSD2109.2	Critique mobile applications on their design pros and cons
CSD2109.3	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces,
CSD2109.4	Program mobile applications for the Android operating system that use basic
CSD2109.5	advanced phone features
CSD2109.6	Deploy applications to the Android marketplace for distribution

Year/Sem: II B.Tech II Sem

Course Name: Probability and Statistics	
Course Code: CSD2201	
CSD2201.1	Explain the concepts of data science and its importance
CSD2201.2	Learn characteristics and through Correlation and regression tools
CSD2201.3	Write the concepts of probability and their applications
CSD2201.4	Apply discrete and continuous probability distributions
CSD2201.5	Explain the components of classical hypothesis test
CSD2201.6	To learn statistical inferential methods based on small and large sampling test

Course Name: Computer Organization	
Course Code: CSD2202	
CSD2202.1	Develop a detailed understanding of computer systems.
CSD2202.2	Cite different number systems, binary addition and subtraction, standard, floating-point, and micro operations.
CSD2202.3	Develop a detailed understanding of architecture.
CSD2202.4	Functionality of central processing unit.
CSD2202.5	Exemplify in a better way the I/O and memory organization.
CSD2202.6	Illustrate concepts of parallel processing, pipelining and inter processor communication.

Course Name: Data Warehousing and Mining	
Course Code: CSD2203	
CSD2203.1	Summarize the architecture of data warehouse
CSD2203.2	Apply different preprocessing methods, Similarity, Dissimilarity measures for any given raw data
CSD2203.3	Construct a decision tree.
CSD2203.4	Construct a decision resolve the problem of model overfitting.
CSD2203.5	Compare Apriori and FP-growth association rule mining algorithms for frequent itemset generation
CSD2203.6	Apply suitable clustering algorithm for the given data set

Course Name: Visual Design and Communication	
Course Code: CSD2204	
CSD2204.1	Students will develop the ability to create visual compositions using basic elements and apply appropriate principles of visual composition to communicate ideas.
CSD2204.2	Students will begin to understand the visual language and develop the ability to perceive, visualize and communicate using visual narratives.
CSD2204.3	Students will develop the ability to apply the visual dynamics of visual language in Typography, Photography and Videography.
CSD2204.4	Students will develop the ability to apply the visual dynamics of visual language in Image and layouts in the design of signage systems
CSD2204.5	Students will begin to understand the visual dynamics that exists in visual design as a visualisation process to evolve mental imageries that represent solutions to simple communication problems.
CSD2204.6	Students will be able to execute design solutions using appropriate software programmes.

Course Name: Managerial Economics and Financial Accountancy	
Course Code: CSD2205	
CSD2205.1	Demonstrate skills in solving mathematical problems
CSD2205.2	Comprehend mathematical principles and logic
CSD2205.3	Demonstrate knowledge of mathematical modelling
CSD2205.4	Proficiency in using mathematical software
CSD2205.5	Manipulate and analyze data numerically and/or graphically using appropriate Software
CSD2205.6	Communicate effectively mathematical ideas/results verbally or in writing

Course Name: Games Development Lab	
Course Code: CSD2206	
CSD2206.1	Learning how to use the various fundamentals of Unity
CSD2206.2	Understanding how everything works in the engine
CSD2206.3	Understanding the basic concepts of game design
CSD2206.4	Creating and building actual sample games
CSD2206.5	Learning how to deploy your projects to the market

Course Name: Data Mining using Python Lab	
Course Code: CSD2207	
CSD2207.1	Apply pre-processing techniques on real world datasets
CSD2207.2	Apply apriori algorithm to generate frequent item sets.
CSD2207.3	Apply Classification and clustering algorithms on different datasets.
CSD2207.4	Choose Model building and evaluation.
CSD2207.5	Make use of association rule mining techniques viz. Apriori and FP Growth algorithms and analyze on frequent itemsets generation.
CSD2207.6	Identify and apply various clustering algorithm (with open source tools), interpret, evaluate and report the result.

Course Name: Web Application Development Lab	
Course Code: CSD2208	
CSD2208.1	Develop Single Page Applications.
CSD2208.2	Develop NodeJS&ReactJS Reusable Service.
CSD2208.3	Store the data in MySQL.
CSD2208.4	Get acquainted with the latest web application development trends in the IT industry.
CSD2208.5	To develop the skill in server side programming using JSP.
CSD2208.6	Developing applications in a team environment.

Course Name: Digital Photography using Adobe Photoshop	
Course Code: CSD2209	
CSD2209.1	Installation of Photoshop
CSD2209.2	Photoshop Workspace and Shortcut Keys
CSD2209.3	Layers in Photoshop
CSD2209.4	Demonstrate how to Remove Background of an Image Using Photoshop.
CSD2209.5	Photoshop Brush Tool and Pen Tool
CSD2209.6	Demonstrate how to change colour in Photoshop

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE OUTCOMES

A.Y:- 2022-2023

Year/Sem: II B.Tech I SEM

Course Name: MATHEMATICS-III(Vector Calculus, Transforms and PDE)	
Course Code: AME2101	
AME2101.1	Able to Interpret the physical meaning of different operators such as gradient, curl and divergence (L5)
AME2101.2	Estimate the work done against a field, circulation and flux using vector calculus (L5)
AME2101.3	Apply the Laplace transform for solving differential equations (L3)
AME2101.4	Find or compute the Fourier series of periodic signals (L3)
AME2101.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
AME2101.6	Identify solution methods for partial differential equations that model physical processes (L3)

Course Name: THERMODYNAMICS	
Course Code: AME2102	
AME2102.1	Define basic concepts of thermodynamics.
AME2102.2	Describe Laws of thermodynamics.
AME2102.3	Explain Concept of entropy.
AME2102.4	Evaluation of vapors and their depiction in tables .
AME2125.5	Evaluation of charts.
AME2102.6	Evaluation of properties of perfect gas mixtures.

Course Name: MECHANICS OF SOLIDS	
Course Code: AME2103	
AME2103.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
AME2103.2	Able to Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
AME2103.3	Analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
AME2103.4	Analyse beams and draw correct and complete shear and bending moment diagrams for beams.
AME2103.5	Able to understanding of the loads, stresses, and strains acting on a structure

	and their relations in the elastic behavior
AME2103.6	Design and analysis of Industrial components like pressure vessels.

Course Name: Fluid Mechanics & Hydraulic Machines	
Course Code: AME2104	
AME2104.1	Able to know the basic concepts of fluid properties.
AME2104.2	Explain the mechanics of fluids in static and dynamic conditions.
AME2104.3	Clarify Boundary layer theory, flow separation and dimensional analysis.
AME2104.4	Describe Hydrodynamic forces of jet on vanes in different positions.
AME2104.5	Explain Working Principles and performance evaluation of hydraulic pump
AME2104.6	Describe Working Principles and performance evaluation of hydraulic turbines.

Course Name: Components of Automobile Chassis	
Course Code: AME2105	
AME2105.1	Identify the different types of frame and chassis used inAutomotive.
AME2105.2	Able to know relate different types of drive lines and drives used inAutomotive.
AME2105.3	Acquire knowledge about different types of front axle and rear axles used in motor vehicles.
AME2105.4	Acquire knowledge about different types of rear axles used in motor vehicles.
AME2105.5	Examine the working principle of conventional and independent suspension systems .
AME2105.6	Apply knowledge on working principles of brake and its subsystems.

Course Name: Mechanics of Solids & Metallurgy Lab	
Course Code: AME2106	
AME2106.1	Determine Mechanical properties and Elastic Constants
AME2106.2	Appraise the students with the use of testing machines
AME2106.3	Characterize the microstructures of different ferrous and non ferrous metals.
AME2106.4	Identify the effect of heat treatment and cooling rates on the properties of steels
AME2106.5	Clarify Hardeneability of steels by Jominy End QuenchTest
AME2106.6	Able to know the Microstructure of Mild steels, low carbon steels, high – Csteels

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Course Name: Automobile Chassis lab	
Course Code: AME2107	
AME2107.1	Able to know the understand working of braking, , Suspension systems.
AME2107.2	Describe understand working of steering.
AME2107.3	Define understand working of clutch.
AME2107.4	Explain working of transmission.
AME2107.5	Differentiate various subsystems of two, three & Four wheeler vehicles
AME2107.6	Develop skills in Dismantling and assembling of chassis components.

Course Name: Fluid Mechanics & Hydraulic Machines lab	
Course Code: AME2108	
AME2108.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
AME2108.2	To gain practical exposure on the performance evaluation methods of Pelton Wheel
AME2108.3	To gain practical exposure on the performance evaluation methods of Francis Turbine
AME2108.4	To gain practical exposure on the performance evaluation methods of Reciprocating pump
AME2108.5	To gain practical exposure on the performance evaluation methods of Venturimeter
AME2108.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name: COMPUTER AIDED DRAFTING AND MODELLING LAB	
Course Code: AME2109	
AME2109.1	Able to use software like AutoCAD, Invertor/ Pro E/ Unigraphics.
AME2109.2	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 2D Modelling.
AME2109.3	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 3D Modelling.
AME2109.4	Able to make 3D assembling of different machine components
AME2109.5	Able to make 3D modelling, modification & manipulation along with detailing.

AME2109.6	Able to prepare surface modelling and sheet metal operations through various exercises

Year/Sem: II B.Tech II SEM

Course Name: Applied Thermodynamics	
Course Code: AME2201	
AME2201.1	Expected to learn the working of steam power cycles and also should be able to analyze and evaluate the performance of individual components
AME2201.2	Able to learn the principles of combustion ,stochiometry and flue gas analysis
AME2201.3	Able to design the components and calculate the losses and efficiency of the boilers.
AME2201.4	Able to design the components and calculate the losses and efficiency of the nozzles.
AME2201.5	Able to design the components and calculate the losses and efficiency of the turbines and condensers.
AME2201.6	Able to learn various types of compressors, principles of working and their performance evaluation.

Course Name: COMPLEX VARIABLES AND STATISTICAL METHODS	
Course Code: AME2202	
AME2202.1	Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic (L3)
AME2202.2	Find the differentiation and integration of complex functions used in engineering problems (L5)
AME2202.3	Make use of the Cauchy residue theorem to evaluate certain integrals (L3)
AME2202.4	Apply discrete and continuous probability distributions (L3)
AME2202.5	Design the components of a classical hypothesis test (L6)
AME2202.6	Infer the statistical inferential methods based on small and large sampling tests (L4)

Course Name: AUTOMOBILE ENGINES	
Course Code: AME2203	
AME2203.1	Able to know the Air Standard and Actual Cycles
AME2203.2	Explain the Four Stroke and Two Stroke Engines
AME2203.3	Able to know about the Lubrication, Cooling systems, Supercharging and Turbocharging
AME2203.4	Describe the Carburetor and its types

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AME2203.5	Define the Homogeneous Charge Compression Ignition(HCCI), Reactivity Controlled Compression Ignition (RCCI) Technologies and Pre-mixed Charge Compression (PCCI)
AME2203.6	Able to know the Emission Effects on Health & Environment
Course Name: AUTOMOBILE ELECTRICAL AND ELECTRONICS	
Course Code: AME2204	
AME2204.1	Ableto know the Lead Acid Battery and Lighting System
AME2204.2	Explain the Starting System and Starter Motor
AME2204.3	Define the Charging System and Alternators
AME2204.4	Describe the Electronic Dashboard Instruments and Onboard Diagnostic System.
AME2204.5	Explain the Types of Sensors
AME2204.6	Able to know the actuators

Course Name: Operations Research	
Course Code: AME2205	
AME2205.1	**Formulate the resource management problems and identify appropriate methods to solve them**
AME2205.2	**Apply LPP.**
AME2205.3	**Apply transportation and assignment models to optimize the industrial resources**
AME2205.4	**Solve decision theory problems through the application of game theory**
AME2205.5	**Apply the replacement and queuing models to increase the efficiency of the system**
AME2205.6	**Model the project management problems through CPM and PERT**

Course Name: Automobile Assembly Drawing	
Course Code: AME2206	
AME2206.1	Describe various joint, simple mechanical parts Selection of Views
AME2206.2	Explain machine elements and parts with every drawing proportions.
AME2206.3	Able to Shaft coupling, spigot and socket pipejoint
AME2206.4	able to draw the assembly from the individual part drawing
AME2206.5	Explain the Drawings of assembled views for the part drawings
AME2206.6	Able to know the spring loaded safety valve, feed check valve and air cock, Controlvalves

Course Name: Automobile Engines & Fuels Lab	
Course Code: AME2207	
AME2207.1	Expected to know the principles in assembly.
AME2207.2	Able to know the principles in dismantling of engine components.
AME2207.3	Describe the Dismantle and Assemble of Agriculture single Cylinder and Multi- Cylinder Automotive Engines

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AME2207.4	Explain characteristics automobile
AME2207.5	Able to know the fuels.
AME2207.6	Explain lubricants used in automobile

Course Name: Automobile Electrical & Electronics Lab	
Course Code: AME2208	
AME2208.1	**Able to know the batteries and starter motor testing**
AME2208.2	**Alarifty the alternator testing and wiring system**
AME2208.3	**Describe Battery Ignition System and different Electrical Equipment's**
AME2208.4	**Able to know the different sensors and various electronics system**
AME2208.5	**Describe the lighting system of two wheeler and FourWheeler**
AME2208.6	**Define the Automotive Electronics**

Course Name: MACHINE TOOLS AND METROLOGY LAB	
Course Code: AME2209	
AME2209.1	Explain hands on experience on lathe machine to perform turning, facing, threading operations.
AME2209.2	Explain flat surface machining, milling and grinding operations.
AME2209.3	Able to know the drilling and threading operations.
AME2209.4	Describe Linear and angular measurements exposure.
AME2209.5	Describe machine tool alignment test on the lathe
AME2209.6	Able to operate various precession measuring instruments and working and operations of various machines tools

Year/Sem: III B.Tech I SEM

Course Name: THEORY OF MACHINES	
Course Code: AME3101	
AME3101.1	Demonstrate the fundamentals of mechanisms and their applications and able to analyse the kinematic properties of mechanism such as displacement, velocity and acceleration
AME3101.2	Analyze the effect of friction in machines such as belt drives, clutches and brakes
AME3101.3	Able to know the the basic nomenclature of gears and analyze gear kinematics.
AME3101.4	Analyze velocity and acceleration
AME3101.5	Analysis of cam and demonstrate the balancing of any kinematic system
AME3101.6	Analyze different types of Vibrations

Course Name: PRODUCTION TECHNOLOGY	
Course Code: AME3102	
AME3102.1	Able to design the patterns and core boxes for metal casting processes
AME3102.2	Able to design the gating system for different metallic components

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AME3102.3	Describe the different types of welding processes
AME3102.4	Explain the Principles of Gating
AME3102.5	Learn about plastic deformation processes
AME3102.6	Explain about the Sheet metal forming

Course Name: VEHICLE DYNAMICS	
Course Code: AME3103	
AME3103.1	Able to know the different types of forces, loads and fundamental dynamics variables acting on vehicle
AME3103.2	Derivation of expression for braking and acceleration parameters on vehicle such as constant retardation wind resistance and having knowledge on brakes
AME3103.3	Determination of different types of road loads acting on a vehicle
AME3103.4	Describe rolling resistance and factors effecting on it
AME3103.5	Identify and understand the Vehicle response properties
AME3103.6	Derivation of steady state cornering parameters

Course Name:Basic Automobile Engineering	
Course Code: AME3104	
AME3104.1	Able to know the course, shall learn about transmission,
AME3104.2	Learn about oil filters, oil pumps and crank case ventilation
AME3104.3	Analysis the steering
AME3104.4	Able to know the suspension system
AME3104.5	Explain the braking and safety
AME3104.6	Able to know the vehicle troubleshooting.

Course Name: Two and Three Wheelers	
Course Code: AME3105	
AME3105.1	Able to know the different frames
AME3105.2	Learn about suspension system
AME3105.3	Learn about transmission unit used in various two and three wheeler vehicles
AME3105.4	Describe ignition systems electrical &braking systems
AME3105.5	Explain about three wheeler vehicles
AME3105.6	Able to know the wheels and tyres

Course Name: PRODUCTION TECHNOLOGY LAB	
Course Code: AME3106	
AME3106.1	Able to Design and manufacture simple patterns
AME3106.2	Control sand properties in foundry

AME3106.3	Operate arc welding, gas welding and resistance welding equipment
AME3106.4	Describe blow moulding and injection moulding equipment
AME3106.5	Able to know the sheet metal operations
AME3106.6	Explain brazing and soldering

Course Name: THEORY OF MACHINES LAB	
Course Code: AME3107	
AME3107.1	Able to Evaluate performance of a Hartnel governor
AME3107.2	Determine the frequencies of vibration in case of free and forced vibrations of a spring- mass system and whirling speed of a shaft
AME3107.3	Determine motion characteristics of a slider crank mechanism and cam-follower mechanism
AME3107.4	Demonstrate various mechanical power transmission devices
AME3107.5	Explain Components like screw jack and gears.
AME3107.6	Define moment of inertia of a flywheel

Course Name: VEHICLE DESIGN AND ANALYSIS LAB	
Course Code: AME3108	
AME3108.1	Able to visualize the automotive components with the help of modelling software.
AME3108.2	Make the modifications instantly if required at the initial stage itself.
AME3108.3	Demonstrate the knowledge on designing components to withstand the loads and deformations.
AME3108.4	Synthesize, analyze and document the design of the various components
AME3108.5	Demonstrate the ability to use engineering techniques for developing vehicle components with industry standards.
AME3108.6	Able to understanding Vehicle Aerodynamics

Year/Sem: III B.Tech II SEM

Course Name: Automobile Components and Chassis Design	
Course Code: AME3201	
AME3201.1	Identifying the constructional details of chassis and components
AME3201.2	Explain various steering systems, steering linkages and steering gear boxes
AME3201.3	Able to understand the principle of suspension system
AME3201.4	Derivation of steering kinematics parameters
AME3201.5	Describe Knowledge on gearbox design
AME3201.6	Explain the working of CVT

Course Name: Automobile Transmission systems	
Course Code: AME3202	
AME3202.1	Able to know the the concept of hydrodynamic transmissions.

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AME3202.2	Explain the Planetary gear trains
AME3202.3	Describe automatic and hydrostatic transmissions and their performance.
AME3202.4	Explain about the epi-cyclic gear boxes
AME3202.5	Describe the electric drives
AME3202.6	Clarify Know about the advantages and disadvantages of electric drives

Course Name: Vehicle Body Engineering	
Course Code: AME3203	
AME3203.1	Describe car body details
AME3203.2	Explain the vehicle aero dynamics
AME3203.3	Define bus body details
AME3203.4	Able to know the commercial vehicle details
AME3203.5	Describe the the Wind Tunnel Testing
AME3203.6	Explain the body materials, trim and mechanisms

Course Name: Alternative Fuels for Automobiles	
Course Code: AME3204	
AME3204.1	Possess a comprehensive understanding of available alternative fuels for IC engines.
AME3204.2	Able to know the different biofuels, modifying them and using them in IC engines
AME3204.3	Acquire the skills in developing new technologies for alternative fuels efficiently in IC engines.
AME3204.4	Demonstrate the importance of using alternative fuels for sustainable energy supply and for emission control in IC engines.
AME3204.5	Describe combustion and emission Characteristics in engines
AME3204.6	Explain Biogas, Compressed Natural gas (CNG) and LPG

Course Name: Mechatronics	
Course Code: AME3205	
AME3205.1	Able to use the various mechatronics systems devices
AME3205.2	Components in the design of electro mechanical systems.
AME3205.3	Able to Know the programmable logic controllers
AME3205.4	Explain the System and interfacing and data acquisition
AME3205.5	Describe the System Digital Signal Processing
AME3205.6	Able to Know the Dynamic models and analogies, System response

Course Name: AUTO SCANNING & VEHICLE TESTING LAB
Course Code: AME3206

AME3206.1	Able to understand automotive scan tools
AME3206.2	Diagnostic equipment for fault diagnosis and troubleshooting
AME3206.3	Computerized engine analyzer and wheel balancing machine
AME3206.4	Describe Two wheeler chassis dynamometer
AME3206.5	Explain Head light focusing test and Visibility test
AME3206.6	Able to know the bus depots and service station workshop layouts

Course Name: VEHICLE MAINTENANCE LABORATORY	
Course Code: AME3207	
AME3207.1	Acquire the fundamental knowledge in evaluation and maintenance
AME3207.2	Understand the various methods of maintaining vehicles and their subsystems
AME3207.3	Know the Fault diagnosis and service of vehicle air conditioning system
AME3207.4	Understand Minor and major tune up of gasoline and diesel engines and Calibration of Fuel injection pump
AME3207.5	Know the Removal and fitting of tire and tube
AME3207.6	Know the Fault diagnosis of brake/clutch

Course Name: VEHICLE EVALUATION LAB	
Course Code: AME3208	
AME3208.1	Know the Brake Performance Evaluation
AME3208.2	Understand Grade ability and Coast Down Test for all Vehicles
AME3208.3	Know the Speedometer Calibration
AME3208.4	Understand the Bus body, Truck and Ambulance code
AME3208.5	Know the Acceleration performance of 2 wheeler
AME3208.6	Students at the end of the course will be able to gain knowledge on various standards used for testing of vehicles.

Course Name: SOFT SKILLS	
Course Code: AME3209	
AME3209.1	Use language fluently, accurately and appropriately in debates and group discussions
AME3209.2	Exhibit interview skills and develop soft skills
AME3209.3	Understand how to making meeting effective, Negotiation skills

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AME3209.4	Use their skills of listening comprehension to communicate effectively in cross-cultural contexts
AME3209.5	Learn and use new vocabulary
AME3209.6	Write resumes, project reports and reviews.

Year/Sem: IV B.Tech I SEM

Course Name: INDUSTRIAL ENGINEERING AND MANAGEMENT	
Course Code: AME4101	
AME4101.1	Design and conduct experiments, analyse, interpret data and synthesise valid conclusions
AME4101.2	Design a system, component, or process, and synthesise solutions to achieve desired needs
AME4101.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health
AME4101.4	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for safety, cultural, societal, and environmental constraints
AME4101.5	Function effectively within multi-disciplinary teams
AME4101.6	Understand the fundamental precepts of effective project management

Course Name: VEHICLE DYNAMICS	
Course Code: AME4102	
AME4102.1	Understand the principles underlying the development and design of road vehicles under the influence of dynamic loads. CO3 CO5
AME4102.2	Analyze the performance and establish the design specifications for the acceleration and braking conditions.
AME4102.3	Model, simulate and analyze the conventional road vehicles for better ride comfort.
AME4102.4	Analyze the cornering forces and effects of tractive forces on cornering
AME4102.5	Analyze the cornering effects of tractive forces on cornering
AME4102.6	Design suspension systems for better damping and comfort

Course Name: Vehicle Body Engineering	
Course Code: AME4103	
AME4103.1	Describe car body details
AME4103.2	Explain the vehicle aero dynamics
AME4103.3	Define bus body details

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AME4103.4	Able to know the commercial vehicle details
AME4103.5	Describe the the Wind Tunnel Testing
AME4103.6	Explain the body materials, trim and mechanisms

Course Name: ALTERNATIVE ENERGY SOURCES FOR AUTOMOBILES	
Course Code: AME4103	
AME4104.1	Possess a comprehensive understanding of available alternative fuels for IC engines.
AME4104.2	Able to knowledge on producing different biofuels, modifying them and using them in IC engines
AME4104.3	Acquire the skills in developing new technologies for alternative fuels efficiently in IC engines.
AME4104.4	Demonstrate the importance of using alternative fuels for sustainable energy supply and for emission control in IC engines.
AME4104.5	Able to combustion and emission Characteristics in engines
AME4104.6	Explain Working of LPG and CNG

Course Name: TWO AND THREE WHEELERS	
Course Code: AME4105	
AME4105.1	Able to know the different frames
AME4105.2	Learn about suspension system
AME4105.3	Learn about transmission unit used in various two and three wheeler vehicles
AME4105.4	Describe ignition systems electrical &braking systems
AME4105.5	Explain about three wheeler vehicles
AME4105.6	Able to know the wheels and tyres

Course Name: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	
Course Code: AME4106	
AME4106.1	Able to the knowledge of estimating the Demand and demand elasticities for a product.
AME4106.2	Describe Input-Output-Cost relationships and estimation of the least cost combination of inputs
AME4106.3	Able to understand the nature of different markets and Price Output determination under various market conditions
AME4106.4	Define knowledge of different Business Units
AME4106.5	Able to prepare Financial Statements and the usage of various Accounting tools for Analysis.
AME4106.6	Evaluate various investment project proposals with the help of capital budgeting techniques for decision making.

Course Name: VEHICLE DESIGN AND SIMULATION LAB

Course Code: AME4107	
AME4107.1	Make the modifications instantly if required at the initial stage itself
AME4107.2	Demonstrate the knowledge on designing components to withstand the loads and deformations.
AME4107.3	Synthesize, analyze and document the design of the various components
AME4107.4	Demonstrate the ability to use engineering techniques for developing vehicle components with industry standards.
AME4107.5	Able to design and Modeling of rear axle
AME4107.6	Derive mathematical problems in matlab

Year/Sem: IV B.Tech II SEM

Course Name: NOISE, VIBRATIONS AND HARSHNESS	
Course Code: AME4201	
AME4201.1	Demonstrate a clear understanding of the sources, effects, prediction, control techniques
AME4201.2	Measurement techniques of noise
AME4201.3	Able to vibration pertain to an automobile
AME4201.4	Explain Vibration Prediction and Control
AME4201.5	Describe Metrology and Traceability of Vibration and Shock Measurements
AME4201.6	Explain Interior Transportation Noise and Vibration Sources

Course Name: VEHICLE MAINTENANCE	
Course Code: AME4202	
AME4202.1	Able to maintain various records
AME4202.2	Describe scheduled and unscheduled maintenance
AME4202.3	Able to maintain of various systems of a vehicle.
AME4202.4	Describe repair of various systems of a vehicle.
AME4202.5	Explain service of various systems of a vehicle
AME4202.6	Able to Rims classification, wheel balancing types.

Course Name: CERTIFICATION AND HOMOLOGATION	
Course Code: AME4203	
AME4203.1	Able to know the Regulations overview(ECE,EEC, FMVSS, AIS, CMVR, ADR)
AME4203.2	Explain the operation of full load and part load conditions
AME4203.3	Describe wind tunnel testing, road testing, test tracks
AME4203.4	Explain Wheel rim testing for cornering and radial fatigue
AME4203.5	Describe Size and Ply rating of tyres, Safety Glasses
AME4203.6	Able to know the SAE standards

Course Name: SPECIAL PURPOSE VEHICLES	
Course Code: AME4204	
AME4204.1	After the completion of the course, the student will be able to acquire the knowledge about the various equipments used in earth moving,

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	applications.
AME4204.2	Understand the construction and working of the vehicle for constructional application
AME4204.3	Describe the working nature of farm equipment's based on their application.
AME4204.4	Discriminate the various industrial vehicles based on the purpose.
AME4204.5	Acquire the knowledge on the functioning of military vehicle.
AME4204.6	Know material handlers, recliners, Street sweepers

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE OUTCOMES

A.Y:- 2021-2022

Year/Sem: II B.Tech I SEM

Course Name: MATHEMATICS-III(Vector Calculus, Transforms and PDE)	
Course Code: AME2101	
AME2101.1	Able to Interpret the physical meaning of different operators such as gradient, curl and divergence (L5)
AME2101.2	Estimate the work done against a field, circulation and flux using vector calculus (L5)
AME2101.3	Apply the Laplace transform for solving differential equations (L3)
AME2101.4	Find or compute the Fourier series of periodic signals (L3)
AME2101.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
AME2101.6	Identify solution methods for partial differential equations that model physical processes (L3)

Course Name: THERMODYNAMICS	
Course Code: AME2102	
AME2102.1	Define basic concepts of thermodynamics.
AME2102.2	Describe Laws of thermodynamics.
AME2102.3	Explain Concept of entropy.
AME2102.4	Evaluation of vapors and their depiction in tables .
AME2125.5	Evaluation of charts.
AME2102.6	Evaluation of properties of perfect gas mixtures.

Course Name: MECHANICS OF SOLIDS	
Course Code: AME2103	
AME2103.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
AME2103.2	Able to Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
AME2103.3	Analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
AME2103.4	Analyse beams and draw correct and complete shear and bending moment diagrams for beams.
AME2103.5	Able to understanding of the loads, stresses, and strains acting on a structure

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	and their relations in the elastic behavior
AME2103.6	Design and analysis of Industrial components like pressure vessels.

Course Name: Fluid Mechanics & Hydraulic Machines	
Course Code: AME2104	
AME2104.1	Able to know the basic concepts of fluid properties.
AME2104.2	Explain the mechanics of fluids in static and dynamic conditions.
AME2104.3	Clarify Boundary layer theory, flow separation and dimensional analysis.
AME2104.4	Describe Hydrodynamic forces of jet on vanes in different positions.
AME2104.5	Explain Working Principles and performance evaluation of hydraulic pump
AME2104.6	Describe Working Principles and performance evaluation of hydraulic turbines.

Course Name: Components of Automobile Chassis	
Course Code: AME2105	
AME2105.1	Identify the different types of frame and chassis used inAutomotive.
AME2105.2	Able to know relate different types of drive lines and drives used inAutomotive.
AME2105.3	Acquire knowledge about different types of front axle and rear axles used in motor vehicles.
AME2105.4	Acquire knowledge about different types of rear axles used in motor vehicles.
AME2105.5	Examine the working principle of conventional and independent suspension systems .
AME2105.6	Apply knowledge on working principles of brake and its subsystems.

Course Name: Mechanics of Solids & Metallurgy Lab	
Course Code: AME2106	
AME2106.1	Determine Mechanical properties and Elastic Constants
AME2106.2	Appraise the students with the use of testing machines
AME2106.3	Characterize the microstructures of different ferrous and non ferrous metals.
AME2106.4	Identify the effect of heat treatment and cooling rates on the properties of steels
AME2106.5	Clarify Hardeneability of steels by Jominy End QuenchTest
AME2106.6	Able to know the Microstructure of Mild steels, low carbon steels, high – Csteels

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Course Name: Automobile Chassis lab	
Course Code: AME2107	
AME2107.1	Able to know the understand working of braking, , Suspension systems.
AME2107.2	Describe understand working of steering.
AME2107.3	Define understand working of clutch.
AME2107.4	Explain working of transmission.
AME2107.5	Differentiate various subsystems of two, three & Four wheeler vehicles
AME2107.6	Develop skills in Dismantling and assembling of chassis components.

Course Name: Fluid Mechanics & Hydraulic Machines lab	
Course Code: AME2108	
AME2108.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
AME2108.2	To gain practical exposure on the performance evaluation methods of Pelton Wheel
AME2108.3	To gain practical exposure on the performance evaluation methods of Francis Turbine
AME2108.4	To gain practical exposure on the performance evaluation methods of Reciprocating pump
AME2108.5	To gain practical exposure on the performance evaluation methods of Venturimeter
AME2108.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name: COMPUTER AIDED DRAFTING AND MODELLING LAB	
Course Code: AME2109	
AME2109.1	Able to use software like AutoCAD, Invertor/ Pro E/ Unigraphics.
AME2109.2	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 2D Modelling.
AME2109.3	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 3D Modelling.
AME2109.4	Able to make 3D assembling of different machine components
AME2109.5	Able to make 3D modelling, modification & manipulation along with detailing.

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AME2109.6	Able to prepare surface modelling and sheet metal operations through various exercises

Year/Sem: II B.Tech II SEM

Course Name: Applied Thermodynamics	
Course Code: AME2201	
AME2201.1	Expected to learn the working of steam power cycles and also should be able to analyze and evaluate the performance of individual components
AME2201.2	Able to learn the principles of combustion ,stochiometry and flue gas analysis
AME2201.3	Able to design the components and calculate the losses and efficiency of the boilers.
AME2201.4	Able to design the components and calculate the losses and efficiency of the nozzles.
AME2201.5	Able to design the components and calculate the losses and efficiency of the turbines and condensers.
AME2201.6	Able to learn various types of compressors, principles of working and their performance evaluation.

Course Name: COMPLEX VARIABLES AND STATISTICAL METHODS	
Course Code: AME2202	
AME2202.1	Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic (L3)
AME2202.2	Find the differentiation and integration of complex functions used in engineering problems (L5)
AME2202.3	Make use of the Cauchy residue theorem to evaluate certain integrals (L3)
AME2202.4	Apply discrete and continuous probability distributions (L3)
AME2202.5	Design the components of a classical hypothesis test (L6)
AME2202.6	Infer the statistical inferential methods based on small and large sampling tests (L4)

Course Name: AUTOMOBILE ENGINES	
Course Code: AME2203	
AME2203.1	Able to know the Air Standard and Actual Cycles
AME2203.2	Explain the Four Stroke and Two Stroke Engines
AME2203.3	Able to know about the Lubrication, Cooling systems, Supercharging and Turbocharging
AME2203.4	Describe the Carburetor and its types

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AME2203.5	Define the Homogeneous Charge Compression Ignition(HCCI), Reactivity Controlled Compression Ignition (RCCI) Technologies and Pre-mixed Charge Compression (PCCI)
AME2203.6	Able to know the Emission Effects on Health & Environment
Course Name: AUTOMOBILE ELECTRICAL AND ELECTRONICS	
Course Code: AME2204	
AME2204.1	Formulate the resource management problems and identify appropriate methods to solve them
AME2204.2	Apply LPP.
AME2204.3	Apply transportation and assignment models to optimize the industrial resources
AME2204.4	Solve decision theory problems through the application of game theory
AME2204.5	Apply the replacement and queuing models to increase the efficiency of the system
AME2204.6	Model the project management problems through CPM and PERT

Course Name: Operations Research	
Course Code: AME2205	
AME2205.1	Formulate the resource management problems and identify appropriate methods to solve them
AME2205.2	Apply LPP.
AME2205.3	Apply transportation and assignment models to optimize the industrial resources
AME2205.4	Solve decision theory problems through the application of game theory
AME2205.5	Apply the replacement and queuing models to increase the efficiency of the system
AME2205.6	Model the project management problems through CPM and PERT

Course Name: Automobile Assembly Drawing	
Course Code: AME2206	
AME2206.1	Describe various joint, simple mechanical parts Selection of Views
AME2206.2	Explain machine elements and parts with every drawing proportions.
AME2206.3	Able to Shaft coupling, spigot and socket pipejoint
AME2206.4	able to draw the assembly from the individual part drawing
AME2206.5	Explain the Drawings of assembled views for the part drawings
AME2206.6	Able to know the spring loaded safety valve, feed check valve and air cock, Controlvalves

Course Name: Automobile Engines & Fuels Lab	
Course Code: AME2207	
AME2207.1	Expected to know the principles in assembly.
AME2207.2	Able to know the principles in dismantling of engine components.
AME2207.3	Describe the Dismantle and Assemble of Agriculture single Cylinder and

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	Multi- Cylinder Automotive Engines
AME2207.4	Explain characteristics automobile
AME2207.5	Able to know the fuels.
AME2207.6	Explain lubricants used in automobile
Course Name: Automobile Electrical & Electronics Lab	
Course Code: AME2208	
AME2208.1	Able to know the batteries and starter motor testing
AME2208.2	Alarifty the alternator testing and wiring system
AME2208.3	Describe Battery Ignition System and different Electrical Equipment's
AME2208.4	Able to know the different sensors and various electronics system
AME2208.5	Describe the lighting system of two wheeler and FourWheeler
AME2208.6	Define the Automotive Electronics

Course Name: MACHINE TOOLS AND METROLOGY LAB	
Course Code: AME2209	
AME2209.1	Explain hands on experience on lathe machine to perform turning, facing, threading operations.
AME2209.2	Explain flat surface machining, milling and grinding operations.
AME2209.3	Able to know the drilling and threading operations.
AME2209.4	Describe Linear and angular measurements exposure.
AME2209.5	Describe machine tool alignment test on the lathe
AME2209.6	Able to operate various precession measuring instruments and working and operations of various machines tools

Year/Sem: III B.Tech I SEM

Course Name: DYNAMICS OF MACHINERY	
Course Code: AME3101	
AME3101.1	Compute the frictional losses and transmission in clutches, brakes and dynamometers
AME3101.2	Determine the effect of gyroscopic couple in motor vehicles, ships and aeroplanes
AME3101.3	Analyze the forces in four bar and slider crank mechanisms and design a flywheel
AME3101.4	Determine the rotary unbalanced mass in reciprocating equipment
AME3101.5	Determine the unbalanced forces and couples in reciprocating and radial engines
AME3101.6	Determine the natural frequencies of discrete systems undergoing longitudinal, torsional and transverse vibrations.

Course Name: FUELS AND COMBUSTION	
Course Code: AME3102	
AME3102.1	Able to understand the various kinds of fuels

AME3102.2	Able to understand the characteristics and origin
AME3102.3	Able to understand the thermodynamics behind combustion
AME3102.4	Clarify the flame propagation
AME3102.5	Able to know the choice of combustion systems
AME3102.6	Define combustion and chemical kinetics.

Course Name: AUTOMOTIVE COMPONENTS DESIGN	
Course Code: AME3103	
AME3103.1	Able to know theFundamentals of Machine Design
AME3103.2	Able to know the Design of Shafts
AME3103.3	Define and explaination of friction clutch
AME3103.4	Able to know the design of brakes and components
AME3103.5	Able to know the design of gears and components
AME3103.6	Able to know the design of Bearings

Course Name: MICRO PROCESSORS AND MICRO CONTROLLERS	
Course Code: AME3104	
AME3104.1	Able to know the develop programs for different addressing modes.
AME3104.2	Able to know the perform 8086 interfacing with different peripherals and implement programs
AME3104.3	Describe the key features of serial and parallel communication
AME3104.4	Design a microcontroller for simple applications
AME3104.5	Describe the PIC16Cx/7X instructions and interrupts in PIC 16C61/71
AME3104.6	Able to know the assembly language programming tools.

Course Name: MACHINE TOOLS AND METROLOGY	
Course Code: AME3105	
AME3105.1	Define fundamentals of metal cutting and forces
AME3105.2	Explain concepts of Engine Lathe
AME3105.3	Able to know theDrilling and boring machines
AME3105.4	Able to know the tolerances and measurement instruments
AME3105.5	Explain Optical measurement instruments
AME3105.6	Able to know the Surface roughness measurement

Course Name: AUTOMOTIVE ENGINES AND FUELS LAB	
Course Code: AME3106	
AME3106.1	Able to know the principles in assembly & dismantling of Single cylinder two and four stroke engines
AME3106.2	Able to know the assembly & dismantling of Carburetor and Fuel injection pump

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AME3106.3	Able to know the assembly & dismantling of Lubrication system and Cooling system
AME3106.4	Clarify the Flash and Fire points of petrol and diesel
AME3106.5	Describe the viscosity of lubricants & Fuels
AME3106.6	Able to know the Cloud and Pour point Test

Course Name: MICRO PROCESSORS AND MICRO CONTROLLERS LAB	
Course Code: AME3107	
AME3107.1	Understand and apply the fundamentals of assembly level programming of microprocessors and microcontroller
AME3107.2	Able to know Work with standard microprocessor real time interfaces including GPIO, serial ports, digital-to-analog converters and analog-to-digital converters
AME3107.3	Clarify Troubleshoot interactions between software and hardware
AME3107.4	Able to know Timer in different modes
AME3107.5	Analyze abstract problems and apply a combination of hardware and software to address the problem;
AME3107.6	Use standard test and measurement equipment to evaluate digital interfaces.

Course Name: PRODUCTION TECHNOLOGY LAB	
Course Code: AME3108	
AME3108.1	Design and manufacture simple patterns
AME3108.2	Able to know the Sand testing
AME3108.3	Clarify Arc welding, gas welding and resistance welding
AME3108.4	Evaluate the quality of welded joints
AME3108.5	Describe Injection Molding and Blow Molding
AME3108.6	Able to know the Brazing and soldering

Year/Sem: III B.Tech II SEM

Course Name: HEAT TRANSFER	
Course Code: AME3201	
AME3201.1	Represent the physical problems of heat transfer in terms of governing equations or mathematical models
AME3201.2	Differentiate between different boundary conditions and apply the same for solving heat transfer problems
AME3201.3	Design thermal systems applying the concepts of heat transfer under steady state and well as unsteady state conditions
AME3201.4	Design, select and analyze the heat exchangers
AME3201.5	Apply the radiation concepts to the engineering devices
AME3201.6	Able to know the Radiation Heat Transfer

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Course Name: ELECTRICAL VEHICLES AND HYBRID TECHNOLOGY	
Course Code: AME3202	
AME3202.1	Define and exlplain Electric and hybrid vehicle operation and architectures
AME3202.2	Design of hybrid and electric vehicles
AME3202.3	Able to know the Energy requirement for vehicles
AME3202.4	Describe Vehicle characteristics, operating modes, and performance parameters of the vehicle
AME3202.5	Clarify Different subsystems of hybrid and electric vehicles
AME3202.6	Able to know the Control Strategies for Hybrid Vehicle

Course Name: AUTOMOTIVE CHASSIS DESIGN	
Course Code: AME3203	
AME3203.1	Able to know the Design of Frames for Passenger and Commercial Vehicle
AME3203.2	Clarify Steering Design and its components
AME3203.3	Calculation of Tyre rolling radius, checking of camber change & Toe Change
AME3203.4	Able to know the Gear Box Design
AME3203.5	Define and explain Continuous Variable Transmission
AME3203.6	Able to know the Pressure Spring and Fly weight System

Course Name: AUTOMOTIVE POLLUTION AND CONTROL	
Course Code: AME3204	
AME3204.1	Explain air pollution and pollutants, their sources & their effects.
AME3204.2	Describe different parameters responsible for pollutant formation.
AME3204.3	Choose instruments for pollution measurements.
AME3204.4	Analyze measurement of pollutants
AME3204.5	Explain Constant Volume Sampling I and 3
AME3204.6	Able to know the Encapsulation technique for noise reduction

Course Name: RENEWABLE ENERGY SOURCES	
Course Code: AME3205	
AME3205.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface
AME3205.2	Design solar photo voltaic systems
AME3205.3	Develop maximum power point techniques in solar PV and wind energy systems.
AME3205.4	Explain wind energy conversion systems, wind generators, power generation
AME3205.5	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems.
AME3205.6	Describe Energy equation and Types of turbines

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Course Name: AUTOMOTIVE ELECTRICAL AND ELECTRONICS LAB	
Course Code: AME3206	
AME3206.1	Know the batteries and starter motor testing
AME3206.2	Understanding the alternator testing and wiring system
AME3206.3	Study of Battery Ignition System and different Electrical Equipment's
AME3206.4	Know about the different sensors and various electronics system
AME3206.5	Understand the lighting system of two wheeler and FourWheeler
AME3206.6	Know the Automotive Electronics

Course Name: METROLOGY AND MACHINE TOOLS LAB	
Course Code: AME3207	
AME3207.1	Explain hands on experience on lathe machine to perform turning, facing, threading operations.
AME3207.2	Explain flat surface machining, milling and grinding operations.
AME3207.3	Able to know the drilling and threading operations.
AME3207.4	Describe Linear and angular measurements exposure.
AME3207.5	Describe machine tool alignment test on the lathe
AME3207.6	Able to operate various precession measuring instruments and working and operations of various machines tools

Course Name: AUTO SCANNING & VEHICLE TESTING LAB	
Course Code: AME3208	
AME3208.1	Understand automotive scan tools
AME3208.2	Diagnostic equipment for fault diagnosis and troubleshooting
AME3208.3	Understand the Computerized engine analyzer and wheel balancing machine
AME3208.4	Know the Two wheeler chassis dynamometer
AME3208.5	Understand the Head light focusing test andVisibility test
AME3208.6	Know the bus depots and service station workshop layouts

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Year/Sem: IV B.Tech I SEM

Course Name: AUTOMOTIVE CHASSIS & SUSPENSION	
Course Code: AME4101	
AME4101.1	Explain different chassis layouts and frames, Suspensions, Wheels and Tyres
AME4101.2	Determine stability and weight distribution and suitability of frames.
AME4101.3	Describe, about various Front Axles, factors of wheel alignment Steering Systems and Calculate dimensions of Front Axle
AME4101.4	Able to know Front Wheel Mounting
AME4101.5	Able to know the brakes and its components
AME4101.6	Describe Classification of two and three wheelers

Course Name: VEHICLE DYNAMICS	
Course Code: AME4102	
AME4102.1	Understand the principles underlying the development and design of road vehicles under the influence of dynamic loads
AME4102.2	Analyze the performance and establish the design specifications for the acceleration and braking conditions.
AME4102.3	Model, simulate and analyze the conventional road vehicles for better ride comfort.
AME4102.4	Analyze the cornering forces and effects of tractive forces on cornering
AME4102.5	Analyze the cornering effects of tractive forces on cornering
AME4102.6	Design suspension systems for better damping and comfort

Course Name: CAD/CAM	
Course Code: AME4103	
AME4103.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves,
AME4103.2	Describe the surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
AME4103.3	Describe the use of GT for the product development
AME4103.4	Describe the use of CAPP for the product development
AME4103.5	Able to know the Identify the various elements
AME4103.6	Able to know the activities in the Computer Integrated Manufacturing Systems.

Course Name: FINITE ELEMENT METHODS	
Course Code: AME4104	
AME4104.1	Understand the concepts behind variational methods and weighted residual methods in FEM

AME4104.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
AME4104.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
AME4104.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
AME4104.5	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.
AME4104.6	Analysis of Steady state heat transfer

Course Name: VEHICLE BODY ENGG. & SAFETY	
Course Code: AME4105	
AME4105.1	Classify the vehicles and define basic terms
AME4105.2	Able to know the Select appropriate body materia
AME4105.3	Calculate various aerodynamic forces and moments acting on vehicle
AME4105.4	Calculate load distribution in vehicle body
AME4105.5	Explain the ergonomics, stability the vehicle.
AME4105.6	Identify the various safety aspects in a given vehicle.

Course Name: CONDITION MONITORING	
Course Code: AME4106	
AME4106.1	Gaining invaluable insights into the benefits of Condition Monitoring
AME4106.2	Understanding the reasons for selecting particular maintenance strategies
AME4106.3	Understanding effective methodologies for implementing Condition Monitoring Techniques
AME4106.4	Identifying the optimum maintenance strategy for different types of equipment
AME4106.5	Gaining practical approaches to minimise the risk of plant and machinery breakdowns
AME4106.6	Awareness of International Standards covering asset management

Course Name: AUTOMOBILE CHASSIS LAB & INSTRUMENTATION LAB	
Course Code: AME4107	
AME4107.1	Calibration of Pressure Gauges and transducer
AME4107.2	Able to know the servicing the generators and batteries and ignition systems.
AME4107.3	Able to know temperature detector for temperature measurement
AME4107.4	calibration of a rotometer for flow measurement
AME4107.5	Able to measurement of vibration amplitude of an engine bed at various loads.
AME4107.6	Explain Mcleod gauge for low pressure

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Course Name: CAD/CAM LAB	
Course Code: AME4108	
AME4108.1	Able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
AME4108.2	Able to know the Use of these tools for any engineering and real time applications
AME4108.3	Able to know the Development of part drawings for various components
AME4108.4	Generation of various 3D models through protrusion
AME4108.5	Determination of deflection and stresses in 2D and 3D trusses and beams
AME4108.6	Acquire knowledge on utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence when it matters to use these tools in their Employment

Year/Sem: IV B.Tech II SEM

Course Name: AUTOMOTIVE CONTROL SYSTEMS	
Course Code: AME4201	
AME4201.1	Define current state of automotive control systems
AME4201.2	Explain basic Engine Operation: Effective Work, Air-Fuel Ratio, Combustion, and Energy conversion.
AME4201.3	Able to know the Engine control systems
AME4201.4	Explain Diagnosis of automotive engines
AME4201.5	Able to know the Vehicle modelling and Road and driver models
AME4201.6	Describe Introduction to Mechatronics

Course Name: VEHICLE MAINTENANCE	
Course Code: AME4202	
AME4202.1	Able to know the maintain various records
AME4202.2	Clarify scheduled and unscheduled maintenance
AME4202.3	They are also expected to maintain of various systems of a vehicle.
AME4202.4	Describe repair of various systems of a vehicle.
AME4202.5	Able to service of various systems of a vehicle
AME4202.6	Explain Wheel Alignment

Course Name: PRODUCT DESIGN AND ASSEMBLY AUTOMATION	
Course Code: AME4203	
AME4203.1	Understand the mechanics of vibratory conveying and the principles behind vibrator feeders
AME4203.2	Analyze the effect of active orienting devices on feed rate and the performance of orienting systems
AME4203.3	Discuss the development process of assembly automation and factors influencing the choice of assembly method
AME4203.4	Analyze assembly processes and derive general rules for product design for automation

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AME4203.5	Discuss the role of design for assembly (DFA) in the design process and general guidelines for manual assembly.
AME4203.6	Evaluate the performance and economics of assembly systems, including indexing machines, free transfer machines, and robot assembly

Course Name: AUTOMOBILE AIR CONTIDITIONING	
Course Code: AME4204	
AME4204.1	Understand the basic principles of air conditioning systems
AME4204.2	Identify and explain the components of air conditioning systems including compressors, evaporators, condensers, and expansion devices.
AME4204.3	Evaluate the factors influencing the load on refrigeration and air conditioning systems.
AME4204.4	Analyze the layout of duct systems in automobiles and their effects on load calculations.
AME4204.5	Define objectives of air routing and temperature control in air conditioning systems.
AME4204.6	Able to know the maintenance and servicing tasks for air conditioning systems, including leak testing, system discharging, evacuating, and charging.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE OUTCOMES

A.Y:- 2020-2021

Year/Sem: II B.Tech I SEM

Course Name:METALLURGY & MATERIALS SCIENCE	
Course Code: AME2101	
AME2101.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
AME2101.2	Describe behavior of ferrous and non ferrous metals and alloys and their application in different domains.
AME2101.3	Able to understand the effect of heat treatment
AME2101.4	Able to understand the addition of alloying elements on properties of ferrous metals.
AME2101.5	Clarify the Grasp the methods of making of metal powders and applications of powder metallurgy
AME2101.6	Comprehend the properties and applications of ceramic, composites and other advanced methods.

Course Name: MECHANICS OF SOLIDS	
Course Code: AME2102	
AME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
AME2102.2	to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
AME2102.3	analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
AME2102.4	analyse beams and draw correct and complete shear and bending moment diagrams for beams.
AME2125.5	Able to understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
AME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name: THERMODYNAMICS	
Course Code: AME2103	
AME2103.1	Describe basic concepts of thermodynamics.
AME2103.2	Able to Laws of thermodynamics.
AME2103.3	Explain Concept of entropy.

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AME2103.4	Evaluation of vapors and their depiction in tables .
AME2123.5	Evaluation of charts.
AME2103.6	Evaluation of properties of perfect gas mixtures.

Course Name: **Fluid Mechanics & Hydraulic Machines**	
Course Code: **AME2104**	
AME2104.1	Able to know the basic concepts of fluid properties.
AME2104.2	Explain the mechanics of fluids in static and dynamic conditions.
AME2104.3	Clarify Boundary layer theory, flow separation and dimensional analysis.
AME2104.4	Describe Hydrodynamic forces of jet on vanes in different positions.
AME2104.5	Explain Working Principles and performance evaluation of hydraulic pump
AME2104.6	Describe Working Principles and performance evaluation of hydraulic turbines.

Course Name: **BASIC ELEMENTS OF AUTOMOBILE CHASSIS**	
Course Code: **AME2105**	
AME2105.1	Identify the different types of frame and chassis used in Automotive.
AME2105.2	Relate different types of drive lines and drives used in Automotive.
AME2105.3	Acquire knowledge about different types of front axle and rear axles used in motor vehicles.
AME2105.4	Examine the working principle of conventional and independent suspension systems.
AME2105.5	Apply knowledge on working principles of brake and its subsystems.
AME2105.6	Able to know the Suspension System

Course Name: **COMPUTER AIDED ENGINEERING PRACTICE**	
Course Code: **AME2106**	
AME2106.1	Able to draw projections of regular solids inclined to both planes, including auxiliary views.
AME2106.2	Analyze and illustrate the interpenetration of right regular solids, including the intersection of cylinder vs. cylinder, cylinder vs. prism, and cylinder vs. cone.
AME2106.3	Able to understand the basics of perspective projections, including points, lines, plane figures, and simple solids, using vanishing point methods
AME2106.4	Able to AutoCAD commands to draw geometric entities, create 2D and 3D wireframe models, and perform dimensioning
AME2106.5	Able to display the created models as isometric, orthographic, or perspective projections.

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AME2106.6	Demonstrate the ability to create geometrical models of simple solids and machine parts using computer-aided solid modeling techniques.

Course Name: AUTOMOTIVE COMPONENTS LAB	
Course Code: AME2107	
AME2107.1	Able to Dismantle and Assemble the automobile chassis and Engine components
AME2107.2	Identify & differentiate components of SI & CI engines
AME2107.3	Able to understand working of braking, steering, clutch, transmission, Suspension systems.
AME2107.4	Differentiate various subsystems of two, three & Four wheeler vehicles
AME2107.5	Develop skills in Dismantling and assembling of chassis components.
AME2107.6	Describe Correct minor repairs and trouble shoots the breakdowns

Course Name:MECHANICS OF SOLIDS AND METALLURGY LAB	
Course Code: AME2108	
AME2108.1	Determine Mechanical properties and Elastic Constants
AME2108.2	Appraise the students with the use of testing machines
AME2108.3	Characterize the microstructures of different ferrous and non ferrous metals.
AME2108.4	Identify the effect of heat treatment and cooling rates on the properties of steels
AME2108.5	Clarify Hardeneability of steels by Jominy End QuenchTest
AME2108.6	Able to know the Microstructure of Mild steels, low carbon steels, high – Csteels

Year/Sem: II B.Tech II SEM

Course Name: KINEMATICS OF MACHINERY	
Course Code: AME2201	
AME2201.1	Contrive a mechanism for a given plane motion with single degree of freedom.
AME2201.2	Analyze a mechanism for a given straight line motion and automobile steering motion.
AME2201.3	Analyze the motion (velocity and acceleration) of a plane mechanism.
AME2201.4	Suggest and analyze mechanisms for a prescribed intermittent motion like opening and closing of IC engine valves etc.

AME2201.5	Able to Select a power transmission system for a given application
AME2201.6	Analyze motion of different transmission systems

Course Name: Applied Thermodynamics	
Course Code: AME2202	
AME2202.1	Expected to learn the working of steam power cycles and also should be able to analyze and evaluate the performance of individual components
AME2202.2	Able to learn the principles of combustion ,stochiometry and flue gas analysis
AME2202.3	Able to design the components and calculate the losses and efficiency of the boilers.
AME2202.4	Able to design the components and calculate the losses and efficiency of the nozzles.
AME2202.5	Able to design the components and calculate the losses and efficiency of the turbines and condensers**.**
AME2202.6	Able to learn various types of compressors, principles of working and their performance evaluation.

Course Name: AUTOMOBILE ENGINES	
Course Code: AME2203	
AME2203.1	Define engine glossaries, identify various components of SI and CI engines and its sub-systems Ignition, cooling and lubrication
AME2203.2	Able to understand the actual engine working principle and its thermochemistry of fuel-air mixtures
AME2203.3	Able to know the understand basic knowledge on SI and CI engine combustion and its related parameters
AME2203.4	Able to apply their knowledge in analyzing the engine performance and pollution characteristics

Course Name: PRODUCTION TECHNOLOGY	

AME2203.5	Exposed to gain knowledge on recent developments of prime sources
AME2203.6	Explain methods to improve engine performance

Course Code: AME2204	
AME2204.1	Able to design the patterns and core boxes for metal casting processes
AME2204.2	Able to design the gating system for different metallic components
AME2204.3	Know the different types of manufacturing processes
AME2204.4	Able to use forging, extrusion processes
AME2204.5	Learn about the different types of welding processes used for special fabrication.
AME2204.6	Explain about Sheet metal forming

Course Name: AUTOMOBILE ELECTRICAL AND ELECTRONICS	
Course Code: AME2205	
AME2205.1	Understand the Lead Acid Battery and Lighting System
AME2205.2	Know the Starting System and Starter Motor
AME2205.3	Understand the Charging System and Alternators
AME2205.4	Know the Electronic Dashboard Instruments and Onboard Diagnostic System.
AME2205.5	Understand the Types of Sensors
AME2205.6	Know the actuators

Course Name: Automobile Assembly Drawing	
Course Code: AME2206	
AME2206.1	Explain the conventional representation of materials and common machine elements such as screws, nuts, bolts, keys, gears, webs, and ribs.
AME2206.2	Demonstrate proficiency in drawing sections and auxiliary sectional views, while understanding parts that are typically not sectioned.
AME2206.3	Able to understand the purpose, size, and location of title boxes on engineering drawings.
AME2206.4	Able to understanding and drawing practice of various joint and simple mechanical parts.
AME2206.5	Ability to draw assemblies from individual part drawings.
AME2206.6	Create assembled views for machine parts such as engine components

Course Name:THERMAL ENGINEERING LAB	
Course Code: AME2207	
AME2207.1	Analyze and draw valve and port timing diagrams for various types of engines.
AME2207.2	Able to conduct and interpret fuel tests accurately.
AME2207.3	Methods for exhaust emission measurements and evaluating engine performance.
AME2207.4	Able to calculate and analyze friction power losses in engines.
AME2207.5	Determining friction power using retardation or motoring tests on IC engines.
AME2207.6	Analyze heat distribution curves and understand the energy balance within

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	the engine.

Year/Sem: III B.Tech I SEM

Course Name: DYNAMICS OF MACHINERY	
Course Code: AME3101	
AME3101.1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles
AME3101.2	Compute frictional losses, torque transmission of mechanical systsms.
AME3101.3	Analyze dynamic force analysis of slider crank mechanism and design of flywheel.
AME3101.4	Able to understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
AME3101.5	Able to understand balancing of reciprocating and rotary masses.
AME3101.6	Able to know the vibrations

Course Name: FUELS AND COMBUSTION	
Course Code: AME3102	
AME3102.1	Able to understand the various kinds of fuels
AME3102.2	Able to understand the characteristics and origin
AME3102.3	Able to understand the thermodynamics behind combustion
AME3102.4	Clarify the flame propagation
AME3102.5	Able to know the choice of combustion systems
AME3102.6	Define combustion and chemical kinetics.

Course Name: DESIGN OF MACHINE ELEMENTS	
Course Code: AME3103	
AME3103.1	able to understand the concepts of various theories of failure
AME3103.2	Clarify factors of safety
AME3103.3	Able to Design for strength and rigidity
AME3103.4	Define used to design mechanical parts such as joints, shafts couplings
AME3103.5	Able to know the fundamentals of lubrication, various bearings and estimation of bearing life.
AME3103.6	design concepts to design various engine components.

Course Name: VEHICLE TRANSPORT MANAGEMENT	
Course Code: AME3104	
AME3104.1	Able to understand the need of preventive maintenance.
AME3104.2	Administration and inter departmental liaison

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AME3104.3	Able how to prevent accidents by recording and estimating using different mechanisms.
AME3104.4	Able understand the vehicle schedule and crew timings and fare collection systems.
AME3104.5	Derive fare structure by estimating the operating costs for various types of vehicles.
AME3104.6	Estimate the operating cost by considering factors like depreciation, obsolescence, life of vehicles and wages

Course Name: HEAT TRANSFER	
Course Code: AME3105	
AME3105.1	Represent the physical problems of heat transfer in terms of governing equations or mathematical models
AME3105.2	Differentiate between different boundary conditions and apply the same for solving heat transfer problems
AME3105.3	Design thermal systems applying the concepts of heat transfer under steady state and well as unsteady state conditions
AME3105.4	Design, select and analyze the heat exchangers
AME3105.5	Apply the radiation concepts to the engineering devices
AME3105.6	Able to know the Radiation Heat Transfer

Course Name: AUTOMOTIVE ENGINES LAB AND FUELS LABORATORY	
Course Code: AME3106	
AME3106.1	Able to know the principles in assembly & dismantling of Single cylinder two and four stroke engines
AME3106.2	Able to know the assembly & dismantling of Carburetor and Fuel injection pump
AME3106.3	Able to know the assembly & dismantling of Lubrication system and Cooling system
AME3106.4	Clarify the Flash and Fire points of petrol and diesel
AME3106.5	Describe the viscosity of lubricants & Fuels
AME3106.6	Able to know the Cloud and Pour point Test

Course Name: HEAT TRANSFER LAB	
Course Code: AME3107	
AME3107.1	Determine the overall heat transfer coefficient of composite slabs.
AME3107.2	Analyze the effects of insulation on heat transfer and quantify the reduction in heat loss.
AME3107.3	Calculate Heat Transfer Coefficients And Understand The Principles Of Heat Transfer In Spherical Geometries.
AME3107.4	Measure heat transfer coefficients in forced convection experiments under different flow conditions.

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AME3107.5	Understand the principles of blackbody radiation and its significance in thermal radiation.
AME3107.6	Identify the conditions under which boiling transitions occur and the implications for heat transfer applications.

Course Name: PRODUCTION TECHNOLOGY LAB	
Course Code: AME3108	
AME3108.1	apply some of the manufactures process directly in the industry for preparation of complicated jobs
AME3108.2	various jobs using various manufacturing process
AME3108.3	preparation of jobs can be extended to implement in the preparation of complicated jobs.
AME3108.4	Pattern Design and making and Sand properties testing
AME3108.5	Able to know the elding
AME3108.6	Explain the metal forming process

Year/Sem: III B.Tech II SEM

Course Name : MACHINE TOOLS & METROLOGY	
Course Code: AME3201	
AME3201.1	Define fundamentals of metal cutting and forces
AME3201.2	Explain Engine Lathe and its various operations
AME3201.3	Describe Shaping, Slotting, and Planning, Drilling and boring machines and its various operations
AME3201.4	Able to know the Milling machines, grinding machines and its various operations
AME3201.5	Explain systems of limits and tolerances and measurement instruments.
AME3201.6	Able to know the optical measuring instruments and surface measurement instruments.

Course Name: INSTRUMENTATION & CONTROL SYSTEMS	
Course Code: AME3202	
AME3202.1	Definition and fundamental principles of measurement systems.
AME3202.2	Explain Various temperature measurement devices such as expansion, electrical resistance, thermistors, thermocouples, and pyrometers.
AME3202.3	Measurement of speed using mechanical tachometers, electrical tachometers, stroboscopes, and non-contact tachometers.
AME3202.4	Able to know the Application of strain gauges for measuring torque and the usage of strain gauge rosettes
AME3202.5	Measurement of humidity, including moisture content of gases and various devices like sling psychrometers, absorption psychrometers, and dew point meters.
AME3202.6	Explain Introduction to control systems, their importance, and classification into open and closed systems.

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Course Name: AUTOMOTIVE ELECTRICAL AND ELECTRONICS	
Course Code: AME3203	
AME3203.1	Able to understand the different automotive electrical systems
AME3203.2	Define energy storages and ignition systems
AME3203.3	Explain electronic components involved
AME3203.4	Able to identify the fault diagnosis and preventive measures.
AME3203.5	Describe understand the dash board units and electrical accessories
AME3203.6	Determine Binary numbers and conversions
Course Name: ALTERNATIVE ENERGY SOURCES FOR AUTOMOBILES	
Course Code: AME3204	
AME3204.1	Able to understand the ever increasing quality of life
AME3204.2	Explain this phenomenon imposes high demand on conventional fossil fuels
AME3204.3	Describe search for alternate fuels is a continuous phenomenon.
AME3204.4	Able to various alternate fuels along with their merits and limitations.
AME3204.5	Explain hydrogen fuel usage
AME3204.6	Able to know the use of turbines in automobiles

Course Name: AUTOMOTIVE EMISSION AND POLLUTION CONTROL	
Course Code: AME3205	
AME3205.1	Explain air pollution and pollutants, their sources & their effects.
AME3205.2	Describe different parameters responsible for pollutant formation.
AME3205.3	Choose instruments for pollution measurements.
AME3205.4	Analyze measurement of pollutants
AME3205.5	Explain Constant Volume Sampling I and 3
AME3205.6	Able to know the Encapsulation technique for noise reduction

Course Name: AUTOMOTIVE ELECTRICAL AND ELECTRONICS LAB	
Course Code: AME3206	
AME3206.1	Able to know the batteries and starter motor testing
AME3206.2	Alarifty the alternator testing and wiring system
AME3206.3	Describe Battery Ignition System and different Electrical Equipment's
AME3206.4	Able to know the different sensors and various electronics system
AME3206.5	Describe the lighting system of two wheeler and FourWheeler
AME3206.6	Define the Automotive Electronics

Course Name: METROLOGY AND MACHINE TOOLS LAB

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Course Code: AME3207	
AME3207.1	Explain hands on experience on lathe machine to perform turning, facing, threading operations.
AME3207.2	Explain flat surface machining, milling and grinding operations.
AME3207.3	Able to know the drilling and threading operations.
AME3207.4	Describe Linear and angular measurements exposure.
AME3207.5	Describe machine tool alignment test on the lathe
AME3207.6	Able to operate various precession measuring instruments and working and operations of various machines tools

Course Name: AUTO SCANNING & VEHICLE TESTING LAB	
Course Code: AME3208	
AME3208.1	Able tounderstand automotive scan tools
AME3208.2	Diagnostic equipment for fault diagnosis and troubleshooting
AME3208.3	Computerized engine analyzer and wheel balancing machine
AME3208.4	Describe Two wheeler chassis dynamometer
AME3208.5	Explain Head light focusing test andVisibility test
AME3208.6	Able to know the bus depots and service station workshop layouts

Year/Sem: IV B.Tech I SEM

Course Name: AUTOMOTIVE CHASSIS & SUSPENSION	
Course Code: AME4101	
AME4101.1	Explain different chassis layouts and frames, Suspensions, Wheels and Tyres
AME4101.2	Determine stability and weight distribution and suitability of frames.
AME4101.3	Describe, about various Front Axles, factors of wheel alignment Steering Systems and Calculate dimensions of Front Axle
AME4101.4	Able to know Front Wheel Mounting
AME4101.5	Able to know the brakes and its components
AME4101.6	Describe Classification of two and three wheelers

Course Name: VEHICLE DYNAMICS	
Course Code: AME4102	
AME4102.1	Understand the principles underlying the development and design of road vehicles under the influence of dynamic loads
AME4102.2	Analyze the performance and establish the design specifications for the acceleration and braking conditions.
AME4102.3	Model, simulate and analyze the conventional road vehicles for better ride comfort.
AME4102.4	Analyze the cornering forces and effects of tractive forces on cornering
AME4102.5	Analyze the cornering effects of tractive forces on cornering

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AME4102.6	Design suspension systems for better damping and comfort

Course Name: CAD/CAM	
Course Code: AME4103	
AME4103.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves,
AME4103.2	Describe the surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
AME4103.3	Describe the use of GT for the product development
AME4103.4	Describe the use of CAPP for the product development
AME4103.5	Able to know the Identify the various elements
AME4103.6	Able to know the activities in the Computer Integrated Manufacturing Systems.

Course Name: FINITE ELEMENT METHODS	
Course Code: AME4104	
AME4104.1	Understand the concepts behind variational methods and weighted residual methods in FEM
AME4104.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
AME4104.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
AME4104.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
AME4104.5	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.
AME4104.6	Analysis of Steady state heat transfer

Course Name: VEHICLE BODY ENGG. & SAFETY	
Course Code: AME4105	
AME4105.1	Classify the vehicles and define basic terms
AME4105.2	Able to know the Select appropriate body materia
AME4105.3	Calculate various aerodynamic forces and moments acting on vehicle
AME4105.4	Calculate load distribution in vehicle body
AME4105.5	Explain the ergonomics, stability the vehicle.
AME4105.6	Identify the various safety aspects in a given vehicle.

Course Name: CONDITION MONITORING	
Course Code: AME4106	
AME4106.1	Gaining invaluable insights into the benefits of Condition Monitoring
AME4106.2	Understanding the reasons for selecting particular maintenance strategies

AME4106.3	Understanding effective methodologies for implementing Condition Monitoring Techniques
AME4106.4	Identifying the optimum maintenance strategy for different types of equipment
AME4106.5	Gaining practical approaches to minimise the risk of plant and machinery breakdowns
AME4106.6	Awareness of International Standards covering asset management

Course Name: AUTOMOBILE CHASSIS LAB & INSTRUMENTATION LAB	
Course Code: AME4107	
AME4107.1	Calibration of Pressure Gauges and transducer
AME4107.2	Able to know the servicing the generators and batteries and ignition systems.
AME4107.3	Able to know temperature detector for temperature measurement
AME4107.4	calibration of a rotometer for flow measurement
AME4107.5	Able to measurement of vibration amplitude of an engine bed at various loads.
AME4107.6	Explain Mcleod gauge for low pressure

Course Name: CAD/CAM LAB	
Course Code: AME4108	
AME4108.1	Able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
AME4108.2	Able to know the Use of these tools for any engineering and real time applications
AME4108.3	Able to know the Development of part drawings for various components
AME4108.4	Generation of various 3D models through protrusion
AME4108.5	Determination of deflection and stresses in 2D and 3D trusses and beams
AME4108.6	Acquire knowledge on utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence when it matters to use these tools in their Employment

Year/Sem: IV B.Tech II SEM

Course Name: AUTOMOTIVE CONTROL SYSTEMS	
Course Code: AME4201	
AME4201.1	Define current state of automotive control systems
AME4201.2	Explain basic Engine Operation: Effective Work, Air-Fuel Ratio, Combustion, and Energy conversion.
AME4201.3	Able to know the Engine control systems
AME4201.4	Explain Diagnosis of automotive engines
AME4201.5	Able to know the Vehicle modelling and Road and driver models
AME4201.6	Describe Introduction to Mechatronics

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Course Name: VEHICLE MAINTENANCE	
Course Code: AME4202	
AME4202.1	Able to know the maintain various records
AME4202.2	Clarify scheduled and unscheduled maintenance
AME4202.3	They are also expected to maintain of various systems of a vehicle.
AME4202.4	Describe repair of various systems of a vehicle.
AME4202.5	Able to service of various systems of a vehicle
AME4202.6	Explain Wheel Alignment

Course Name: PRODUCT DESIGN AND ASSEMBLY AUTOMATION	
Course Code: AME4203	
AME4203.1	Understand the mechanics of vibratory conveying and the principles behind vibrator feeders
AME4203.2	Analyze the effect of active orienting devices on feed rate and the performance of orienting systems
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Course Name: AUTOMOBILE AIR CONTIDITIONING	
Course Code: AME4204	
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AME4204.4	Analyze the layout of duct systems in automobiles and their effects on load calculations.
AME4204.5	Define objectives of air routing and temperature control in air conditioning systems.
AME4204.6	Able to know the maintenance and servicing tasks for air conditioning systems, including leak testing, system discharging, evacuating, and charging.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE OUTCOMES

A.Y:- 2019-2020

Year/Sem: II B.Tech I SEM

Course Name:METALLURGY & MATERIALS SCIENCE	
Course Code: AME2101	
AME2101.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
AME2101.2	Describe behavior of ferrous and non ferrous metals and alloys and their application in different domains.
AME2101.3	Able to understand the effect of heat treatment
AME2101.4	Able to understand the addition of alloying elements on properties of ferrous metals.
AME2101.5	Clarify the Grasp the methods of making of metal powders and applications of powder metallurgy
AME2101.6	Comprehend the properties and applications of ceramic, composites and other advanced methods.

Course Name: MECHANICS OF SOLIDS	
Course Code: AME2102	
AME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
AME2102.2	Analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
AME2102.3	Analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
AME2102.4	Able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
AME2125.5	Understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
AME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name: THERMODYNAMICS	
Course Code: AME2103	
AME2103.1	Describe basic concepts of thermodynamics.
AME2103.2	Able to Laws of thermodynamics.
AME2103.3	Explain Concept of entropy.

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AME2103.4	Evaluation of vapors and their depiction in tables .
AME2123.5	Evaluation of charts.
AME2103.6	Evaluation of properties of perfect gas mixtures.

Course Name: AUTOMOTIVE ENGINES	
Course Code: AME2104	
AME2104.1	Able to understand the development in internal combustion engines
AME2104.2	Describe fuel admission in SI Engines and related systems
AME2104.3	Explain various components involved in fuel injection in CI engines
AME2104.4	learn about the fuel characteristics
AME2104.5	Explain Intake & Exhaust system.
AME2104.6	Able to know the importance of lubrication and cooling system

Course Name: COMPUTER AIDED ENGINEERING DRAWING PRACTICE	
Course Code: AME2105	
AME2105.1	Able to draw projections of regular solids inclined to both planes, including auxiliary views.
AME2105.2	Analyze and illustrate the interpenetration of right regular solids, including the intersection of cylinder vs. cylinder, cylinder vs. prism, and cylinder vs. cone.
AME2105.3	Able to understand the basics of perspective projections, including points, lines, plane figures, and simple solids, using vanishing point methods
AME2105.4	Able to AutoCAD commands to draw geometric entities, create 2D and 3D wireframe models, and perform dimensioning
AME2105.5	Able to display the created models as isometric, orthographic, or perspective projections.
AME2105.6	Demonstrate the ability to create geometrical models of simple solids and machine parts using computer-aided solid modeling techniques.

Course Name: MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS	
Course Code: AME2106	
AME2106.1	Able to the knowledge of estimating the Demand and demand elasticities for a product.
AME2106.2	Describe Input-Output-Cost relationships and estimation of the least cost combination of inputs
AME2106.3	Able to understand the nature of different markets and Price Output determination under various market conditions
AME2106.4	Define knowledge of different Business Units

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AME2106.5	Able to prepare Financial Statements and the usage of various Accounting tools for Analysis.
AME2106.6	Evaluate various investment project proposals with the help of capital budgeting techniques for decision making.

Course Name: ELECTRICAL & ELECTRONICS ENGG.LAB	
Course Code: AME2107	
AME2107.1	Able to find out the efficiency of dc shunt machine without actual loading of the machine.
AME2107.2	Able to estimate the efficiency and regulation for different load conditions and power factors of single phase transformer with OC and SC test.
AME2107.3	Able to analyse the performance characteristics and to determine efficiencyof DC shunt motor &3-phase induction motor.
AME2107.4	Able to pre-determine the regulation of an alternator by synchronous impedance method.
AME2107.5	Able to control the speed of dc shunt motor using speed control methods.
AME2107.6	Able to find out the characteristics of PN junction diode & transistor

Course Name:MECHANICS OF SOLIDS AND METALLURGY LAB	
Course Code: AME2108	
AME2108.1	Apply methods to determine Mechanical properties and Elastic Constants
AME2108.2	Appraise the students with the use of testing machines
AME2108.3	Characterize the microstructures of different ferrous and non ferrous metals.
AME2108.4	Identify the effect of heat treatment and cooling rates on the properties of steels
AME2108.5	Hardeneability of steels by Jominy End QuenchTest
AME2108.6	Microstructure of Mild steels, low carbon steels, high – Csteels

Year/Sem: II B.Tech II SEM

Course Name: KINEMATICS OF MACHINERY	
Course Code: AME2201	
AME2201.1	Contrive a mechanism for a given plane motion with single degree of freedom.
AME2201.2	Analyze a mechanism for a given straight line motion and automobile steering motion.
AME2201.3	Analyze the motion (velocity and acceleration) of a plane mechanism.

AME2201.4	Suggest and analyze mechanisms for a prescribed intermittent motion like opening and closing of IC engine valves etc.
AME2201.5	Able to Select a power transmission system for a given application
AME2201.6	Analyze motion of different transmission systems
Course Name: THERMAL ENGINEERING -I	
Course Code: AME2202	
AME2202.1	Describe various losses that occur in the actual engine operation.
AME2202.2	Able to know the various engine systems along with their function and necessity.
AME2202.3	Explain normal combustion phenomenon and knocking in S.I. and C.I. Engines
AME2202.4	Determine perform testing on S.I and C.I Engines for the calculations of performance and emission parameters.
AME2202.5	Explain compressors and to calculate power and efficiency of reciprocating compressors
AME2202.6	Calculate power and efficiency of rotary compressors

Course Name: FLUID MECHANICS & HYDRAULIC MACHINES	
Course Code: AME2203	
AME2203.1	The basic concepts of fluid properties.
AME2203.2	The mechanics of fluids in static and dynamic conditions.
AME2203.3	Boundary layer theory, flow separation and dimensional analysis.
AME2203.4	Hydrodynamic forces of jet on vanes in different positions.
AME2203.5	Working Principles and performance evaluation of hydraulic pump
AME2203.6	Working Principles and performance evaluation of hydraulic turbines.

Course Name: PRODUCTION TECHNOLOGY

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Course Code: AME2204	
AME2204.1	Design patterns, Gating, runner and riser systems
AME2204.2	Select a suitable casting process based on the component
AME2204.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements
AME2204.4	Able to Understand various bulk deformation processes
AME2204.5	Able to Understand various sheet metal forming and processing of plastics
AME2204.6	Explain the sheet metal forming

Course Name: INDUSTRIAL ENGINEERING & MANAGEMENT	
Course Code: AME2206	
AME2206.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
AME2206.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
AME2206.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints
AME2206.4	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
AME2206.5	Explain about analsys
AME2206.6	Determination of floats, importance, project crashing, smoothing and numerical examples.

Course Name: MACHINE DRAWING	
Course Code: AME2207	
AME2207.1	Able understanding of various machine elements and simple mechanical parts such as screw threads, bolts, keys, cotter joints, etc.
AME2207.2	Describe selecting appropriate views, proportions, and additional views to accurately represent machine elements and parts.
AME2207.3	able to translate theoretical knowledge into practical skills by producing working drawings
AME2207.4	Able to communicate technical information effectively through engineering drawings
AME2207.5	analysis of machine elements and parts
AME2207.6	Define knowledge of machine elements commonly used in various applications

Course Name:THERMAL ENGINEERING LAB	

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Course Code: AME2207	
AME2207.1	Analyze and draw valve and port timing diagrams for various types of engines.
AME2207.2	Able to conduct and interpret fuel tests accurately.
AME2207.3	Methods for exhaust emission measurements and evaluating engine performance.
AME2207.4	Able to calculate and analyze friction power losses in engines.
AME2207.5	Determining friction power using retardation or motoring tests on IC engines.
AME2207.6	Analyze heat distribution curves and understand the energy balance within the engine.

Course Name: FLUID MECHANICS & HYDRAULIC MACHINES LAB	
Course Code: AME2208	
AME2208.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
AME2208.2	To gain practical exposure on the performance evaluation methods of Pelton Wheel
AME2208.3	To gain practical exposure on the performance evaluation methods of Francis Turbine
AME2208.4	To gain practical exposure on the performance evaluation methods of Reciprocating pump
AME2208.5	To gain practical exposure on the performance evaluation methods of Venturimeter
AME2208.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Year/Sem: III B.Tech I SEM

Course Name: DYNAMICS OF MACHINERY	
Course Code: AME3101	
AME3101.1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles
AME3101.2	Compute frictional losses, torque transmission of mechanical systsms.
AME3101.3	Analyze dynamic force analysis of slider crank mechanism and design of flywheel.
AME3101.4	Able to understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
AME3101.5	Able to understand balancing of reciprocating and rotary masses.
AME3101.6	Able to know the vibrations

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Course Name: FUELS AND COMBUSTION	
Course Code: AME3102	
AME3102.1	Able to understand the various kinds of fuels
AME3102.2	Able to understand the characteristics and origin
AME3102.3	Able to understand the thermodynamics behind combustion
AME3102.4	Clarify the flame propagation
AME3102.5	Able to know the choice of combustion systems
AME3102.6	Define combustion and chemical kinetics.

Course Name: DESIGN OF MACHINE ELEMENTS	
Course Code: AME3103	
AME3103.1	able to understand the concepts of various theories of failure
AME3103.2	Clarify factors of safety
AME3103.3	Able to Design for strength and rigidity
AME3103.4	Define used to design mechanical parts such as joints, shafts couplings
AME3103.5	Able to know the fundamentals of lubrication, various bearings and estimation of bearing life.
AME3103.6	design concepts to design various engine components.

Course Name: VEHICLE TRANSPORT MANAGEMENT	
Course Code: AME3104	
AME3104.1	Able to understand the need of preventive maintenance.
AME3104.2	Administration and inter departmental liaison
AME3104.3	Able how to prevent accidents by recording and estimating using different mechanisms.
AME3104.4	Able understand the vehicle schedule and crew timings and fare collection systems.
AME3104.5	Derive fare structure by estimating the operating costs for various types of vehicles.
AME3104.6	Estimate the operating cost by considering factors like depreciation, obsolescence, life of vehicles and wages

Course Name: HEAT TRANSFER	
Course Code: AME3105	
AME3105.1	Represent the physical problems of heat transfer in terms of governing equations or mathematical models

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AME3105.2	Differentiate between different boundary conditions and apply the same for solving heat transfer problems
AME3105.3	Design thermal systems applying the concepts of heat transfer under steady state and well as unsteady state conditions
AME3105.4	Design, select and analyze the heat exchangers
AME3105.5	Apply the radiation concepts to the engineering devices
AME3105.6	Able to know the Radiation Heat Transfer

Course Name: AUTOMOTIVE ENGINES LAB AND FUELS LABORATORY	
Course Code: AME3106	
AME3106.1	Able to know the principles in assembly & dismantling of Single cylinder two and four stroke engines
AME3106.2	Able to know the assembly & dismantling of Carburetor and Fuel injection pump
AME3106.3	Able to know the assembly & dismantling of Lubrication system and Cooling system
AME3106.4	Clarify the Flash and Fire points of petrol and diesel
AME3106.5	Describe the viscosity of lubricants & Fuels
AME3106.6	Able to know the Cloud and Pour point Test

Course Name: HEAT TRANSFER LAB	
Course Code: AME3107	
AME3107.1	Determine the overall heat transfer coefficient of composite slabs.
AME3107.2	Analyze the effects of insulation on heat transfer and quantify the reduction in heat loss.
AME3107.3	Calculate Heat Transfer Coefficients And Understand The Principles Of Heat Transfer In Spherical Geometries.
AME3107.4	Measure heat transfer coefficients in forced convection experiments under different flow conditions.
AME3107.5	Understand the principles of blackbody radiation and its significance in thermal radiation.
AME3107.6	Identify the conditions under which boiling transitions occur and the implications for heat transfer applications.

Course Name: PRODUCTION TECHNOLOGY LAB	
Course Code: AME3108	
AME3108.1	apply some of the manufactures process directly in the industry for preparation of complicated jobs
AME3108.2	various jobs using various manufacturing process
AME3108.3	preparation of jobs can be extended to implement in the preparation of complicated jobs.
AME3108.4	Pattern Design and making and Sand properties testing
AME3108.5	Able to know the elding

AME3108.6	Explain the metal forming process

Year/Sem: III B.Tech II SEM

Course Name : MACHINE TOOLS & METROLOGY	
Course Code: AME3201	
AME3201.1	Define fundamentals of metal cutting and forces
AME3201.2	Explain Engine Lathe and its various operations
AME3201.3	Describe Shaping, Slotting, and Planning, Drilling and boring machines and its various operations
AME3201.4	Able to know the Milling machines, grinding machines and its various operations
AME3201.5	Explain systems of limits and tolerances and measurement instruments.
AME3201.6	Able to know the optical measuring instruments and surface measurement instruments.
Course Name: INSTRUMENTATION & CONTROL SYSTEMS	
Course Code: AME3202	
AME3202.1	Definition and fundamental principles of measurement systems.
AME3202.2	Explain Various temperature measurement devices such as expansion, electrical resistance, thermistors, thermocouples, and pyrometers.
AME3202.3	Measurement of speed using mechanical tachometers, electrical tachometers, stroboscopes, and non-contact tachometers.
AME3202.4	Able to know the Application of strain gauges for measuring torque and the usage of strain gauge rosettes
AME3202.5	Measurement of humidity, including moisture content of gases and various devices like sling psychrometers, absorption psychrometers, and dew point meters.
AME3202.6	Explain Introduction to control systems, their importance, and classification into open and closed systems.

Course Name: AUTOMOTIVE ELECTRICAL AND ELECTRONICS	
Course Code: AME3203	
AME3203.1	Able to understand the different automotive electrical systems
AME3203.2	Define energy storages and ignition systems
AME3203.3	Explain electronic components involved
AME3203.4	Able to identify the fault diagnosis and preventive measures.
AME3203.5	Describe understand the dash board units and electrical accessories
AME3203.6	Determine Binary numbers and conversions

Course Name: ALTERNATIVE ENERGY SOURCES FOR AUTOMOBILES	
Course Code: AME3204	
AME3204.1	Able to understand the ever increasing quality of life
AME3204.2	Explain this phenomenon imposes high demand on conventional fossil fuels
AME3204.3	Describe search for alternate fuels is a continuous phenomenon.

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AME3204.4	Able to various alternate fuels along with their merits and limitations.
AME3204.5	Explain hydrogen fuel usage
AME3204.6	Able to know the use of turbines in automobiles

Course Name: AUTOMOTIVE EMISSION AND POLLUTION CONTROL	
Course Code: AME3205	
AME3205.1	Explain air pollution and pollutants, their sources & their effects.
AME3205.2	Describe different parameters responsible for pollutant formation.
AME3205.3	Choose instruments for pollution measurements.
AME3205.4	Analyze measurement of pollutants
AME3205.5	Explain Constant Volume Sampling I and 3
AME3205.6	Able to know the Encapsulation technique for noise reduction

Course Name: AUTOMOTIVE ELECTRICAL AND ELECTRONICS LAB	
Course Code: AME3206	
AME3206.1	Know the batteries and starter motor testing
AME3206.2	Understanding the alternator testing and wiring system
AME3206.3	Study of Battery Ignition System and different Electrical Equipment's
AME3206.4	Know about the different sensors and various electronics system
AME3206.5	Understand the lighting system of two wheeler and FourWheeler
AME3206.6	Know the Automotive Electronics

Course Name: METROLOGY AND MACHINE TOOLS LAB	
Course Code: AME3207	
AME3207.1	Define fundamentals of metal cutting and forces
AME3207.2	Explain Engine Lathe and its various operations
AME3207.3	Describe Shaping, Slotting, and Planning, Drilling and boring machines and its various operations
AME3207.4	Able to know the Milling machines, grinding machines and its various operations
AME3207.5	Explain systems of limits and tolerances and measurement instruments.
AME3207.6	Able to know the optical measuring instruments and surface measurement instruments.

Course Name: AUTO SCANNING & VEHICLE TESTING LAB	
Course Code: AME3208	

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AME3208.1	Able tounderstand automotive scan tools
AME3208.2	Diagnostic equipment for fault diagnosis and troubleshooting
AME3208.3	Computerized engine analyzer and wheel balancing machine
AME3208.4	Describe Two wheeler chassis dynamometer
AME3208.5	Explain Head light focusing test andVisibility test
AME3208.6	Able to know the bus depots and service station workshop layouts

Year/Sem: IV B.Tech I SEM

Course Name: AUTOMOTIVE CHASSIS & SUSPENSION	
Course Code: AME4101	
AME4101.1	Explain different chassis layouts and frames, Suspensions, Wheels and Tyres
AME4101.2	Determine stability and weight distribution and suitability of frames.
AME4101.3	Describe, about various Front Axles, factors of wheel alignment Steering Systems and Calculate dimensions of Front Axle
AME4101.4	Able to know Front Wheel Mounting
AME4101.5	Able to know the brakes and its components
AME4101.6	Describe Classification of two and three wheelers

Course Name: VEHICLE DYNAMICS	
Course Code: AME4102	
AME4102.1	Understand the principles underlying the development and design of road vehicles under the influence of dynamic loads
AME4102.2	Analyze the performance and establish the design specifications for the acceleration and braking conditions.
AME4102.3	Model, simulate and analyze the conventional road vehicles for better ride comfort.
AME4102.4	Analyze the cornering forces and effects of tractive forces on cornering
AME4102.5	Analyze the cornering effects of tractive forces on cornering
AME4102.6	Design suspension systems for better damping and comfort

Course Name: CAD/CAM	
Course Code: AME4103	
AME4103.1	Describe the mathematical basis in the technique of representation of

	geometric entities including points, lines, and parametric curves,
AME4103.2	Describe the surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
AME4103.3	Describe the use of GT for the product development
AME4103.4	Describe the use of CAPP for the product development
AME4103.5	Able to know the Identify the various elements
AME4103.6	Able to know the activities in the Computer Integrated Manufacturing Systems.

Course Name: FINITE ELEMENT METHODS	
Course Code: AME4104	
AME4104.1	Understand the concepts behind variational methods and weighted residual methods in FEM
AME4104.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
AME4104.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
AME4104.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
AME4104.5	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.
AME4104.6	Analysis of Steady state heat transfer

Course Name: VEHICLE BODY ENGG. & SAFETY	
Course Code: AME4105	
AME4105.1	Classify the vehicles and define basic terms
AME4105.2	Able to know the Select appropriate body materia
AME4105.3	Calculate various aerodynamic forces and moments acting on vehicle
AME4105.4	Calculate load distribution in vehicle body
AME4105.5	Explain the ergonomics, stability the vehicle.
AME4105.6	Identify the various safety aspects in a given vehicle.

Course Name: CONDITION MONITORING	
Course Code: AME4106	
AME4106.1	Gaining invaluable insights into the benefits of Condition Monitoring
AME4106.2	Understanding the reasons for selecting particular maintenance strategies
AME4106.3	Understanding effective methodologies for implementing Condition Monitoring Techniques
AME4106.4	Identifying the optimum maintenance strategy for different types of equipment
AME4106.5	Gaining practical approaches to minimise the risk of plant and machinery breakdowns

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AME4106.6	Awareness of International Standards covering asset management

Course Name: AUTOMOBILE CHASSIS LAB & INSTRUMENTATION LAB	
Course Code: AME4107	
AME4107.1	Calibration of Pressure Gauges and transducer
AME4107.2	Able to know the servicing the generators and batteries and ignition systems.
AME4107.3	Able to know temperature detector for temperature measurement
AME4107.4	calibration of a rotometer for flow measurement
AME4107.5	Able to measurement of vibration amplitude of an engine bed at various loads.
AME4107.6	Explain Mcleod gauge for low pressure

Course Name: CAD/CAM LAB	
Course Code: AME4108	
AME4108.1	Able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
AME4108.2	Able to know the Use of these tools for any engineering and real time applications
AME4108.3	Able to know the Development of part drawings for various components
AME4108.4	Generation of various 3D models through protrusion
AME4108.5	Determination of deflection and stresses in 2D and 3D trusses and beams
AME4108.6	Acquire knowledge on utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence when it matters to use these tools in their Employment

Year/Sem: IV B.Tech II SEM

Course Name: AUTOMOTIVE CONTROL SYSTEMS	
Course Code: AME4201	
AME4201.1	Define current state of automotive control systems
AME4201.2	Explain basic Engine Operation: Effective Work, Air-Fuel Ratio, Combustion, and Energy conversion.
AME4201.3	Able to know the Engine control systems
AME4201.4	Explain Diagnosis of automotive engines
AME4201.5	Able to know the Vehicle modelling and Road and driver models
AME4201.6	Describe Introduction to Mechatronics

Course Name: VEHICLE MAINTENANCE	
Course Code: AME4202	
AME4202.1	Able to know the maintain various records
AME4202.2	Clarify scheduled and unscheduled maintenance

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AME4202.3	They are also expected to maintain of various systems of a vehicle.
AME4202.4	Describe repair of various systems of a vehicle.
AME4202.5	Able to service of various systems of a vehicle
AME4202.6	Explain Wheel Alignment

Course Name: PRODUCT DESIGN AND ASSEMBLY AUTOMATION	
Course Code: AME4203	
AME4203.1	Understand the mechanics of vibratory conveying and the principles behind vibrator feeders
AME4203.2	Analyze the effect of active orienting devices on feed rate and the performance of orienting systems
AME4203.3	Discuss the development process of assembly automation and factors influencing the choice of assembly method
AME4203.4	Analyze assembly processes and derive general rules for product design for automation
AME4203.5	Discuss the role of design for assembly (DFA) in the design process and general guidelines for manual assembly.
AME4203.6	Evaluate the performance and economics of assembly systems, including indexing machines, free transfer machines, and robot assembly

Course Name: AUTOMOTIVE SAFETY	
Course Code: AME4204	
AME4204.1	Design of the body for safety, energy equation
AME4204.2	Explain forces in roll over, head on impact, plastics collapse and analysis
AME4204.3	Describe Safety and equipments
AME4204.4	Define Collision warning system
AME4204.5	Able to know the Steering and mirror adjustment, central locking system
AME4204.6	Claify driver support systems and geographical information systems

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DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE OUTCOMES
A.Y:- 2018-2019

Year/Sem: II B.Tech I SEM

Course Name:METALLURGY & MATERIALS SCIENCE	
Course Code: AME2101	
AME2101.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
AME2101.2	Describe behavior of ferrous and non ferrous metals and alloys and their application in different domains.
AME2101.3	Able to understand the effect of heat treatment
AME2101.4	Able to understand the addition of alloying elements on properties of ferrous metals.
AME2101.5	Clarify the Grasp the methods of making of metal powders and applications of powder metallurgy
AME2101.6	Comprehend the properties and applications of ceramic, composites and other advanced methods.

Course Name: MECHANICS OF SOLIDS	
Course Code: AME2102	
AME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
AME2102.2	Analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
AME2102.3	Analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
AME2102.4	Able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
AME2125.5	Understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
AME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name: THERMODYNAMICS	
Course Code: AME2103	
AME2103.1	Basic concepts of thermodynamics.
AME2103.2	Laws of thermodynamics.
AME2103.3	Concept of entropy.
AME2103.4	Property evaluation of vapors and their depiction in tables .

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AME2123.5	Evaluation of charts.
AME2103.6	Evaluation of properties of perfect gas mixtures.

Course Name: AUTOMOTIVE ENGINES

Course Code: AME2104

AME2104.1	Able to understand the development in internal combustion engines
AME2104.2	Describe fuel admission in SI Engines and related systems
AME2104.3	Explain various components involved in fuel injection in CI engines
AME2104.4	learn about the fuel characteristics
AME2104.5	Explain Intake & Exhaust system.
AME2104.6	Able to know the importance of lubrication and cooling system

Course Name: COMPUTER AIDED ENGINEERING DRAWING PRACTICE	
Course Code: AME2105	
AME2105.1	Able to draw projections of regular solids inclined to both planes, including auxiliary views.
AME2105.2	Analyze and illustrate the interpenetration of right regular solids, including the intersection of cylinder vs. cylinder, cylinder vs. prism, and cylinder vs. cone.
AME2105.3	Understand the basics of perspective projections, including points, lines, plane figures, and simple solids, using vanishing point methods
AME2105.4	using AutoCAD commands to draw geometric entities, create 2D and 3D wireframe models, and perform dimensioning
AME2105.5	Able to display the created models as isometric, orthographic, or perspective projections.
AME2105.6	Demonstrate the ability to create geometrical models of simple solids and machine parts using computer-aided solid modeling techniques.

Course Name: MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS	
Course Code: AME2106	
AME2106.1	Able to the knowledge of estimating the Demand and demand elasticities for a product.
AME2106.2	Describe Input-Output-Cost relationships and estimation of the least cost combination of inputs
AME2106.3	Able to understand the nature of different markets and Price Output determination under various market conditions
AME2106.4	Define knowledge of different Business Units
AME2106.5	Able to prepare Financial Statements and the usage of various Accounting tools for Analysis.

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AME2106.6	Evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
Course Name: ELECTRICAL & ELECTRONICS ENGG LAB	
Course Code: AME2107	
AME2107.1	Able to find out the efficiency of dc shunt machine without actual loading of the machine.
AME2107.2	Able to estimate the efficiency and regulation for different load conditions and power factors of single phase transformer with OC and SC test.
AME2107.3	Able to analyse the performance characteristics and to determine efficiencyof DC shunt motor &3-phase induction motor.
AME2107.4	Able to pre-determine the regulation of an alternator by synchronous impedance method.
AME2107.5	Able to control the speed of dc shunt motor using speed control methods.
AME2107.6	Able to find out the characteristics of PN junction diode & transistor

Course Name:MECHANICS OF SOLIDS AND METALLURGY LAB	
Course Code: AME2108	
AME2108.1	Apply methods to determine Mechanical properties and Elastic Constants
AME2108.2	Appraise the students with the use of testing machines
AME2108.3	Characterize the microstructures of different ferrous and non ferrous metals.
AME2108.4	Identify the effect of heat treatment and cooling rates on the properties of steels
AME2108.5	Hardeneability of steels by Jominy End QuenchTest
AME2108.6	Microstructure of Mild steels, low carbon steels, high – Csteels

Year/Sem: II B.Tech II SEM

Course Name: KINEMATICS OF MACHINERY	
Course Code: AME2201	
AME2201.1	Contrive a mechanism for a given plane motion with single degree of freedom.
AME2201.2	Analyze a mechanism for a given straight line motion and automobile steering motion.
AME2201.3	Analyze the motion (velocity and acceleration) of a plane mechanism.
AME2201.4	Suggest and analyze mechanisms for a prescribed intermittent motion like opening and closing of IC engine valves etc.

AME2201.5	Able to Select a power transmission system for a given application
AME2201.6	Analyze motion of different transmission systems
Course Name: THERMAL ENGINEERING - I	
Course Code: AME2202	
AME2202.1	Describe various losses that occur in the actual engine operation.
AME2202.2	Able to know the various engine systems along with their function and necessity.
AME2202.3	Explain normal combustion phenomenon and knocking in S.I. and C.I. Engines
AME2202.4	Determine perform testing on S.I and C.I Engines for the calculations of performance and emission parameters.
AME2202.5	Explain compressors and to calculate power and efficiency of reciprocating compressors
AME2202.6	Calculate power and efficiency of rotary compressors

Course Name: FLUID MECHANICS & HYDRAULIC MACHINES	
Course Code: AME2203	
AME2203.1	The basic concepts of fluid properties.
AME2203.2	The mechanics of fluids in static and dynamic conditions.
AME2203.3	Boundary layer theory, flow separation and dimensional analysis.
AME2203.4	Hydrodynamic forces of jet on vanes in different positions.

Course Name: PRODUCTION TECHNOLOGY	
Course Code: AME2204	
AME2204.1	Design patterns, Gating, runner and riser systems
AME2204.2	Select a suitable casting process based on the component
AME2204.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements

AME2203.5	Working Principles and performance evaluation of hydraulic pump
AME2203.6	Working Principles and performance evaluation of hydraulic turbines.

AME2204.4	Able to Understand various bulk deformation processes
AME2204.5	Able to Understand various sheet metal forming and processing of plastics
AME2204.6	Explain the sheet metal forming

Course Name: INDUSTRIAL ENGINEERING & MANAGEMENT	
Course Code: AME2205	
AME2205.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
AME2205.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
AME2205.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints
AME2205.4	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
AME2205.5	Explain about analsys
AME2205.6	Determination of floats, importance, project crashing, smoothing and numerical examples.

Course Name: MACHINE DRAWING	
Course Code: AME2206	
AME2206.1	Able understanding of various machine elements and simple mechanical parts such as screw threads, bolts, keys, cotter joints, etc.
AME2206.2	Describe selecting appropriate views, proportions, and additional views to accurately represent machine elements and parts.
AME2206.3	able to translate theoretical knowledge into practical skills by producing working drawings
AME2206.4	Able to communicate technical information effectively through engineering drawings
AME2206.5	analysis of machine elements and parts
AME2206.6	Define knowledge of machine elements commonly used in various applications

Course Name:THERMAL ENGINEERING LAB	
Course Code: AME2207	
AME2207.1	Analyze and draw valve and port timing diagrams for various types of engines.
AME2207.2	Able to conduct and interpret fuel tests accurately.
AME2207.3	Methods for exhaust emission measurements and evaluating engine performance.
AME2207.4	Able to calculate and analyze friction power losses in engines.
AME2207.5	Determining friction power using retardation or motoring tests on IC

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	engines.
AME2207.6	Analyze heat distribution curves and understand the energy balance within the engine.

Course Name: FLUID MECHANICS & HYDRAULIC MACHINES LAB	
Course Code: AME2208	
AME2208.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
AME2208.2	To gain practical exposure on the performance evaluation methods of Pelton Wheel
AME2208.3	To gain practical exposure on the performance evaluation methods of Francis Turbine
AME2208.4	To gain practical exposure on the performance evaluation methods of Reciprocating pump
AME2208.5	To gain practical exposure on the performance evaluation methods of Venturimeter
AME2208.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Year/Sem: III B.Tech I SEM

Course Name: DYNAMICS OF MACHINERY	
Course Code: AME3101	
AME3101.1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles
AME3101.2	Compute frictional losses, torque transmission of mechanical systsms.
AME3101.3	Analyze dynamic force analysis of slider crank mechanism and design of flywheel.
AME3101.4	Able to understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
AME3101.5	Able to understand balancing of reciprocating and rotary masses.
AME3101.6	Able to know the vibrations

Course Name: FUELS AND COMBUSTION	
Course Code: AME3102	
AME3102.1	Able to understand the various kinds of fuels
AME3102.2	Able to understand the characteristics and origin
AME3102.3	Able to understand the thermodynamics behind combustion
AME3102.4	Clarify the flame propagation
AME3102.5	Able to know the choice of combustion systems

AME3102.6	Define combustion and chemical kinetics.

Course Name: DESIGN OF MACHINE ELEMENTS	
Course Code: AME3103	
AME3103.1	able to understand the concepts of various theories of failure
AME3103.2	Clarify factors of safety
AME3103.3	Able to Design for strength and rigidity
AME3103.4	Define used to design mechanical parts such as joints, shafts couplings
AME3103.5	Able to know the fundamentals of lubrication, various bearings and estimation of bearing life.
AME3103.6	design concepts to design various engine components.

Course Name: VEHICLE TRANSPORT MANAGEMENT	
Course Code: AME3104	
AME3104.1	Able to understand the need of preventive maintenance.
AME3104.2	Administration and inter departmental liaison
AME3104.3	Able how to prevent accidents by recording and estimating using different mechanisms.
AME3104.4	Able understand the vehicle schedule and crew timings and fare collection systems.
AME3104.5	Derive fare structure by estimating the operating costs for various types of vehicles.
AME3104.6	Estimate the operating cost by considering factors like depreciation, obsolescence, life of vehicles and wages

Course Name: HEAT TRANSFER	
Course Code: AME3105	
AME3105.1	Represent the physical problems of heat transfer in terms of governing equations or mathematical models
AME3105.2	Differentiate between different boundary conditions and apply the same for solving heat transfer problems
AME3105.3	Design thermal systems applying the concepts of heat transfer under steady state and well as unsteady state conditions
AME3105.4	Design, select and analyze the heat exchangers
AME3105.5	Apply the radiation concepts to the engineering devices
AME3105.6	Able to know the Radiation Heat Transfer

Course Name: AUTOMOTIVE ENGINES LAB AND FUELS LABORATORY

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Course Code: AME3106	
AME3106.1	Able to know the principles in assembly & dismantling of Single cylinder two and four stroke engines
AME3106.2	Able to know the assembly & dismantling of Carburetor and Fuel injection pump
AME3106.3	Able to know the assembly & dismantling of Lubrication system and Cooling system
AME3106.4	Clarify the Flash and Fire points of petrol and diesel
AME3106.5	Describe the viscosity of lubricants & Fuels
AME3106.6	Able to know the Cloud and Pour point Test

Course Name: HEAT TRANSFER LAB	
Course Code: AME3107	
AME3107.1	Determine the overall heat transfer coefficient of composite slabs.
AME3107.2	Analyze the effects of insulation on heat transfer and quantify the reduction in heat loss.
AME3107.3	Calculate Heat Transfer Coefficients And Understand The Principles Of Heat Transfer In Spherical Geometries.
AME3107.4	Measure heat transfer coefficients in forced convection experiments under different flow conditions.
AME3107.5	Understand the principles of blackbody radiation and its significance in thermal radiation.
AME3107.6	Identify the conditions under which boiling transitions occur and the implications for heat transfer applications.

Course Name: PRODUCTION TECHNOLOGY LAB	
Course Code: AME3108	
AME3108.1	Apply some of the manufactures process directly in the industry for preparation of complicated jobs
AME3108.2	various jobs using various manufacturing process
AME3108.3	Preparation of jobs can be extended to implement in the preparation of complicated jobs.
AME3108.4	Pattern Design and making and Sand properties testing
AME3108.5	Able to know the elding
AME3108.6	Explain the metal forming process

Year/Sem: III B.Tech II SEM

Course Name : MACHINE TOOLS & METROLOGY	
Course Code: AME3201	
AME3201.1	Define fundamentals of metal cutting and forces

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AME3201.2	Explain Engine Lathe and its various operations
AME3201.3	Describe Shaping, Slotting, and Planning, Drilling and boring machines and its various operations
AME3201.4	Able to know the Milling machines, grinding machines and its various operations
AME3201.5	Explain systems of limits and tolerances and measurement instruments.
AME3201.6	Able to know the optical measuring instruments and surface measurement instruments.

Course Name: INSTRUMENTATION & CONTROL SYSTEMS	
Course Code: AME3202	
AME3202.1	Definition and fundamental principles of measurement systems.
AME3202.2	Explain Various temperature measurement devices such as expansion, electrical resistance, thermistors, thermocouples, and pyrometers.
AME3202.3	Measurement of speed using mechanical tachometers, electrical tachometers, stroboscopes, and non-contact tachometers.
AME3202.4	Able to know the Application of strain gauges for measuring torque and the usage of strain gauge rosettes
AME3202.5	Measurement of humidity, including moisture content of gases and various devices like sling psychrometers, absorption psychrometers, and dew point meters.
AME3202.6	Explain Introduction to control systems, their importance, and classification into open and closed systems.

Course Name: AUTOMOTIVE ELECTRICAL AND ELECTRONICS	
Course Code: AME3203	
AME3203.1	Able to understand the different automotive electrical systems
AME3203.2	Define energy storages and ignition systems
AME3203.3	Explain electronic components involved
AME3203.4	Able to identify the fault diagnosis and preventive measures.
AME3203.5	Describe understand the dash board units and electrical accessories
AME3203.6	Determine Binary numbers and conversions

Course Name: ALTERNATIVE ENERGY SOURCES FOR AUTOMOBILES	
Course Code: AME3204	
AME3204.1	Able to understand the ever increasing quality of life
AME3204.2	Explain this phenomenon imposes high demand on conventional fossil fuels
AME3204.3	Describe search for alternate fuels is a continuous phenomenon.
AME3204.4	Able to various alternate fuels along with their merits and limitations.
AME3204.5	Explain hydrogen fuel usage

AME3204.6	Able to know the use of turbines in automobiles

Course Name: AUTOMOTIVE EMISSION AND POLLUTION CONTROL	
Course Code: AME3205	
AME3205.1	Explain air pollution and pollutants, their sources & their effects.
AME3205.2	Describe different parameters responsible for pollutant formation.
AME3205.3	Choose instruments for pollution measurements.
AME3205.4	Analyze measurement of pollutants
AME3205.5	Explain Constant Volume Sampling I and 3
AME3205.6	Able to know the Encapsulation technique for noise reduction

Course Name: AUTOMOTIVE ELECTRICAL AND ELECTRONICS LAB	
Course Code: AME3206	
AME3206.1	Know the batteries and starter motor testing
AME3206.2	Understanding the alternator testing and wiring system
AME3206.3	Study of Battery Ignition System and different Electrical Equipment's
AME3206.4	Know about the different sensors and various electronics system
AME3206.5	Understand the lighting system of two wheeler and FourWheeler
AME3206.6	Know the Automotive Electronics

Course Name: METROLOGY AND MACHINE TOOLS LAB	
Course Code: AME3207	
AME3207.1	Define fundamentals of metal cutting and forces
AME3207.2	Explain Engine Lathe and its various operations
AME3207.3	Describe Shaping, Slotting, and Planning, Drilling and boring machines and its various operations
AME3207.4	Able to know the Milling machines, grinding machines and its various operations
AME3207.5	Explain systems of limits and tolerances and measurement instruments.
AME3207.6	Able to know the optical measuring instruments and surface measurement instruments.

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Course Name: AUTO SCANNING & VEHICLE TESTING LAB	
Course Code: AME3208	
AME3208.1	Understand automotive scan tools
AME3208.2	Diagnostic equipment for fault diagnosis and troubleshooting
AME3208.3	Understand the Computerized engine analyzer and wheel balancing machine
AME3208.4	Know the Two wheeler chassis dynamometer
AME3208.5	Understand the Head light focusing test andVisibility test
AME3208.6	Know the bus depots and service station workshop layouts

Year/Sem: IV B.Tech I SEM

Course Name: OPERATIONS RESEARCH	
Course Code: AME4101	
AME4101.1	solve the LP and DP problems
AME4101.2	solve the Transportation, assignment, game, inventory, replacement, sequencing, queuing problems
AME4101.3	Explain rectangular games without saddle points
AME4101.4	Analys ABC & VE
AME4101.5	capital budgeting problem – shortest path problem
AME4101.6	inventory and queuing problems

Course Name: VEHICLE DYNAMICS	
Course Code: AME4102	
AME4102.1	Understand the principles underlying the development and design of road vehicles under the influence of dynamic loads
AME4102.2	Analyze the performance and establish the design specifications for the acceleration and braking conditions.
AME4102.3	Model, simulate and analyze the conventional road vehicles for better ride comfort.
AME4102.4	Analyze the cornering forces and effects of tractive forces on cornering
AME4102.5	Analyze the cornering effects of tractive forces on cornering
AME4102.6	Design suspension systems for better damping and comfort

Course Name: CAD/CAM	
Course Code: AME4103	
AME4103.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves,
AME4103.2	Describe the surfaces and solid, and the technique of transformation of geometric entities using transformation matrix

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AME4103.3	Describe the use of GT for the product development
AME4103.4	Describe the use of CAPP for the product development
AME4103.5	Able to know the Identify the various elements
AME4103.6	Able to know the activities in the Computer Integrated Manufacturing Systems.

Course Name: FINITE ELEMENT METHODS	
Course Code: AME4104	
AME4104.1	Understand the concepts behind variational methods and weighted residual methods in FEM
AME4104.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
AME4104.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
AME4104.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
AME4104.5	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.
AME4104.6	Analysis of Steady state heat transfer

Course Name: AUTOMOTIVE POLLUTION AND CONTROL	
Course Code: AME4105	
AME4105.1	Explain air pollution and pollutants, their sources & their effects.
AME4105.2	Describe different parameters responsible for pollutant formation.
AME4105.3	Choose instruments for pollution measurements.
AME4105.4	Analyze measurement of pollutants
AME4105.5	Explain Constant Volume Sampling I and 3
AME4105.6	Able to know the Encapsulation technique for noise reduction

Course Name: AUTOMOTIVE CHASSIS & SUSPENSION	
Course Code: AME4106	
AME4106.1	Explain different chassis layouts and frames, Suspensions, Wheels and Tyres
AME4106.2	Determine stability and weight distribution and suitability of frames.
AME4106.3	Describe, about various Front Axles, factors of wheel alignment Steering Systems and Calculate dimensions of Front Axle
AME4106.4	Able to know Front Wheel Mounting
AME4106.5	Able to know the brakes and its components
AME4106.6	Describe Classification of two and three wheelers

Course Name: AUTOMOBILE ENGINEERING LAB & INSTRUMENTATION LAB	
Course Code: AME4107	

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AME4107.1	Describe lmv and hmv
AME4107.2	Explain about clutch and gear box
AME4107.3	Calibration of micrometer, measurement of plain plug, measurement of plain ring gauge, taper gauge
AME4107.4	Calibration of LVDT transducer for displacement measurement
AME4107.5	position to servicing the generators and batteries and ignition systems
AME4107.6	Expected to wellverse with various calibrated the devices.

Course Name: CAD/CAM LAB	
Course Code: AME4108	
AME4108.1	Able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
AME4108.2	Able to know the Use of these tools for any engineering and real time applications
AME4108.3	Able to know the Development of part drawings for various components
AME4108.4	Generation of various 3D models through protrusion
AME4108.5	Determination of deflection and stresses in 2D and 3D trusses and beams
AME4108.6	Acquire knowledge on utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence when it matters to use these tools in their Employment

Year/Sem: IV B.Tech II SEM

Course Name: AUTOMOTIVE CONTROL SYSTEMS	
Course Code: AME4201	
AME4201.1	Define current state of automotive control systems
AME4201.2	Explain basic Engine Operation: Effective Work, Air-Fuel Ratio, Combustion, and Energy conversion.
AME4201.3	Able to know the Engine control systems
AME4201.4	Explain Diagnosis of automotive engines
AME4201.5	Able to know the Vehicle modelling and Road and driver models
AME4201.6	Describe Introduction to Mechatronics

Course Name: VEHICLE MAINTENANCE	
Course Code: AME4202	
AME4202.1	Able to know the maintain various records
AME4202.2	Clarify scheduled and unscheduled maintenance
AME4202.3	They are also expected to maintain of various systems of a vehicle.
AME4202.4	Describe repair of various systems of a vehicle.
AME4202.5	Able to service of various systems of a vehicle
AME4202.6	Explain Wheel Alignment

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Course Name: AUTOMOTIVE SAFETY	
Course Code: AME4203	
AME4203.1	Design of the body for safety, energy equation
AME4203.2	Explain forces in roll over, head on impact, plastics collapse and analysis
AME4203.3	Describe Safety and equipments
AME4203.4	Define Collision warning system
AME4203.5	Able to know the Steering and mirror adjustment, central locking system
AME4203.6	Claify driver support systems and geographical information systems

Course Name: MODERN VEHICLE TECHNOLOGY	
Course Code: AME4204	
AME4204.1	Able to know the hydrogen engines-electric vehicles
AME4204.2	Describe Interconnected air and liquid suspensions, Hydrolastic suspension system, Hydra gas suspension.
AME4204.3	Explain Breaking systems and safety
AME4204.4	Clarify Emission and Noise Pollution Control
AME4204.5	Able to know the Computer Control for pollution, noise and for fuel economy
AME4204.6	Explain latest technologies to develop more efficient vehicles to meet the customer demands.

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DEPARTMENT OF AGRICULTURE ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2022-2023**

Course Name: Mathematics –III(Vector Calculus, Transforms and PDE)	
Course Code: AGR2101	
AGR2101.1	Determine the physical meaning of different operators such as gradient, curl and divergence
AGR2101.2	Estimate the work done against a field, circulation and flux using vector calculus
AGR2101.3	Apply the Laplace transform for solving differential equations
AGR2101.4	Compute the Fourier series of periodic signals
AGR2101.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
AGR2101.6	Identify solution methods for partial differential equations that model physical processes

Course Name: Surveying and levelling	
Course Code: AGR2102	
AGR2102.1	Understand the overview of plane surveying
AGR2102.2	Able to know the various methods in surveying and types
AGR2102.3	Classify the levelling methods
AGR2102.4	Differentiate the inaccessible points in the plane table surveying
AGR2102.5	Define the tachometric surveying and points in the plane
AGR2102.6	Analyse the distance and elevation points in the surveying

Course Name: Fluid Mechanics and Open Channel Hydraulics	
Course Code: AGR2103	
AGR21.03.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
AGR2103.2	Calculate the forces that act on submerged planes and curves
AGR2103.3	Ability to analyse various types of fluid flows
AGR2103.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
AGR2103.5	Determination of order to predict relevant pressures, velocities and forces
AGR2103.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels

Course Name: Properties of Strength of materials	
Course Code: AGR2104	
AGR2104.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
AGR2104.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
AGR2104.3	Knowledge of bending concepts and calculation of section modulus
AGR2104.4	Determination of stresses developed in the beams and deflections due to various loading conditions
AGR2104.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
AGR2104.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Farm Power and Tractor System	
Course Code: AGR2105	
AGR2105.1	Able to development on farm power sources classification I.C engine components &construction, operating systems
AGR2105.2	Understand the classification of fuels and lubricants in farm methods
AGR2105.3	Define the heir properties, governing systems of IC engines, power transmission, clutches & its applications
AGR2105.4	Differentiate the principles of fluid coupling &torque connector, brakes principles
AGR2105.5	Applying Tractor testing and its main components, CG estimation, Tractor chassis its mechanics
AGR2105.6	Classify the friction concepts of hydraulic system in factors.

Course Name: Surveying and Levelling Lab	
Course Code: AGR2106	
AGR2106.1	To understand the various types of surveying methods
AGR2106.2	Determination of the areas by applying the chain surveying
AGR2106.3	Analyse the area calculations by triangulations methods
AGR2106.4	Finding the area boundaries by plane table survey
AGR2106.5	Determination of distance between two inaccessible points by using compass
AGR2106.6	To understand the Height of the instrument method

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Course Name: Fluid Mechanics and Open Channel Hydraulics Lab	
Course Code: AGR2107	
AGR2107.1	Understand the practical skills on determination of metacentric height and Bernoulli's theorem
AGR2107.2	Analyse the measurement of discharge with venturimeter and pilot tubes
AGR2107.3	Determing discharge coefficient of rectangular, triangular and trapezoidal weir and orifices
AGR2107.4	Imposing practical skills on determination of head losses in pipes, roughness coefficient of open channels
AGR2107.5	Able to know the velocity and pressure in open channels, construction of flow net problems on flow nets
AGR2107.6	Determination of head losses in pipes

Course Name: Field Operation and Maintenance of Tractors Lab	
Course Code: AGR2108	
AGR2108.1	Able to know skills on air kind fuel filtration systems, lubrication system and Their maintenance in tractors
AGR2108.2	Analyse maintenance of transmission and radiators cooling systems in tractor
AGR2108.3	Practical skills development on maintenance of tractor ignition and hydraulic systems
AGR2108.4	knowledge on periodical maintenance of tractors, emission of smoke, clutch and brake system maintenance
AGR2108.5	Define precautions in handling diesel fuels in diesel engine
AGR2108.6	Understand the causes of ignition failure in battery system

Course Name: Agricultural Machinery Design using CAD/CAM	
Course Code: AGR2109	
AGR2109.1	Application of computers for designing and Overview of CAD window – explanation of various options on drawing screen
AGR2109.2	Understand dimension and dimensional editing tool bar and Practice on dimension toolbar
AGR2109.3	Study on layer command and modifying drafting
AGR2109.4	Practice on 3-D commands- Extrusion and loft commands
AGR2109.5	Define 2 D- orthographic projections using draw tool bar
AGR2109.6	Demonstration on CNC machine and simple problems

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Year/Sem: II B.Tech II SEM

Course Name: Heat and Mass Transfer	
Course Code: AGR2201	
AGR2201.1	Understand the principles of heat and mass transfer, steady state heat transfer & its analysis
AGR2201.22	Able to know the measurement of thermal conducting of pleasure & composite walls, tubes and spheres, multilayer tubes
AGR2201.3	Classify the conduction principles of different materials in parallel
AGR2201.4	Differentiate combined convection and conduction, concept of insulation
AGR2201.5	Analyse the conduction, convection and radiation analysis of heat and mass transfer, different laws on radiation theory
AGR2201.6	Define principles of heat exchanges, their analysis, frick's law of mass transfer coefficients, Reynolds analogy

Course Name: Ground Water Hydrology ,Wells and Pumps	
Course Code: AGR2202	
AGR2202.1	Able to know principles of ground water resources development, different acquaintance and their principles
AGR2202.2	Define the types of aquifers and their properties
AGR2202.3	Understand knowledge on theory of open well hydraulics and drilling methods
AGR2202.4	Imparting the artificial ground water recharge classification of indigenous pumps, solar pumps, wind mill pumps
AGR2202.5	Differentiate the types pumps and their properties
AGR2202.6	Apply High lift pumps, mixed flow pumps and vertical turbine pump sets

Course Name: Theory of Structures	
Course Code: AGR2203	
AGR2203.1	Able to understand the various design methods in RCC
AGR2203.2	Differentiate the over and under reinforced structures with loading
AGR2203.3	Analysis and design of flexural members and detailing
AGR2203.4	Classification of various types slabs in RCC
AGR2203.5	Design different type of compression members and footings
AGR2203.6	Understand different types of footings and design

Course Name: Soil mechanics	
Course Code: AGR2204	
AGR2204.1	Define principles of soil mechanics soil classification, stresses in soils
AGR2204.2	Understand Bousinesq's analysis for vertical pressure applications
AGR2204.3	Apply the westerguard's analysis for point load applications
AGR2204.4	knowledge on shear stress analysis, Mohr's stress circle, measurement of shear strength
AGR2204.5	Skill development on soil consolidations theory and principles
AGR2204.6	Classify the earth pressure and its effects on soil stability of slopes

Course Name: Managerial Economics & Financial Analysis	
Course Code: AGR2205	
AGR2205.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
AGR2205.2	The knowledge of understanding of the Input-Output-Cost relationships
AGR2205.3	Estimation of the least cost combination of inputs
AGR2205.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
AGR2205.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
AGR2205.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Course Name: Heat and Mass Transfer Lab	
Course Code: AGR2206	
AGR2206.1	Understand the COP of VCR System with Capillary and thermal expansion valve
AGR2206.2	Determination of heat transfer rate through a lagged pipe
AGR2206.3	Able to know the heat transfer rate through a concentric sphere
AGR2206.4	Estimate the heat transfer coefficient in natural and forced convection
AGR2206.5	Define the effectiveness of parallel and counter flow heat exchangers
AGR2206.6	Apply the Thermal conductivity of liquids and gases on samples

Course Name: Theory of Structures Lab	
Course Code: AGR2207	
AGR2207.1	Understand the moment area theorem regarding the slope and deflection of the beam
AGR2207.2	Differente types of columns and find Euler's buckling load for each case
AGR2207.3	Analyse two hinged arch for the horizontal displacement of the roller end for a given system of loading
AGR2207.4	Define the value of flexural rigidity (EI) for a given beam and compare it with theoretical value
AGR2207.5	Estimate the Muller Breslau theorem by using Begg's deformator set
AGR2207.6	Verify clerk Maxwell's reciprocal theorem

Course Name: Soil Mechanics Lab	
Course Code: AGR2208	
AGR2208.1	Able to Determination of water content of soil
AGR2208.2	Understand the field density of soil by core cutter method
AGR2208.3	Classify Grain size analysis by sieving (Dry sieve analysis)
AGR2208.4	Define the permeability by constant head method
AGR2208.5	Able to know the Determination of unconfined compressive strength of soil
AGR2208.6	Differentiate the consolidation properties of soils

Course Name: Analysis/Simulation Using MAT Lab	
Course Code: AGR220	
AGR2209.1	Understand the Development of soil monitoring systems
AGR2209.2	Analysis of harvesting equipment design parameters and performance
AGR2209.3	Define the safety storage of harvested crops
AGR2209.4	Able to know the Tractor position tracking using MAT Lab
AGR2209.5	Development of real–time monitoring system of agricultural fields
AGR2209.6	Monitoring the critical factor as water quality to enhance the growth of crops is develop using sensors

Year/Sem: III B.Tech I SEM

Course Name: Farm Machinery and Equipment - I	
Course Code: AGR3101	
AGR3101.1	To understand primary and secondary tillage implements
AGR3101.2	Differentiate earth moving machinery, seeding and plant protection equipment
AGR3101.3	Able to know get awareness on the mechanical area of the agricultural engineering
AGR3101.4	Understand Classification and types of tillage, Primary tillage implements
AGR3101.5	Analyse Problems on forces analysis, Draft measurement of tillage equipment
AGR3101.6	Apply the Different types of seed metering mechanism, different types of furrow openers

Course Name: Surface Water Hydrology	
Course Code: AGR3102	
AGR3102.1	Able to know to acquire knowledge and skills on hydrological cycle
AGR3102.2	Understand to measurements in watersheds, hydrological design of structure
AGR3102.3	Differentiate the prediction of volume and rates of runoff with tools like hydrographs and unit hydrograph
AGR3102.4	Define the reservoir planning with flood routing techniques
AGR3102.5	Application in natural resources management in watershed
AGR3102.6	Analyse Arithmetic mean, Thiessen polygon, Isohyetal methods, DAD relationships and curves

Course Name: Post Harvest engineering of Cereals, Pulses And Oilseeds	
Course Code: AGR3103	
AGR3103.1	To acquire knowledge and skills on Cleaning and grading
AGR3103.2	Define aspiration, scalping; size separators, screens, sieve analysis, capacity
AGR3103.3	Able to know Different methods of drying, batch-continuous
AGR3103.4	Apply mixing-non-mixing, sun, mechanical, conduction, convection, radiation, superheated steam, tempering during drying
AGR3103.5	Define Milling of rice, Milling of wheat, unit operations and equipment
AGR3103.6	Apply the CFTRI and Pantnagar methods

Course Name: Environmental Management	
Course Code: AGR3104	
AGR3104.1	Understand the Plan and design the water and wastewater systems
AGR3104.2	Analyse the he source of emissions and select proper control systems
AGR3104.3	Able to know the Design & estimation of water supply system for a city
AGR3104.4	knowledge about various environmental aspects
AGR3104.5	Apply the suitable treatment flow for raw water treatments
AGR3104.6	Differentiate the importance of Water and Wastewater Treatment Plant and supply system

Course Name: Green House Technology	
Course Code: AGR3105	
AGR3105.1	Understand the Constructional and operational details of greenhouses
AGR3105.2	students to grow crops with profits
AGR3105.3	Able to know the greenhouses for offseason usage and also to manage them commercially
AGR3105.4	Classify Greenhouse types based on shape, utility, construction and covering material
AGR3105.5	Define Temperature requirement of horticultural crops, light requirement of crops and lighting control methods
AGR3105.6	Analyse Site selection and orientation, structural design

Course Name: Theory of Machines Lab	
Course Code: AGR3106	
AGR3106.1	Able to determine whirling speed of shaft theoretically and experimentally.
AGR3106.2	Understand position of sleeve against controlling force and speed of a Hartnell governor and to plot the characteristic curve of radius of rotation
AGR3106.3	Analyse the motion of a motorized gyroscope when the couple is applied along its spin axis
AGR3106.4	Study the static and dynamic balancing using rigid blocks
AGR3106.5	Plot slider displacement, velocity and acceleration against crank rotation for single slider crank mechanism/Four bar mechanism
AGR3106.6	Define simple and compound screw jack and determine the mechanical advantage , velocity ratio and efficiency

Course Name: Electrical Circuits Lab	
Course Code: AGR3107	
AGR3107.1	To verify and demonstrate various theorems and resonance
AGR3107.2	Able to draw the locus diagram of series circuits
AGR3107.3	Determine the various parameters of a two port networks
AGR3107.4	Define self and mutual inductance of a magnetic circuit, parameters of a given coil
AGR3107.5	Analyse to measure the power of three phase unbalanced circuit
AGR3107.6	Applying Kirchhoff's law to verify the circuit laws

Year/Sem: III B.Tech II SEM

Course Name: Soil and Water Conservation Engineering	
Course Code: AGR3201	
AGR3201.1	Acquire knowledge on different soil laws estimation models, run off estimation by rational, curve number, cook's
AGR3201.2	Define Land use, capability classification, soil conservation measures like contour bunding, terracing, bench terraces
AGR3201.3	Classify the contour trenches and their types and complete design calculations
AGR3201.4	To enrich the students and familiarize the students in the design of various gully control structures
AGR3201.5	Able to know the estimation of Factors affecting runoff
AGR3201.6	Designs with a due importance to hydrologic, hydraulic and structural phases of design

Course Name: Farm Machinery and Equipment - II	
Course Code: AGR3202	
AGR3202.1	Understand the basic principles of cutting mechanisms and to know the various available harvesting machine
AGR3202.2	To know the working principle and functions of various machine parts of mowers, reapers
AGR3202.3	Define windrowers, forage harvesters, threshers, combine harvesters, cotton strippers, cotton pickers, groundnut and potato and sugarcane harvesters
AGR3202.4	Students can also understand the importance of testing and evaluation of agricultural machines
AGR3202.5	Differente standard codes (BIS Codes) available in India for testing of machinery
AGR3202.6	Classify Crop harvesting machinery, history of development

Course Name: Agricultural Process Engineering	
Course Code: AGR3203	
AGR3203.1	Able to know the unit operations of agricultural process engineering
AGR3203.2	Classify the preliminary operations such as clearing, size reduction, mixing, separation, filtration and materials handling equipment
AGR3203.3	Define Principle, classification, operation, advantages, disadvantages
AGR3203.4	Analyse capacity and power requirement
AGR3203.5	Able to know the Scope and importance crop processing
AGR3203.6	Introduction, theory of solids mixing, criteria of mixer effectiveness and mixing index for granular solids

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Course Name: Water Shed Management	
Course Code: **AGR3204**	
AGR3204.1	Know the quality and quantity of water for various industries and Advanced water treatment methods
AGR3204.2	Learn the common methods of treatment of wastewaters and Biological treatment methods
AGR3204.3	Analyse methods to reduce impacts of disposal of wasters into environment and CETPs
AGR3204.4	Classify the treatment of wastewaters from specific industries like steel plants
AGR3204.5	Able to know methods of treatment of wastewaters from industries like Aqua, dairy, sugar plants, and distilleries that imply biological treatment methods
AGR3204.6	Applying the neutralization methods for water treatment

Course Name: Remote Sensing & GIS	
Course Code: AGR3205	
AGR3205.1	Understand Model the geometry of real-world structure Represent the physical model of structural element/structure
AGR3205.2	Analyse the Perform analysis of the frame
AGR3205.3	Able to Design and detailing of built up steel beam
AGR3205.4	Developing a design programme for foundation
AGR3205.5	Differentiate the Interpret from the Post processing results
AGR3205.6	Analysis & Design of Roof Trusses

Course Name: Soil and Water Conservation Engineering Lab	
Course Code: AGR3206	
AGR3206.1	Estimate the soil losses and sediment concentration
AGR3206.2	Describes the procedure for planning and construction of soil conservation measures
AGR3206.3	Design the soil conversion measures and structures
AGR3206.4	Underrated the procedure for estimation of soil loss
AGR3206.5	Define discharge, evaporation, sediment, accumulation, water movement through layers
AGR3206.6	Able to know Measurement of irrigation water with H-Flume

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Course Name: Farm Machinery and Equipment Lab	
Course Code: AGR3207	
AGR3207.1	student to get the practical knowledge on various operation in agricultural field for crop production
AGR3207.2	Study of various Farm Machinery and equipment
AGR3207.3	Determination of Field capacity and Field efficiency of primary tillage implements
AGR3207.4	Study of different types of plough bottoms and shares of M.B. Plough
AGR3207.5	Define Calibration of seed drill and problems
AGR3207.6	Analyse Construction and working of renovators and weeding equipment

Course Name: Agricultural Process Engineering Lab	
Course Code: AGR3208	
AGR3208.1	Understand students on how to conduct experiments and evaluate performance of various agricultural food process
AGR3208.2	Able to know the Preparation of flow charts and layout of a food processing plant
AGR3208.3	Determination of the efficiency of cyclone separator
AGR3208.4	Tutorial on extraction by McCabe and Thiele plot
AGR3208.5	Define Performance evaluation of hammer mill and attribution mill
AGR3208.6	Apply Transport Processes and separation Process Principle

Course Name: Structural Design with ANSYS Lab	
Course Code: AGR3209	
AGR3209.1	Understand the concepts of Loads and use of BIS Codes
AGR3209.2	Able to design of singly and doubly reinforced sections, Reinforced concrete Cantilever
AGR3209.3	Design of Eccentric Shear and Moment Resisting connections
AGR3209.4	Applying Method of IS code and Structural steel Framing
AGR3209.5	Able to know Design of Flanged Beams, Slabs, Columns, Foundations, Retaining walls and Silos
AGR3209.6	Differentiate Design of Shear Key-Design and Drawing

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DEPARTMENT OF AGRICULTURE ENGINEERING
Course Outcomes

Year/Sem: II B.Tech I SEM   **A.Y:2021-2022**

Course Name: Mathematics –III(Vector Calculus, Transforms and PDE)	
Course Code: AGR2101	
AGR2101.1	Determine the physical meaning of different operators such as gradient, curl and divergence
AGR2101.2	Estimate the work done against a field, circulation and flux using vector calculus
AGR2101.3	Apply the Laplace transform for solving differential equations
AGR2101.4	Compute the Fourier series of periodic signals
AGR2101.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
AGR2101.6	Identify solution methods for partial differential equations that model physical processes

Course Name: Surveying and levelling	
Course Code: AGR2102	
AGR2102.1	Understand the overview of plane surveying
AGR2102.2	Able to know the various methods in surveying and types
AGR2102.3	Classify the levelling methods
AGR2102.4	Differentiate the inaccessible points in the plane table surveying
AGR2102.5	Define the tachometric surveying and points in the plane
AGR2102.6	Analyse the distance and elevation points in the surveying

Course Name: Fluid Mechanics and Open Channel Hydraulics	
Course Code: AGR2103	
AGR21.03.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
AGR2103.2	Calculate the forces that act on submerged planes and curves
AGR2103.3	Ability to analyse various types of fluid flows
AGR2103.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
AGR2103.5	Determination of order to predict relevant pressures, velocities and forces
AGR2103.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels

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Course Name: Properties of Strength of materials	
Course Code: AGR2104	
AGR2104.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
AGR2104.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
AGR2104.3	Knowledge of bending concepts and calculation of section modulus
AGR2104.4	Determination of stresses developed in the beams and deflections due to various loading conditions
AGR2104.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
AGR2104.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Farm Power and Tractor System	
Course Code: AGR2105	
AGR2105.1	Able to development on farm power sources classification I.C engine components &construction, operating systems
AGR2105.2	Understand the classification of fuels and lubricants in farm methods
AGR2105.3	Define the heir properties, governing systems of IC engines, power transmission, clutches & its applications
AGR2105.4	Differentiate the principles of fluid coupling &torque connector, brakes principles
AGR2105.5	Applying Tractor testing and its main components, CG estimation, Tractor chassis its mechanics
AGR2105.6	Classify the friction concepts of hydraulic system in factors.

Course Name: Surveying and Levelling Lab	
Course Code: AGR2106	
AGR2106.1	To understand the various types of surveying methods
AGR2106.2	Determination of the areas by applying the chain surveying
AGR2106.3	Analyse the area calculations by triangulations methods
AGR2106.4	Finding the area boundaries by plane table survey
AGR2106.5	Determination of distance between two inaccessible points by using compass
AGR2106.6	To understand the Height of the instrument method

Course Name: Fluid Mechanics and Open Channel Hydraulics Lab	
Course Code: AGR2107	
AGR2107.1	Understand the practical skills on determination of metacentric height and Bernoulli's theorem
AGR2107.2	Analyse the measurement of discharge with venturimeter and pilot tubes
AGR2107.3	Determing discharge coefficient of rectangular, triangular and trapezoidal weir and orifices
AGR2107.4	Imposing practical skills on determination of head losses in pipes, roughness coefficient of open channels
AGR2107.5	Able to know the velocity and pressure in open channels, construction of flow net problems on flow nets
AGR2107.6	Determination of head losses in pipes

Course Name: Field Operation and Maintenance of Tractors Lab	
Course Code: AGR2108	
AGR2108.1	Able to know skills on air kind fuel filtration systems, lubrication system and Their maintenance in tractors
AGR2108.2	Analyse maintenance of transmission and radiators cooling systems in tractor
AGR2108.3	Practical skills development on maintenance of tractor ignition and hydraulic systems
AGR2108.4	knowledge on periodical maintenance of tractors, emission of smoke, clutch and brake system maintenance
AGR2108.5	Define precautions in handling diesel fuels in diesel engine
AGR2108.6	Understand the causes of ignition failure in battery system

Course Name: Agricultural Machinery Design using CAD/CAM	
Course Code: AGR2109	
AGR2109.1	Application of computers for designing and Overview of CAD window – explanation of various options on drawing screen
AGR2109.2	Understand dimension and dimensional editing tool bar and Practice on dimension toolbar
AGR2109.3	Study on layer command and modifying drafting
AGR2109.4	Practice on 3-D commands- Extrusion and loft commands
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Year/Sem: II B.Tech II SEM

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Course Code: AGR2202	
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AGR2202.3	Understand knowledge on theory of open well hydraulics and drilling methods
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Course Name: Theory of Structures	
Course Code: AGR2203	
AGR2203.1	Able to understand the various design methods in RCC
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AGR2203.3	Analysis and design of flexural members and detailing
AGR2203.4	Classification of various types slabs in RCC
AGR2203.5	Design different type of compression members and footings
AGR2203.6	Understand different types of footings and design

Course Name: Soil mechanics	
Course Code: AGR2204	
AGR2204.1	Define principles of soil mechanics soil classification, stresses in soils
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AGR2204.3	Apply the westerguard's analysis for point load applications
AGR2204.4	knowledge on shear stress analysis, Mohr's stress circle, measurement of shear strength
AGR2204.5	Skill development on soil consolidations theory and principles
AGR2204.6	Classify the earth pressure and its effects on soil stability of slopes

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Course Code: AGR2205	
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Course Code: AGR2206	
AGR2206.1	Understand the COP of VCR System with Capillary and thermal expansion valve
AGR2206.2	Determination of heat transfer rate through a lagged pipe
AGR2206.3	Able to know the heat transfer rate through a concentric sphere
AGR2206.4	Estimate the heat transfer coefficient in natural and forced convection
AGR2206.5	Define the effectiveness of parallel and counter flow heat exchangers
AGR2206.6	Apply the Thermal conductivity of liquids and gases on samples

Course Name: Theory of Structures Lab	
Course Code: AGR2207	
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AGR2207.3	Analyse two hinged arch for the horizontal displacement of the roller end for a given system of loading
AGR2207.4	Define the value of flexural rigidity (EI) for a given beam and compare it with theoretical value
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AGR2207.6	Verify clerk Maxwell's reciprocal theorem

Course Name: Soil Mechanics Lab	
Course Code: AGR2208	
AGR2208.1	Able to Determination of water content of soil
AGR2208.2	Understand the field density of soil by core cutter method
AGR2208.3	Classify Grain size analysis by sieving (Dry sieve analysis)
AGR2208.4	Define the permeability by constant head method
AGR2208.5	Able to know the Determination of unconfined compressive strength of soil
AGR2208.6	Differentiate the consolidation properties of soils

Course Name: Analysis/Simulation Using MAT Lab	
Course Code: AGR220	
AGR2209.1	Understand the Development of soil monitoring systems
AGR2209.2	Analysis of harvesting equipment design parameters and performance
AGR2209.3	Define the safety storage of harvested crops
AGR2209.4	Able to know the Tractor position tracking using MAT Lab
AGR2209.5	Development of real–time monitoring system of agricultural fields
AGR2209.6	Monitoring the critical factor as water quality to enhance the growth of crops is develop using sensors

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2022-2023

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CE1101**	
CE1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
CE1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
CE1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
CE1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
CE1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
CE1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **CE1102**	
CE1102.1	To utilize mean value theorems to real life problems
CE1102.2	To solve the differential equations related to various engineering fields
CE1102.3	To familiarize with functions ofseveral variables which is useful in optimization
CE1102.4	To familiarize with functions of several variables which is useful in optimization
CE1102.5	To apply double integration techniques in evaluating areas bounded by region
CE1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: CE**1103**	
CE**1103.1**	Explain the need of coherent sources and the conditions for sustained interference
CE**1103.2**	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
CE**1103.3**	Explain the concept of dielectric constant
CE**1103.4**	Explain polarization in dielectric materials
CE**1103.5**	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
CE**1103.6**	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

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Course Name: ENGINEERING DRAWING	
Course Code: **CE1104**	
CE1104.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CE1104.2	: To introduce the students to use orthographic projections, projections of points & simple lines. To make the students draw the projections of the lines inclined to both the planes.
CE1104.3	The objective is to make the students draw the projections of the plane inclined to both the planes.
CE1104.4	The objective is to make the students draw the projections of the plane inclined to both the planes
CE1104.5	The objective is to make the students draw the projections of the various types of solids indifferent positions inclined to one of the planes
CE1104.6	: The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa

Course Name:ENGINEERING GEOLOGY	
Course Code: **CE1105**	
CE1105.1	Identify and classify the geological minerals Measure the rock strengths of various rocks
CE1105.2	Classify and measure the earthquake prone areas to practice the hazard zonation , monitor and measure the Landslides and subsidence zonation
CE1105.3	Prepares, analyses and interpret the Engineering Geologic maps
CE1105.4	Analyses the ground conditions through geophysical surveys
CE1105.5	Test the geological material and ground to check the suitability of civil engineering project construction
CE1105.6	Investigate the project site for mega/mini civil engineering projects. Site selection for mega engineering projects like Dams, Tunnels, disposal sites etc.

Course Name: ENGINEERING GEOLOGY LAB	
Course Code: **CE1106**	
CE1106.1	Identify Megascopic minerals & their properties
CE1106.2	Identify Megascopic rocks & their properties.
CE1106.3	Identify the site parameters such as contour, slope & aspect for topography
CE1106.4	Know the occurrence of materials using the strike & dip problems.
CE1106.5	To identify the topography of the site & material selection
CE1106.6	To identify the Megascopic types of Igneous, Sedimentary, Metamorphic rocks

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Course Name: **English communication skills lab**	
Course Code: **CE1107**	
CE1107.1	To impart the significance of spoken English
CE1107.2	To enhance the general conversation skills through different socio context
CE1107.3	To acquire the ability to use functional English
CE1107.4	To instil confidence by practising pronunciation and accent
CE1107.5	To identifying the barriers of communication
CE1107.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **CE1108**	
CE1108.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CE1108.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CE1108.3	To help students understand the role of direct observation in physics
CE1108.4	To distinguish between interference based on theory and experiments
CE1108.5	To introduce the concepts and techniques which have wide applications in experimental science
CE1108.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: BASICS OF CIVIL ENGG. (WORK SHOP) LAB	
Course Code:**CE1109**	
CE1109.1	Identify various components of a building and give lump-sum estimate
CE1109.2	Determine distances and irregular areas using conventional survey instruments like chain, tape, cross-staff and compass
CE1109.3	Identify different soils.
CE1109.4	Determine centre of gravity and moment of inertia of channel and I-sections.
CE1109.5	Install simple sanitary filling and find discharge/velocity in a water pipe line as density of water
CE1109.6	Know to the process of making cement mortar / concrete for nominal mix

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **CE1201**	
CE1201.1	develop the use of matrix algebra techniques that is needed by engineers for

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CE1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
CE1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
CE1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
CE1201.5	apply numerical integral techniques to different Engineering problems
CE1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: **CE1202**	
CE1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
CE1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
CE1202.3	Synthesize nanomaterial's for modern advances of engineering technology
CE1202.4	Summarize the techniques that detect and measure changes ofstate of reaction
CE1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
CE1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: **CE1203**	
CE1203.1	to be exposed to the concepts of force and friction , direction and its application
CE1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
CE1203.3	Discuss the concepts of centre of gravity
CE1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
CE1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
CE1203.6	Determine the concepts of work, energy and particle motion

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Course Name:PROGRAMMING FOR PROBLEM SOLVING USING C	
Course Code: **CE1204**	
CE1204.1	To write algorithms and to draw flowcharts for solving problems
CE1204.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
CE1204.3	To use different operators, data types and write programs that use two-way/ multi-way selection
CE1204.4	To select the best loop construct for a given problem
CE1204.5	To design and implement programs to analyse the different pointer applications
CE1204.6	To decompose a problem into functions and to develop modular reusable code

Course Name: BUILDING MATERIALS AND CONCRETE TECHNOLOGY	
Course Code: **CE1205**	
CE1205.1	Know various engineering properties of building construction materials and suggest their suitability
CE1205.2	Identify the functional role of ingredients of concrete and apply this knowledge to concrete mix design
CE1205.3	Acquire and apply fundamental knowledge in the fresh and hardened properties of concrete
CE1205.4	Explain Factors affecting workability, Measurement of workability by different tests
CE1205.5	Explain Properties of Hardened Concrete (Elasticity, Creep, Shrinkage, Poisson's ratio, Water absorption, Permeability, etc.
CE1205.6	Determine Non-destructive testing methods – Codal provisions for NDT

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **CE1206**	
CE1206.1	The students entering into the professional course have practically very little exposure tolab classes
CE1206.2	The experiments introduce volumetric analysis
CE1206.3	Introduce redox titrations with different indicators
CE1206.4	Exposed to a few instrumental methods of chemical analysis.
CE1206.5	Understand the student is exposed to different methods of chemical analysis
CE1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

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Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C LAB	
Course Code: **CE1207**	
CE1207.1	Gains Knowledge on various concepts of a C language
CE1207.2	Able to draw flowcharts and write algorithms.
CE1207.3	Able design and development of C problem solving skills
CE1207.4	Able design and development of C problem solving skills
CE1207.5	Able to design and develop modular programming skills
CE1207.6	Able to trace and debug a program

Course Name: BUILDING PLANNING AND COMPUTER AIDED BUILDING DRAWING	
Course Code: CE**1208**	
CE**1208.1**	Perform basic commands of any suitable CAD software to draw 2D drawings
CE**1208.2**	Interpret the conventions, signs and symbols from a given drawing
CE**1208.3**	Prepare line plans of residential and public buildings using principles of planning
CE**1208.4**	Prepare submission and working drawing from the given requirement for Load Bearing and Framed structures
CE**1208.5**	Draw developed plan, elevation, section, site plan from the given line plan for a load bearing
CE**1208.6**	Prepare submission drawing (including foundation plan) of the given framed structure residential building with stair case.

Course Name: ENVIRONMENTAL SCIENCE	
Course Code: CE**1209**	
CE**1209.1**	Overall understanding of the natural resources
CE**1209.2**	Basic understanding of the ecosystem and its diversity
CE**1209.3**	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
CE**1209.4**	Discuss about Solid Waste Management
CE**1209.5**	An understanding of the environmental impact of developmental activities

CE1209.6	Awareness on the social issues, environmental legislation and global treaties.

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes
Regulation R20 A.Y:2022-2023

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **EEE1101**	
EEE1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
EEE1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
EEE1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
EEE1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
EEE1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
EEE1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: EEE**1102**	
EEE**1102.1**	To utilize mean value theorems to real life problems
EEE**1102.2**	To solve the differential equations related to various engineering fields
EEE**1102.3**	To familiarize with functions Of several variables which is useful in optimization
EEE**1102.4**	To familiarize with functions of several variables which is useful in optimization
EEE**1102.5**	To apply double integration techniques in evaluating areas bounded by region
EEE**1102.6**	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: Mathematics-II	
Course Code: EEE**1103**	
EEE**1103.1**	develop the use of matrix algebra techniques that is needed by engineers for practical applications
EEE**1103.2**	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
EEE**1103.3**	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
EEE**1103.4**	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
EEE**1103.5**	apply numerical integral techniques to different Engineering problems
EEE**1103.6**	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

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Course Name: Programming for Problem Solving Using C	
Course Code: EEE**1104**	
EEE**1104.1**	Understand the basic terminology used in computer programming
EEE**1104.2**	Explain, compile and debug programs in C language. Use different data types in a computer program.
EEE**1104.3**	Design programs involving decision structures, loops and functions.
EEE**1104.4**	Explain the difference between call by value and call by reference
EEE**1104.5**	Understand the dynamics of memory by the use of pointers
EEE**1104.6**	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: EEE**1105**	
EEE**1105.1**	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
EEE**1105.2**	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
EEE**1105.3**	The objective is to make the students draw the projections of the lines inclined to both the planes.
EEE**1105.4**	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
EEE**1105.5**	The objective is to make the students draw the projections of the plane inclined to both the planes.
EEE**1105.6**	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: EEE**1106**	
EEE**1106.1**	To impart the significance of spoken English
EEE**1106.2**	To enhance the general conversation skills through different socio context
EEE**1106.3**	To acquire the ability to use functional English
EEE**1106.4**	To instil confidence by practising pronunciation and accent
EEE**1106.5**	To identifying the barriers of communication
EEE**1106.6**	To focus on common errors of English pronunciation as second language

Course Name: Electrical Engineering Workshop	
Course Code: EEE**1107**	
EEE**1107.1**	Explain the limitations, tolerances, safety aspects of electrical systems and wiring.
EEE**1107.2**	Select wires/cables and other accessories used in different types of wiring
EEE**1107.3**	Make simple lighting and power circuits

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EEE**1107.4**	Measure current, voltage and power in a circuit
EEE**1107.5**	To train the students in setting up simple wiring circuit
EEE**1107.6**	To impart methods in electrical machine wiring

Course Name: **Computer programming lab**	
Course Code:EEE**1108**	
EEE**1108.1**	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
EEE**1108.2**	Acquire knowledge about the basic concept of writing a program
EEE**1108.3**	Role of constants, variables, identifiers, operators,
EEE**1108.4**	Explain type conversion and other building blocks of C Language. •
EEE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
EEE**1108.6**	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name : Mathematics-III	
Course Code: **EEE1201**	
EEE1201.1	interpret the physical meaning of different operators such as gradient, curl and divergence
EEE1201.2	estimate the work done against a field, circulation and flux using vector calculus
EEE1201.3	apply the Laplace transform for solving differential equations
EEE1201.4	find or compute the Fourier series of periodic signals
EEE1201.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveform
EEE1201.6	identify solution methods for partial differential equations that model physical processes

Course Name: APPLIED PHYSICS	
Course Code: **EEE1202**	
EEE1202.1	Explain the need of coherent sources and the conditions for sustained interference
EEE1202.2	Understand the basic concepts of LASER light Sources
EEE1202.3	Explain the concept of dual nature of matter
EEE1202.4	Understand the significance of wave function
EEE1202.5	Explain the concept of dielectric constant and polarization in dielectric materials
EEE1202.6	Classify the energy bands of semiconductors

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Course Name: Data Structures Through C	
Course Code: **EEE1203**	
EEE1203.1	To explain data structures concepts with arrays, stacks, queues.
EEE1203.2	To understand Linked lists for stacks, queues and for other applications
EEE1203.3	Determine the traversal methods in the Trees
EEE1203.4	Discuss various algorithms available for the graphs
EEE1203.5	To understand sorting and searching in the data ret retrieval applications
EEE1203.6	Explain Traversal methods and operations.

Course Name: ELECTRICAL CIRCUIT ANALYSIS -I	
Course Code: **EEE1204**	
EEE1204.1	To study the concepts of passive elements, types of sources and various network reduction techniques.
EEE1204.2	To understand the applications of network topology to electrical circuits.
EEE1204.3	To study the concept of magnetic coupled circuit
EEE1204.4	To understand the behaviour of RLC networks for sinusoidal excitations
EEE1204.5	To study the performance of R-L, R-C and R-L-C circuits with variation of one of the parameters and to understand the concept of resonance.
EEE1204.6	To understand the applications of network theorems for analysis of electrical networks

Course Name: BASIC CIVIL AND MECHANICAL ENGINEERING	
Course Code: **EEE1205**	
EEE1205.1	Apply Shear force diagram & Bending moment diagram principles for Cantilever and Simply supported beams.
EEE1205.2	Apply concepts of Rosette analysis for strain measurement
EEE1205.3	Analyse the characteristics of common building materials.
EEE1205.4	To familiarize the sources of energy, power plant economics and environmental aspects
EEE1205.5	Compare the working characteristics of Internal Combustion engines.
EEE1205.6	Compare the differences between boiler mountings and accessories.

Course Name: APPLIED PHYSICS LAB

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Course Code: **EEE1206**	
EEE1206.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
EEE1206.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
EEE1206.3	To help students understand the role of direct observation in physics
EEE1206.4	To distinguish between interference based on theory and experiments
EEE1206.5	To introduce the concepts and techniques which have wide applications in experimental science
EEE1206.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: BASIC CIVIL AND MECHANICAL ENGINEERING LAB	
Course Code: **EEE1207**	
EEE1207.1	Solve to arrive at finding constant speed and variable speed on IC engines and interpret their performance
EEE1207.2	Estimate energy distribution by conducting heat balance test on IC engines
EEE1207.3	Explain procedure for standardization of experiments.
EEE1207.4	Determine flow discharge measuring device used in pipes channels and tanks
EEE1207.5	Determine fluid and flow properties.
EEE1207.6	Solve for drag coefficients

Course Name: DATA STRUCTURES THROUGH C LAB	
Course Code: **EEE1208**	
EEE1208.1	Be able to design and analyze the time and space efficiency of the data structure
EEE1208.2	Be capable to identity the appropriate data structure for given problem
EEE1208.3	Have practical knowledge on the applications of data structures
EEE1208.4	To develop skills to design and analyze simple linear and non linear data structures
EEE1208.5	To strengthen the ability to the students to identify and apply the suitable data structure for the given real world problem
EEE1208.6	To gain knowledge in practical applications of data structures

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Course Name: Constitution of India	
Course Code: EEE**1209**	
EEE**1209.1**	To Enable the student to understand the importance of constitution
EEE**1209.2**	To understand the structure of executive, legislature and judiciary
EEE**1209.3**	To understand philosophy of fundamental rights and duties
EEE**1209.4**	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.
EEE**1209.5**	To understand auditor general of India and election commission of India
EEE**1209.6**	To understand the central and state relation financial and administrative.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2022-2023

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **ME1101**	
ME1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
ME1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
ME1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
ME1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
ME1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
ME1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **ME1102**	
ME1102.1	To utilize mean value theorems to real life problems
ME1102.2	To solve the differential equations related to various engineering fields
ME1102.3	To familiarize with functions ofseveral variables which is useful in optimization
ME1102.4	To familiarize with functions of several variables which is useful in optimization
ME1102.5	To apply double integration techniques in evaluating areas bounded by region
ME1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: **ME1103**	
ME1103.1	Explain the need of coherent sources and the conditions for sustained interference
ME1103.2	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
ME1103.3	Explain the concept of dielectric constant
ME1103.4	Explain polarization in dielectric materials
ME1103.5	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
ME1103.6	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

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Course Name: ENGINEERING DRAWING	
Course Code: **ME1104**	
ME1104.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ME1104.2	: To introduce the students to use orthographic projections, projections of points & simple lines. To make the students draw the projections of the lines inclined to both the planes.
ME1104.3	The objective is to make the students draw the projections of the plane inclined to both the planes.
ME1104.4	The objective is to make the students draw the projections of the plane inclined to both the planes
ME1104.5	The objective is to make the students draw the projections of the various types of solids indifferent positions inclined to one of the planes
ME1104.6	: The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa

Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C	
Course Code: **ME1105**	
ME1105.1	To write algorithms and to draw flowcharts for solving problems
ME1105.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
ME1105.3	To use different operators, data types and write programs that use two-way/ multi-way selection
ME1105.4	To select the best loop construct for a given problem
ME1105.5	To design and implement programs to analyse the different pointer applications
ME1105.6	To decompose a problem into functions and to develop modular reusable code

Course Name: **English communication skills lab**	
Course Code: **ME1106**	
ME1106.1	To impart the significance of spoken English
ME1106.2	To enhance the general conversation skills through different socio context
ME1106.3	To acquire the ability to use functional English
ME1106.4	To instil confidence by practising pronunciation and accent
ME1106.5	To identifying the barriers of communication
ME1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **ME1107**	
ME1107.1	To provide an experimental foundation for the theoretical concepts introduced in

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	the lectures
ME1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ME1107.3	To help students understand the role of direct observation in physics
ME1107.4	To distinguish between interference based on theory and experiments
ME1107.5	To introduce the concepts and techniques which have wide applications in experimental science
ME1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C LAB	
Course Code: **ME1108**	
ME1108.1	Gains Knowledge on various concepts of a C language
ME1108.2	Able to draw flowcharts and write algorithms.
ME1108.3	Able design and development of C problem solving skills
ME1108.4	Able design and development of C problem solving skills
ME1108.5	Able to design and develop modular programming skills
ME1108.6	Able to trace and debug a program

Course Name: ENVIRONMENTAL SCIENCE	
Course Code:**ME1109**	
ME1109.1	Overall understanding of the natural resources
ME1109.2	Basic understanding of the ecosystem and its diversity
ME1109.3	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
ME1109.4	Discuss about Solid Waste Management
ME1109.5	An understanding of the environmental impact of developmental activities
ME1109.6	Awareness on the social issues, environmental legislation and global treaties.

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **ME1201**	
ME1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
ME1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
ME1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
ME1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae

	for equal and unequal interval
ME1201.5	apply numerical integral techniques to different Engineering problems
ME1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: **ME1202**	
ME1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
ME1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
ME1202.3	Synthesize nanomaterial's for modern advances of engineering technology
ME1202.4	Summarize the techniques that detect and measure changes ofstate of reaction
ME1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
ME1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: **ME1203**	
ME1203.1	to be exposed to the concepts of force and friction , direction and its application
ME1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
ME1203.3	Discuss the concepts of centre of gravity
ME1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
ME1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
ME1203.6	Determine the concepts of work, energy and particle motion

Course Name: Basic Electrical & Electronics Engineering	
Course Code: **ME1204**	

ME1204.1	Analyse various electrical networks
ME1204.2	Understand operation of DC generators,3-point starter and DC machine testing by Swinburne's Test and Brake test.
ME1204.3	Analyse performance of single-phase transformer
ME1204.4	Acquire proper knowledge and working of3-phase alternator and 3-phase induction motors.
ME1204.5	Analyse operation of half wave, full wave bridge rectifiers and OP-AMPs.
ME1204.6	Understanding operations of CE amplifier and basic concept of feedback amplifier.

Course Name: Thermodynamics	
Course Code: **ME1205**	
ME1205.1	Acquire Basic concepts of thermodynamics
ME1205.2	Explain Laws of thermodynamics
ME1205.3	Discuss Concept of entropy
ME1205.4	Explain Property evaluation of vapours and their depiction in tables and charts
ME1205.5	Determine Elementary Treatment of the Third Law of Thermodynamics
ME1205.6	Discuss Evaluation of properties of perfect gas mixtures.

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **ME1206**	
ME1206.1	The students entering into the professional course have practically very little exposure tolab classes
ME1206.2	The experiments introduce volumetric analysis
ME1206.3	Introduce redox titrations with different indicators
ME1206.4	Exposed to a few instrumental methods of chemical analysis.
ME1206.5	Understand the student is exposed to different methods of chemical analysis
ME1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

Course Name: Workshop Practice Lab	
Course Code: **ME1207**	
ME1207.1	To Understand the basic components and peripherals of a computer.
ME1207.2	To become familiar in configuring a system
ME1207.3	To Learn the usage of productivity tools
ME1207.4	To Acquire knowledge about the netiquette.
ME1207.5	To Acquire knowledge about cyber hygiene

ME1207.6	To Get hands on experience in trouble shooting a system

Course Name: Basic Electrical & Electronics Engineering Lab	
Course Code: ME**1208**	
ME**1208.1**	Compute the efficiency of DC shunt machine without actual loading of the machine
ME**1208.2**	Estimate the efficiency and regulation at different load conditions and power factors for single phase transformer with OC and SC tests.
ME**1208.3**	Analyse the performance characteristics and to determine efficiency of DC shunt motor
ME**1208.4**	Pre-determine the regulation of an alternator by synchronous impedance method
ME**1208.5**	Control the speed of dc shunt motor using Armature voltage and Field flux control
ME**1208.6**	Determine the ripple factor of half wave & full wave rectifiers.

Course Name: Constitution of India	
Course Code: ME**1209**	
ME**1209.1**	To Enable the student to understand the importance of constitution
ME**1209.2**	To understand the structure of executive, legislature and judiciary
ME**1209.3**	To understand philosophy of fundamental rights and duties
ME**1209.4**	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.
ME**1209.5**	To understand auditor general of India and election commission of India
ME**1209.6**	To understand the central and state relation financial and administrative.

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes
<u>Regulation-R20 A.Y:2022-2023</u>

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **ECE1101**	
ECE1101.1	To develop human resources and serve the society through different ways
ECE1101.2	To educate and adopt the road safety measures by means transport
ECE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
ECE1101.4	Imparting the importance of alternative energy sources to the depleting sources
ECE1101.5	Realization on how to preserve the extension of animal life
ECE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **ECE1102**	
ECE1102.1	Solve the linier differential equations of first order
ECE1102.2	Solve the linier differential equations of second and higher order
ECE1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
ECE1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
ECE1102.5	Solve partial differential equations of first order
ECE1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **ECE1103**	
ECE1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
ECE1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
ECE1103.3	Identify the reasons of corrosion and controlling methods of corrosion
ECE1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
ECE1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
ECE1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving using C

Course Code: **ECE1104**	
ECE1104.1	Understand the basic terminology used in computer programming
ECE1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
ECE1104.3	Design programs involving decision structures, loops and functions.
ECE1104.4	Explain the difference between call by value and call by reference
ECE1104.5	Understand the dynamics of memory by the use of pointers
ECE1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: **ECE1105**	
ECE1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ECE1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
ECE1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
ECE1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
ECE1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
ECES1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **ECE1106**	
ECE1106.1	To impart the significance of spoken English
ECE1106.2	To enhance the general conversation skills through different socio context
ECE1106.3	To acquire the ability to use functional English
ECE1106.4	To instil confidence by practising pronunciation and accent
ECE1106.5	To identifying the barriers of communication
ECE1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: **ECE1107**	
ECE1107.1	To explain The experiments introduce volumetric analysis
ECE1107.2	To explain redox titrations
ECE1107.3	To explain complex metric titrations by using EDTA method
ECE1107.4	To explain the instrumental methods
ECE1107.5	To explain conduct metric titrations
ECE1107.6	To acquire the knowledge on potentiometric titrations

Course Name Programming for Problem Solving Using C Lab	
Course Code:**ECE1108**	
ECE1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
ECE1108.2	Acquire knowledge about the basic concept of writing a program
ECE1108.3	Role of constants, variables, identifiers, operators,
ECE**1108.4**	Explain type conversion and other building blocks of C Language. •
ECE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
ECE**1108.6**	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: ECE**1201**	
ECE**1201.1**	Calculate the root of algebraic and transiently equation
ECE**1201.2**	Compute inter polating polynomial for the given data
ECE**1201.3**	Solve ordinary differential equation numerically using Euler's and R-K method
ECE**1201.4**	Find Fourier series for certain functions
ECE**1201.5**	Find Fourier transform for certain functions
ECE**1201.6**	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: ECE**1202**	
ECE**1202.1**	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1202.2**	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1202.3**	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
ECE**1202.4**	To explore the Nuclear Power as a reliable source required to run industries
ECE**1202.5**	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
ECE**1202.6**	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Name: Object oriented programming through java	
Course Code: ECE**1203**	
ECE**1203.1**	Show competence in the use of the Java programming language in the development of small to medium- sized application programs that demonstrate professionally acceptable coding
ECE**1203.2**	Illustrate the basic principles of the object-oriented programming
ECE**1203.3**	Demonstrate an introductory understanding of graphical user interfaces, multithreaded programming, and event-driven programming.
ECE**1203.4**	the analytical skills of object oriented programming
ECE**1203.5**	Overall development of problem solving and critical analysis
ECE**1203.6**	Formal introduction to Java programming language

Course Name: Network Analysis	
Course Code: ECE**1204**	
ECE**1204.1**	To gain the knowledge on basic network elements.
ECE**1204.2**	Will analyze the RLC circuit's behaviour in detailed.
ECE**1204.3**	Analyze the performance of periodic waveforms.
ECE**1204.4**	Gain the knowledge in characteristics of two port network parameters (Z,Y, ABCD,h&g).
ECE**1204.5**	Analyze the filter design concepts in real world applications.
ECE**1204.6**	To understand the properties of LC networks and filters.

Course Name: Basic Electrical Engineering	
Course Code: ECE**1205**	
ECE**1205.1**	To learn the basic principles of electrical circuital law's and analysis of networks.
ECE**1205.2**	To understand principle of operation and construction details of DC machines.
ECE**1205.3**	To understand principle of operation and construction details of transformers,
ECE**1205.4**	To explain alternator and 3- Phase induction motor.
ECE**1205.5**	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
ECE**1205.6**	To learn operation of PNP and NPN transistors and various amplifiers.

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Course Name: Electronic workshop	
Course Code: ECE**1206**	
ECE**1206.1**	To Understand the basic components and peripherals of a computer.
ECE**1206.2**	To become familiar in configuring a system
ECE**1206.3**	To Learn the usage of productivity tools
ECE**1206.4**	To Acquire knowledge about the netiquette.
ECE**1206.5**	To Acquire knowledge about cyber hygiene
ECE**1206.6**	To Get hands on experience in trouble shooting a system

Course Name: **Engineering physics lab**	
Course Code: ECE**1207**	
ECE**1207.1**	To provide an experimental foundation for the theoretical concepts introduced in the lectures
ECE**1207.2**	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ECE**1207.3**	To help students understand the role of direct observation in physics
ECE**1207.4**	To distinguish between interference based on theory and experiments
ECE**1207.5**	To introduce the concepts and techniques which have wide applications in experimental science
ECE**1207.6**	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name Basic Electrical Engineering Lab	
Course Code: ECE**1208**	
ECE**1208.1**	To plot the magnetizing characteristics of DC shunt generator and understand the mechanism of self-excitation
ECE**1208.2**	To control the speed of DCmotors.
ECE**1208.3**	To determine and predetermine the performance of DCmachines.
ECE**1208.4**	To predetermine the efficiency and regulation of transformers and assess their performance.
ECE**1208.5**	To analyse performance of three phase induction motor.
ECE**1208.6**	To understand the significance of regulation of an alternators using synchronous impedance method.

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Course Name: **Environmental studies**	
Course Code: ECE**1109**	
ECE**1209.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
ECE**1209.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
ECE**1209.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
ECE**1209.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
ECE**1209.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
ECE**1209.6**	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CS1101**	
CS1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
CS1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
CS1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
CS1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
CS1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
CS1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **CS1102**	
CS1102.1	To utilize mean value theorems to real life problems
CS1102.2	To solve the differential equations related to various engineering fields
CS1102.3	To familiarize with functions Of several variables which is useful in optimization
CS1102.4	To familiarize with functions of several variables which is useful in optimization
CS1102.5	To apply double integration techniques in evaluating areas bounded by region
CS1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Applied physics**	
Course Code: **CS1103**	
CS1103.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CS1103.4	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.5	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.6	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.

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Course Name: Programming for Problem Solving using C	
Course Code: **CS1104**	
CS1104.1	Understand the basic terminology used in computer programming
CS1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program
CS1104.3	Design programs involving decision structures, loops and functions.
CS1104.4	Explain the difference between call by value and call by reference
CS1104.5	Understand the dynamics of memory by the use of pointers
CS1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Computer Engineering Workshop	
Course Code: **CS1105**	
CS1105.1	Assemble and disassemble components of a PC
CS1105.2	Construct a fully functional virtual machine, Summarize various Linux operating system
CS1105.3	Recognize characters & extract text from scanned images, Create audio files and podcasts
CS1105.4	Explain the usage of Internet for productivity and self paced lifelong learning
CS1105.5	Describe about Compression, Multimedia and Antivirus tools
CS1105.6	Demonstrate Office Tools such as Word processors, Spreadsheets and Presentation tools

Course Name: **English communication skills lab**	
Course Code: **CS1106**	
CS1106.1	To impart the significance of spoken English
CS1106.2	To enhance the general conversation skills through different socio context
CS1106.3	To acquire the ability to use functional English
CS1106.4	To instil confidence by practising pronunciation and accent
CS1106.5	To identifying the barriers of communication
CS1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied physics lab**	
Course Code: **CS1107**	
CS1107.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CS1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CS1107.3	To help students understand the role of direct observation in physics
CS1107.4	To distinguish between interference based on theory and experiments

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CS1107.5	To introduce the concepts and techniques which have wide applications in experimental science
CS1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Computer programming lab**	
Course Code: **CS1108**	
CS1108.1	Understand the basic concept of C Programming, and its different modules that include conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CS1108.2	Acquire knowledge about the basic concept of writing a program
CS1108.3	Role of constants, variables, identifiers, operators,
CS1108.4	Explain type conversion and other building blocks of C Language. •
CS1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CS1108.6	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech I ISEM

Course Name: Mathematics – II	
Course Code: **CS1201**	
CS1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
CS1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
CS1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithms
CS1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals
CS1201.5	apply numerical integral techniques to different Engineering problems
CS1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: Applied Chemistry	
Course Code: **CS1202**	
CS1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers
CS1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
CS1202.3	Synthesize nonmaterials for modern advances of engineering technology.

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CS1202.4	Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
CS1202.5	Analyze the principles of different analytical instruments and their applications.
CS1202.6	Obtain the knowledge of computational chemistry and molecular machines

Course Name: COMPUTER ORGANIZATION	
Course Code: **CS1203**	
CS1203.1	Demonstrate and understanding of the design of the functional units of a digital computer system
CS1203.2	Relate Postulates of Boolean algebra and minimize combinational functions
CS1203.3	Recognize and manipulate representations of numbers stored in digital computers
CS1203.4	Design and analyze combinational and sequential circuits
CS1203.5	Recall the internal organization of computers, CPU, memory unit and Input/Outputs and the relations between its main components
CS1203.6	Solve elementary problems by assembly language programming

Course Name: PYTHON PROGRAMMING	
Course Code: **CS1204**	
CS1204.1	Develop essential programming skills in computer programming concepts like data types, containers
CS1204.2	Apply the basics of programming in the Python language
CS1204.3	Solve coding tasks related conditional execution, loops
CS1204.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CS1204.5	To be familiarized with general computer programming concepts like conditional execution, loops & functions
CS1204.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: DATA STRUCTURES	
Course Code: **CS1205**	
CS1205.1	Summarize the properties, interfaces, and behaviours of basic abstract data types
CS1205.2	Discuss the computational efficiency of the principal algorithms for sorting & searching
CS1205.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
CS1205.4	Demonstrate different methods for traversing trees
CS1205.5	Emphasize the importance of data structures in developing and implementing efficient algorithms
CS1205.6	Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

Course Name: APPLIED CHEMISTRY LAB	
Course Code: **CS1206**	
CS1206.1	To explain The experiments introduce volumetric analysis
CS1206.2	To explain redox titrations
CS1206.3	To explain complex metric titrations by using EDTA method
CS1206.4	To explain the instrumental methods
CS1206.5	To explain conduct metric titrations
CS1206.6	To acquire the knowledge on potentiometric titrations

Course Name: PYTHON PROGRAMMING LAB	
Course Code: **CS1207**	
CS1207.1	Develop essential programming skills in computer programming concepts like data types, containers
CS1207.2	Apply the basics of programming in the Python language
CS1207.3	Solve coding tasks related conditional execution, loops
CS1207.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CS1207.5	To be familiarized with general computer programming concepts like conditional execution, loops &functions
CS1207.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: DATA STRUCTURES LAB	
Course Code: **CS1208**	
CS1208.1	Use basic data structures such as arrays and linked list.
CS1208.2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
CS1208.3	Use various searching and sorting algorithms.
CS1208.4	Demonstrate the different data structures implementation.
CS1208.5	Write C program that implement stack using arrays
CS1208.6	Write a recursive C program for traversing a binary tree in preorder, in order and post order.

Course Name: ENVIRONMENT SCIENCE	
Course Code: **CS1209**	
CS1209.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CS1209.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CS1209.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CS1209.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CS1209.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CS1209.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes
Regulation-R20 A.Y:2022-2023

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **CSG1101**	
CSG1101.1	To develop human resources and serve the society through different ways
CSG1101.2	To educate and adopt the road safety measures by means transport
CSG1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
CSG1101.4	Imparting the importance of alternative energy sources to the depleting sources
CSG1101.5	Realization on how to preserve the extension of animal life
CSG1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **CSG1102**	
CSG1102.1	Solve the linier differential equations of first order
CSG1102.2	Solve the linier differential equations of second and higher order
CSG1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
CSG1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
CSG1102.5	Solve partial differential equations of first order
CSG1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **CSG1103**	
CSG1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
CSG1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
CSG1103.3	Identify the reasons of corrosion and controlling methods of corrosion
CSG1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
CSG1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
CSG1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving using C

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Course Code: **CSG1104**	
CSG1104.1	Understand the basic terminology used in computer programming
CSG1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
CSG1104.3	Design programs involving decision structures, loops and functions.
CSG1104.4	Explain the difference between call by value and call by reference
CSG1104.5	Understand the dynamics of memory by the use of pointers
CSG1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Design Drawing and Visualization	
Course Code: **CSG1105**	
CSG1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CSG1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
CSG1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
CSG1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
CSG1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
CSGS1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **CSG1106**	
CSG1106.1	To impart the significance of spoken English
CSG1106.2	To enhance the general conversation skills through different socio context
CSG1106.3	To acquire the ability to use functional English
CSG1106.4	To instil confidence by practising pronunciation and accent
CSG1106.5	To identifying the barriers of communication
CSG1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: **CSG1107**	
CSG1107.1	To explain The experiments introduce volumetric analysis
CSG1107.2	To explain redox titrations
CSG1107.3	To explain complex metric titrations by using EDTA method
CSG1107.4	To explain the instrumental methods
CSG1107.5	To explain conduct metric titrations
CSG1107.6	To acquire the knowledge on potentiometric titrations

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Course Name Programming for Problem Solving Using C Lab	
Course Code:**CSG1108**	
CSG1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CSG1108.2	Acquire knowledge about the basic concept of writing a program
CSG1108.3	Role of constants, variables, identifiers, operators,
CSG1108.4	Explain type conversion and other building blocks of C Language. •
CSG1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CSG1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: **Environmental studies**	
Course Code: **CSG1109**	
CSG1109.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CSG1109.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CSG1109.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CSG1109.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CSG1109.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CSG1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: **CSG1201**	
CSG1201.1	Calculate the root of algebraic and transiently equation
CSG1201.2	Compute inter polating polynomial for the given data
CSG1201.3	Solve ordinary differential equation numerically using Euler's and R-K method
CSG1201.4	Find Fourier series for certain functions
CSG1201.5	Find Fourier transform for certain functions
CSG1201.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: **CSG1202**	
CSG1202.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CSG1202.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CSG1202.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CSG1202.4	To explore the Nuclear Power as a reliable source required to run industries
CSG1202.5	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
CSG1202.6	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Name: Digital Logic Design	
Course Code: **CSG1203**	
CSG1203.1	An ability to define different number systems, binary addition and subtraction, 2's Complement representation and operations with this representation.
CSG1203.2	An ability to understand the different switching algebra theorems and apply them for

	Logic functions.
CSG1203.3	An ability to define the Karnaugh map for a few variables and perform an algorithmic Reduction of logic functions.
CSG1203.4	Students will be able to design various logic gates starting from simple ordinary gates
CSG1203.5	Explain complex programmable logic devices & arrays
CSG1203.6	Students will be able to design various sequential circuits starting from flip-flop to Registers and counters.

Course Name: PYTHON PROGRAMMING	
Course Code: **CSG1204**	
CSG1204.1	Develop essential programming skills in computer programming concepts like data types, containers
CSG1204.2	Apply the basics of programming in the Python language
CSG1204.3	Solve coding tasks related conditional execution, loops
CSG1204.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CSG1204.5	To be familiarized with general computer programming concepts like conditional execution, loops & functions
CSG1204.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: DATA STRUCTURES	
Course Code: **CSG1205**	
CSG1205.1	Summarize the properties, interfaces, and behaviours of basic abstract data types
CSG1205.2	Discuss the computational efficiency of the principal algorithms for sorting & searching
CSG1205.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
CSG1205.4	Demonstrate different methods for traversing trees
CSG1205.5	Emphasize the importance of data structures in developing and implementing efficient algorithms
CSG1205.6	Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

Course Name: PYTHON PROGRAMMING LAB

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Course Code: **CSG1206**	
CSG1206.1	Develop essential programming skills in computer programming concepts like data types, containers
CSG1206.2	Apply the basics of programming in the Python language
CSG1206.3	Solve coding tasks related conditional execution, loops
CSG1206.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CSG1206.5	To be familiarized with general computer programming concepts like conditional execution, loops &functions
CSG1206.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: **Engineering physics lab**	
Course Code: **CSG1207**	
CSG1207.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CSG1207.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CSG1207.3	To help students understand the role of direct observation in physics
CSG1207.4	To distinguish between interference based on theory and experiments
CSG1207.5	To introduce the concepts and techniques which have wide applications in experimental science
CSG1207.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name DATA STRUCTURES LAB	
Course Code: **CSG1208**	
CSG1208.1	Use basic data structures such as arrays and linked list.
CSG1208.2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
CSG1208.3	Use various searching and sorting algorithms.
CSG1208.4	Demonstrate the different data structures implementation.
CSG1208.5	Write C program that implement stack using arrays
CSG1208.6	Write a recursive C program for traversing a binary tree in preorder, in order and post order.

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Course Name: **Environmental studies**	
Course Code: **CSG1109**	
CSG1209.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CSG1209.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CSG1209.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CSG1209.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CSG1209.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CSG1209.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

<u>Regulation-R20 A.Y:2022-2023</u>

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **AI&ML1101**	
AI&ML1101.1	To develop human resources and serve the society through different ways
AI&ML1101.2	To educate and adopt the road safety measures by means transport
AI&ML1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
AI&ML1101.4	Imparting the importance of alternative energy sources to the depleting sources
AI&ML1101.5	Realization on how to preserve the extension of animal life
AI&ML1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **AI&ML1102**	
AI&ML1102.1	Solve the linier differential equations of first order
AI&ML1102.2	Solve the linier differential equations of second and higher order
AI&ML1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
AI&ML1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
AI&ML1102.5	Solve partial differential equations of first order
AI&ML1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **AI&ML1103**	
AI&ML1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
AI&ML1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
AI&ML1103.3	Identify the reasons of corrosion and controlling methods of corrosion
AI&ML1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
AI&ML1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
AI&ML1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving using C

Course Code: **AI&ML1104**	
AI&ML1104.1	Understand the basic terminology used in computer programming
AI&ML1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
AI&ML1104.3	Design programs involving decision structures, loops and functions.
AI&ML1104.4	Explain the difference between call by value and call by reference
AI&ML1104.5	Understand the dynamics of memory by the use of pointers
AI&ML1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Computer Engineering Workshop	
Course Code: **AI&ML1105**	
AI&ML1105.1	Explain the internal parts of a computer, peripherals, I/O ports, connecting cables
AI&ML1105.2	Demonstrate basic command line interface commands on Linux
AI&ML1105.3	Teach the usage of Internet for productivity and self paced lifelong learning
AI&ML1105.4	Describe about Compression, Multimedia and Antivirus tools
AI&ML1105.5	Demonstrate Office Tools such as Word processors, Spreadsheets and Presentation tools
AI&MLS1105.6	Recognize characters & extract text from scanned images, Create audio files and podcasts

Course Name: **English communication skills lab**	
Course Code: **AI&ML1106**	
AI&ML1106.1	To impart the significance of spoken English
AI&ML1106.2	To enhance the general conversation skills through different socio context
AI&ML1106.3	To acquire the ability to use functional English
AI&ML1106.4	To instil confidence by practising pronunciation and accent
AI&ML1106.5	To identifying the barriers of communication
AI&ML1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: **AI&ML1107**	
AI&ML1107.1	To explain The experiments introduce volumetric analysis
AI&ML1107.2	To explain redox titrations
AI&ML1107.3	To explain complex metric titrations by using EDTA method
AI&ML1107.4	To explain the instrumental methods
AI&ML1107.5	To explain conduct metric titrations
AI&ML1107.6	To acquire the knowledge on potentiometric titrations

Course Name Programming for Problem Solving Using C Lab	
Course Code:**AI&ML1108**	
AI&ML1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AI&ML1108.2	Acquire knowledge about the basic concept of writing a program
AI&ML1108.3	Role of constants, variables, identifiers, operators,
AI&ML1108.4	Explain type conversion and other building blocks of C Language. •
AI&ML1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
AI&ML1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: **Environmental studies**	
Course Code: **AI&ML1109**	
AI&ML1109.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AI&ML1109.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AI&ML1109.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AI&ML1109.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AI&ML1109.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AI&ML1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: **AI&ML1201**	
AI&ML1201.1	Calculate the root of algebraic and transiently equation
AI&ML1201.2	Compute inter polating polynomial for the given data
AI&ML1201.3	Solve ordinary differential equation numerically using Euler's and R-K method
AI&ML1201.4	Find Fourier series for certain functions
AI&ML1201.5	Find Fourier transform for certain functions
AI&ML1201.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: **AI&ML1202**	
AI&ML1202.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
AI&ML1202.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
AI&ML1202.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
AI&ML1202.4	To explore the Nuclear Power as a reliable source required to run industries
AI&ML1202.5	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
AI&ML1202.6	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Name: Digital Logic Design	
Course Code: **AI&ML1203**	
AI&ML1203.1	An ability to define different number systems, binary addition and subtraction, 2's Complement representation and operations with this representation.
AI&ML1203.2	An ability to understand the different switching algebra theorems and apply them for Logic functions.
AI&ML1203.3	An ability to define the Karnaugh map for a few variables and perform an algorithmic

	Reduction of logic functions.
AI&ML1203.4	Students will be able to design various logic gates starting from simple ordinary gates
AI&ML1203.5	Explain complex programmable logic devices & arrays
AI&ML1203.6	Students will be able to design various sequential circuits starting from flip-flop to Registers and counters.

Course Name: PYTHON PROGRAMMING	
Course Code: **AI&ML1204**	
AI&ML1204.1	Develop essential programming skills in computer programming concepts like data types, containers
AI&ML1204.2	Apply the basics of programming in the Python language
AI&ML1204.3	Solve coding tasks related conditional execution, loops
AI&ML1204.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
AI&ML1204.5	To be familiarized with general computer programming concepts like conditional execution, loops & functions
AI&ML1204.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: DATA STRUCTURES	
Course Code: **AI&ML1205**	
AI&ML1205.1	Summarize the properties, interfaces, and behaviours of basic abstract data types
AI&ML1205.2	Discuss the computational efficiency of the principal algorithms for sorting & searching
AI&ML1205.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
AI&ML1205.4	Demonstrate different methods for traversing trees
AI&ML1205.5	Emphasize the importance of data structures in developing and implementing efficient algorithms
AI&ML1205.6	Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

Course Name: PYTHON PROGRAMMING LAB	
Course Code: **AI&ML1206**	
AI&ML1206.1	Develop essential programming skills in computer programming concepts like data types, containers

AI&ML1206.2	Apply the basics of programming in the Python language
AI&ML1206.3	Solve coding tasks related conditional execution, loops
AI&ML1206.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
AI&ML1206.5	To be familiarized with general computer programming concepts like conditional execution, loops &functions
AI&ML1206.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: **Engineering physics lab**	
Course Code: **AI&ML1207**	
AI&ML1207.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AI&ML1207.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
AI&ML1207.3	To help students understand the role of direct observation in physics
AI&ML1207.4	To distinguish between interference based on theory and experiments
AI&ML1207.5	To introduce the concepts and techniques which have wide applications in experimental science
AI&ML1207.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name DATA STRUCTURES LAB	
Course Code: **AI&ML1208**	
AI&ML1208.1	Use basic data structures such as arrays and linked list.
AI&ML1208.2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
AI&ML1208.3	Use various searching and sorting algorithms.
AI&ML1208.4	Demonstrate the different data structures implementation.
AI&ML1208.5	Write C program that implement stack using arrays
AI&ML1208.6	Write a recursive C program for traversing a binary tree in pre order, in order and post order.

Course Name: Constitution of India	
Course Code: **AI&ML1109**	

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AI&ML1209.1	To Enable the student to understand the importance of constitution
AI&ML1209.2	To understand the structure of executive, legislature and judiciary
AI&ML1209.3	To understand philosophy of fundamental rights and duties
AI&ML1209.4	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.
AI&ML1209.5	To understand auditor general of India and election commission of India
AI&ML1209.6	To understand the central and state relation financial and administrative.

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes
Regulation R20   A.Y:2022-2023

Year/Sem: I B.Tech I SEM

Course Name: **M-I**	
Course Code: **AME1101**	
AME1101.1	Solve the linier differential equations of first order
AME1101.2	Solve the linier differential equations of second and higher order
AME1101.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
AME1101.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
AME1101.5	Solve partial differential equations of first order
AME1101.6	Solve second and higher order differential equations

Course Name: Engineering Chemistry	
Course Code: **AME1102**	
AME1102.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
AME1102.2	Outline the basics for the construction of electrochemical cells, batteries and fuel cells. Understand the mechanism of corrosion and how it can be prevented.
AME1102.3	Express the increase in demand as wide variety of advanced materials are introduced; which have excellent engineering properties
AME1102.4	discuss the materials used in major industries like steel industry, metallurgical industries and construction industries and electrical equipment manufacturing industries. Lubrication is also summarized.
AME1102.5	Relate the need of fuels as a source of energy to any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence introduced
AME1102.6	Explain the importance and usage of water as basic material in almost all the industries; interpret drawbacks of steam boilers and also how portable water is supplied for drinking purposes.

Course Name: Engineering Mechanics	
Course Code: **AME1103**	
AME1103.1	Explain the concepts of force and friction, direction and its applications
AME1103.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
AME1103.3	To explain concepts of centre of gravity
AME1103.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
AME1103.5	To explain to motion in straight line and in curvilinear paths, its velocity and

	acceleration computation and methods of representing plane motion.
AME1103.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: : Programming for Problem Solving Using C	
Course Code: **AME1104**	
AME1104.1	Understand the basic terminology used in computer programming
AME1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
AME1104.3	Design programs involving decision structures, loops and functions.
AME1104.4	Explain the difference between call by value and call by reference
AME1104.5	Understand the dynamics of memory by the use of pointers
AME1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Communicative English	
Course Code: **AME1105**	
AME1105.1	To describe the education system that aims to enhance wisdom
AME1105.2	To promote peaceful existence and universal harmony
AME1105.3	To analyse the symptoms of cultural shock and after math consequences
AME1105.4	To provide the awareness of taboos of cultural tradition
AME1105.5	To educate the affect of environmental changes that leads to several health disorders
AME1105.6	To enhance Advancement of technology for the betterment of human life

Course Name: English Lab	
Course Code: **AME1106**	
AME1106.1	To build the initial ability of presenting their views in debating
AME1106.2	To convey the deas through Group Discussion
AME1106.3	To plan & prepare for oral presentation
AME1106.4	To develop the ability of how to face an interview
AME1106.5	To create the capability of writing skills ie., Emails &Cvs
AME1106.6	To utilise appropriate use of idiomatic Expressions

Course Name: Engineering Chemistry Laboratory	
Course Code: **AME1107**	
AME1107.1	To explain The experiments introduce volumetric analysis
AME1107.2	To explain redox titrations
AME1107.3	To explain complex metric titrations by using EDTA method
AME1107.4	To explain the instrumental methods

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AME1107.5	To explain conduct metric titrations
AME1107.6	To acquire the knowledge on potentiometric titrations

Course Name: Programming for problem Solving Using C Lab	
Course Code: **AME1108**	
AME1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AME1108.2	Acquire knowledge about the basic concept of writing a program
AME1108.3	Role of constants, variables, identifiers, operators,
AME1108.4	Explain type conversion and other building blocks of C Language. •
AME1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
AME1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: Environmental Science	
Course Code: **AME1109**	
AME1109.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AME1109.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AME1109.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AME1109.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AME1109.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AME1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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Year/Sem: I B.Tech I ISEM

Course Name: Mathematics – II	
Course Code: **AME1201**	
AME1201.1	Calculate the root of algebraic and transiently equation
AME1201.2	Compute inter polating polynomial for the given data
AME1201.3	Solve ordinary differential equation numerically using Euler's and R-K method
AME1201.4	Find Fourier series for certain functions
AME1201.5	Find Fourier transform for certain functions
AME1201.6	Identify and classify and solve the different types of partial differential equations

Course Name: : Engineering Physics	
Course Code: **AME1202**	
AME1202.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
AME1202.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
AME1202.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
AME1202.4	To explore the Nuclear Power as a reliable source required to run industries
AME1202.5	To impart the knowledge of materials with characteristic utility in appliances.
AME1202.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

Course Name: Metallurgy & Materials Science	
Course Code: **AME1203**	
AME1203.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems.
AME1203.2	Study the behaviour of ferrous and non ferrous metals and alloys and their

	application in different domains
AME1203.3	Able to understand the effect of heat treatment, addition of alloying elements on Properties of ferrous metals.
AME1203.4	Grasp the methods of making of metal powders and applications of powder metallurgy
AME1203.5	Comprehend the properties and applications of ceramic,
AME1203.6	Explain composites and other advanced methods.

Course Name: **BEEE**	
Course Code: **AME1204**	
AME1204.1	To learn the basic principles of electrical circuital law's and analysis of networks.
AME1204.2	To understand principle of operation and construction details of DC machines.
AME1204.3	To understand principle of operation and construction details of transformers,
AME1204.4	To explain alternator and 3- Phase induction motor.
AME1204.5	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
AME1204.6	To learn operation of PNP and NPN transistors and various amplifiers.

Course Name: Engineering Graphics	
Course Code: **AME1205**	
AME1205.1	Student get exposed on working of sheet metal with help of development of surfaces
AME1205.2	Student understands how to know the hidden details of machine components with the help of sections and interpenetrations of solids
AME1205.3	Student shall exposed to modeling commands for generating 2D and 3D objects using computer aided drafting tools which are useful to create machine elements for computer aided analysis.
AME1205.4	The objective is to introduce various commands in AutoCAD to draw the geometric entities and to create 2D and 3D wire frame models.
AME1205.5	By going through this topic the student will be able to understand the paper-space environment thoroughly.
AME1205.6	The objective is to make the students create geometrical model of simple solids and machine parts and display the same as an Isometric, Orthographic or Perspective projection.

Course Name: Engineering Physics Laboratory	
Course Code: **AME1206**	

AME1206.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AME1206.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
AME1206.3	To help students understand the role of direct observation in physics
AME1206.4	To distinguish between interference based on theory and experiments
AME1206.5	To introduce the concepts and techniques which have wide applications in experimental science
AME1206.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Engineering Workshop & IT Workshop Laboratory	
Course Code: **AME1207**	
AME1207.1	To Understand the basic components and peripherals of a computer.
AME1207.2	To become familiar in configuring a system
AME1207.3	To Learn the usage of productivity tools
AME1207.4	To Acquire knowledge about the netiquette.
AME1207.5	To Acquire knowledge about cyber hygiene
AME1207.6	To Get hands on experience in trouble shooting a system

Course Name: Basic Electrical & Electronics Engineering Lab	
Course Code: **AME1208**	
AME1208.1	To predetermine the efficiency of dc shunt machine using Swinburne's test. To predetermine the efficiency and regulation of 1-phase transformer with O.C and S.C tests.
AME1208.2	To obtain performance characteristics of DC shunt motor &3-phase induction motor.
AME1208.3	To find out regulation of an alternator with synchronous impedance method.
AME1208.4	To control speed of dc shunt motor using Armature voltage and Field flux control methods.
AME1208.5	To find out the characteristics of PN junction diode & transistor
AME1208.6	To determine the ripple factor of half wave & full wave rectifiers.

Course Name: Constitution of India	
Course Code: **AME1209**	
AME1209.1	To Enable the student to understand the importance of constitution
AME1209.2	To understand the structure of executive, legislature and judiciary
AME1209.3	To understand philosophy of fundamental rights and duties
AME1209.4	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.

AME1209.5	To understand auditor general of India and election commission of India
AME1209.6	To understand the central and state relation financial and administrative.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2022-2023

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **AG1101**	
AG1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
AG1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
AG1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
AG1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
AG1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
AG1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **AG1102**	
AG1102.1	To utilize mean value theorems to real life problems
AG1102.2	To solve the differential equations related to various engineering fields
AG1102.3	To familiarize with functions ofseveral variables which is useful in optimization
AG1102.4	To familiarize with functions of several variables which is useful in optimization
AG1102.5	To apply double integration techniques in evaluating areas bounded by region
AG1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: **AG1103**	
AG1103.1	Explain the need of coherent sources and the conditions for sustained interference
AG1103.2	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
AG1103.3	Explain the concept of dielectric constant
AG1103.4	Explain polarization in dielectric materials
AG1103.5	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
AG1103.6	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

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Course Name: Principles of Soil Science and Agronomy	
Course Code: **AG1104**	
AG1104.1	To impart Knowledge on Soil genesis, properties etc
AG1104.2	to enable students to design implements in related to soil, soil conservation, irrigation and drainage applications.
AG1104.3	to enable students to understand farming principles, to grow agricultural field and orchard crop and farming practices
AG1104.4	Irrigation water: Quality of irrigation water
AG1104.5	Explain Biotic and A biotic factors, Crop seasons Kharif, Rabi and summer seasons
AG1104.6	Explain Tillage and tilt, Objective of tillage

Course Name: Engineering Workshop and IT Workshop	
Course Code: **AG1105**	
AG1105.1	Assemble and disassemble components of a PC
AG1105.2	Construct a fully functional virtual machine, Summarize various Linux operating system
AG1105.3	Recognize characters & extract text from scanned images, Create audio files and podcasts
AG1105.4	Explain the usage of Internet for productivity and self paced lifelong learning
AG1105.5	Describe about Compression, Multimedia and Antivirus tools
AG1105.6	Demonstrate Office Tools such as Word processors, Spreadsheets and Presentation tools

Course Name: **English communication skills lab**	
Course Code: **AG1106**	
AG1106.1	To impart the significance of spoken English
AG1106.2	To enhance the general conversation skills through different socio context
AG1106.3	To acquire the ability to use functional English
AG1106.4	To instil confidence by practising pronunciation and accent
AG1106.5	To identifying the barriers of communication
AG1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **AG1107**	
AG1107.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AG1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data

AG1107.3	To help students understand the role of direct observation in physics
AG1107.4	To distinguish between interference based on theory and experiments
AG1107.5	To introduce the concepts and techniques which have wide applications in experimental science
AG1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Soil Science and Agronomy Field Lab	
Course Code: **AG1108**	
AG1108.1	To impose the knowledge of student on soil genesis, soil farming process structure, soil organic matter and chemical operation, etc
AG1108.2	It is helpful to the student to design farm implement in relation to soil and to maintain in soil health
AG1108.3	It is fine to the students to know the analyst of irrigation water, based on quality suitable crops will be selected.
AG1108.4	To enable the students to grow suitable agricultural crops and orchard crops and all farming practices
AG1108.5	To understand the soil, crop and machine specific parameters for design and development of forms machinery equipment & implements
AG1108.6	Students will be acquainted with seed processing equipment, soil and water engineering activating for efficient water and land producing and upcoming organic farming activity

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **AG1201**	
AG1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
AG1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
AG1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
AG1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
AG1201.5	apply numerical integral techniques to different Engineering problems
AG1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: **AG1202**	

AG1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
AG1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
AG1202.3	Synthesize nanomaterial's for modern advances of engineering technology
AG1202.4	Summarize the techniques that detect and measure changes of state of reaction
AG1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
AG1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: **AG1203**	
AG1203.1	to be exposed to the concepts of force and friction , direction and its application
AG1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
AG1203.3	Discuss the concepts of centre of gravity
AG1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
AG1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
AG1203.6	Determine the concepts of work, energy and particle motion

Course Name: Programming for Problem Solving Using C	
Course Code: **AG1204**	
AG1204.1	Understand the basic terminology used in computer programming
AG1204.2	Explain, compile and debug programs in C language. Use different data types in a computer program
AG1204.3	Design programs involving decision structures, loops and functions.
AG1204.4	Explain the difference between call by value and call by reference
AG1204.5	Understand the dynamics of memory by the use of pointers
AG1204.6	Understand the dynamics of memory by the use of pointers

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Course Name: Engineering Drawing	
Course Code: **AG1205**	
AG1205.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
AG1205.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
AG1205.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
AG1205.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
AG1205.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
AG1205.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **AG1206**	
AG1206.1	The students entering into the professional course have practically very little exposure tolab classes
AG1206.2	The experiments introduce volumetric analysis
AG1206.3	Introduce redox titrations with different indicators
AG1206.4	Exposed to a few instrumental methods of chemical analysis.
AG1206.5	Understand the student is exposed to different methods of chemical analysis
AG1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

Course Name: Programming for Problem Solving Using C Lab	
Course Code: **AG1207**	
AG1207.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AG1207.2	Acquire knowledge about the basic concept of writing a program
AG1207.3	Role of constants, variables, identifiers, operators,
AG1207.4	Explain type conversion and other building blocks of C Language. •
AG1207.5	Use of conditional expressions and looping statements to solve problems

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	associated with conditions and repetitions.
AG1207.6	To explain Role of Functions involving the idea of modularity.

Course Name: Machine Drawing and Computer Graphics	
Course Code: **AG1208**	
AG1208.1	Practical skills on preparing manual drawings of model isometric view of the objects, machine components, assembly drawings of different joint
AG1208.2	Practice on drawing of missing views; principles of dimensions and their methods
AG1208.3	Practical skills on sectioning concepts and its drawing & mechanical part
AG1208.4	Practical skills on types of rivet heads & parts, square headed and hexagonal nuts, bolts, different types lock nuts, stands machine screw
AG1208.5	Practical skills on drawing of riveted joints and thread fasteners, computer graphics in agricultural engineering applications, practice of commands in Auto CAD software.
AG1208.6	Practical skills on 2-D drawings and projects in Auto CAD.

Course Name: **Environmental studies**	
Course Code: **AG1209**	
AG1209.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AG1209.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AG1209.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AG1209.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AG1209.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AG1209.6	Explain About environmental assessment and the stages involved in EIA and the

	environmental audit.

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CE1101**	
CE1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
CE1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
CE1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
CE1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
CE1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
CE1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **CE1102**	
CE1102.1	To utilize mean value theorems to real life problems
CE1102.2	To solve the differential equations related to various engineering fields
CE1102.3	To familiarize with functions ofseveral variables which is useful in optimization
CE1102.4	To familiarize with functions of several variables which is useful in optimization
CE1102.5	To apply double integration techniques in evaluating areas bounded by region
CE1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: CE**1103**	
CE**1103.1**	Explain the need of coherent sources and the conditions for sustained interference
CE**1103.2**	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
CE**1103.3**	Explain the concept of dielectric constant
CE**1103.4**	Explain polarization in dielectric materials
CE**1103.5**	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
CE**1103.6**	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

Course Name: ENGINEERING DRAWING	
Course Code: **CE1104**	
CE1104.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CE1104.2	: To introduce the students to use orthographic projections, projections of points & simple lines. To make the students draw the projections of the lines inclined to both the planes.
CE1104.3	The objective is to make the students draw the projections of the plane inclined to both the planes.
CE1104.4	The objective is to make the students draw the projections of the plane inclined to both the planes
CE1104.5	The objective is to make the students draw the projections of the various types of solids indifferent positions inclined to one of the planes
CE1104.6	: The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa

Course Name:ENGINEERING GEOLOGY	
Course Code: **CE1105**	
CE1105.1	Identify and classify the geological minerals Measure the rock strengths of various rocks
CE1105.2	Classify and measure the earthquake prone areas to practice the hazard zonation , monitor and measure the Landslides and subsidence zonation
CE1105.3	Prepares, analyses and interpret the Engineering Geologic maps
CE1105.4	Analyses the ground conditions through geophysical surveys
CE1105.5	Test the geological material and ground to check the suitability of civil engineering project construction
CE1105.6	Investigate the project site for mega/mini civil engineering projects. Site selection for mega engineering projects like Dams, Tunnels, disposal sites etc.

Course Name: ENGINEERING GEOLOGY LAB	
Course Code: **CE1106**	
CE1106.1	Identify Megascopic minerals & their properties
CE1106.2	Identify Megascopic rocks & their properties.
CE1106.3	Identify the site parameters such as contour, slope & aspect for topography
CE1106.4	Know the occurrence of materials using the strike & dip problems.
CE1106.5	To identify the topography of the site & material selection
CE1106.6	To identify the Megascopic types of Igneous, Sedimentary, Metamorphic rocks

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Course Name: **English communication skills lab**	
Course Code: **CE1107**	
CE1107.1	To impart the significance of spoken English
CE1107.2	To enhance the general conversation skills through different socio context
CE1107.3	To acquire the ability to use functional English
CE1107.4	To instil confidence by practising pronunciation and accent
CE1107.5	To identifying the barriers of communication
CE1107.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **CE1108**	
CE1108.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CE1108.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CE1108.3	To help students understand the role of direct observation in physics
CE1108.4	To distinguish between interference based on theory and experiments
CE1108.5	To introduce the concepts and techniques which have wide applications in experimental science
CE1108.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: BASICS OF CIVIL ENGG. (WORK SHOP) LAB	
Course Code:**CE1109**	
CE1109.1	Identify various components of a building and give lump-sum estimate
CE1109.2	Determine distances and irregular areas using conventional survey instruments like chain, tape, cross-staff and compass
CE1109.3	Identify different soils.
CE1109.4	Determine centre of gravity and moment of inertia of channel and I-sections.
CE1109.5	Install simple sanitary filling and find discharge/velocity in a water pipe line as density of water
CE1109.6	Know to the process of making cement mortar / concrete for nominal mix

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **CE1201**	
CE1201.1	develop the use of matrix algebra techniques that is needed by engineers for

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	practical applications
CE1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
CE1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
CE1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
CE1201.5	apply numerical integral techniques to different Engineering problems
CE1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: **CE1202**	
CE1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
CE1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
CE1202.3	Synthesize nanomaterial's for modern advances of engineering technology
CE1202.4	Summarize the techniques that detect and measure changes ofstate of reaction
CE1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
CE1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: **CE1203**	
CE1203.1	to be exposed to the concepts of force and friction , direction and its application
CE1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
CE1203.3	Discuss the concepts of centre of gravity
CE1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
CE1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
CE1203.6	Determine the concepts of work, energy and particle motion

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Course Name:PROGRAMMING FOR PROBLEM SOLVING USING C	
Course Code: **CE1204**	
CE1204.1	To write algorithms and to draw flowcharts for solving problems
CE1204.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
CE1204.3	To use different operators, data types and write programs that use two-way/ multi-way selection
CE1204.4	To select the best loop construct for a given problem
CE1204.5	To design and implement programs to analyse the different pointer applications
CE1204.6	To decompose a problem into functions and to develop modular reusable code

Course Name: BUILDING MATERIALS AND CONCRETE TECHNOLOGY	
Course Code: **CE1205**	
CE1205.1	Know various engineering properties of building construction materials and suggest their suitability
CE1205.2	Identify the functional role of ingredients of concrete and apply this knowledge to concrete mix design
CE1205.3	Acquire and apply fundamental knowledge in the fresh and hardened properties of concrete
CE1205.4	Explain Factors affecting workability, Measurement of workability by different tests
CE1205.5	Explain Properties of Hardened Concrete (Elasticity, Creep, Shrinkage, Poisson's ratio, Water absorption, Permeability, etc.
CE1205.6	Determine Non-destructive testing methods – Codal provisions for NDT

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **CE1206**	
CE1206.1	The students entering into the professional course have practically very little exposure tolab classes
CE1206.2	The experiments introduce volumetric analysis
CE1206.3	Introduce redox titrations with different indicators
CE1206.4	Exposed to a few instrumental methods of chemical analysis.
CE1206.5	Understand the student is exposed to different methods of chemical analysis
CE1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

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Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C LAB	
Course Code: **CE1207**	
CE1207.1	Gains Knowledge on various concepts of a C language
CE1207.2	Able to draw flowcharts and write algorithms.
CE1207.3	Able design and development of C problem solving skills
CE1207.4	Able design and development of C problem solving skills
CE1207.5	Able to design and develop modular programming skills
CE1207.6	Able to trace and debug a program

Course Name: BUILDING PLANNING AND COMPUTER AIDED BUILDING DRAWING	
Course Code: CE**1208**	
CE**1208.1**	Perform basic commands of any suitable CAD software to draw 2D drawings
CE**1208.2**	Interpret the conventions, signs and symbols from a given drawing
CE**1208.3**	Prepare line plans of residential and public buildings using principles of planning
CE**1208.4**	Prepare submission and working drawing from the given requirement for Load Bearing and Framed structures
CE**1208.5**	Draw developed plan, elevation, section, site plan from the given line plan for a load bearing
CE**1208.6**	Prepare submission drawing (including foundation plan) of the given framed structure residential building with stair case.

Course Name: ENVIRONMENTAL SCIENCE	
Course Code: CE**1209**	
CE**1209.1**	Overall understanding of the natural resources
CE**1209.2**	Basic understanding of the ecosystem and its diversity
CE**1209.3**	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
CE**1209.4**	Discuss about Solid Waste Management
CE**1209.5**	An understanding of the environmental impact of developmental activities

CE**1209.6**	Awareness on the social issues, environmental legislation and global treaties.

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Course Outcomes

Regulation R20 A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **EEE1101**	
EEE1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
EEE1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
EEE1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
EEE1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
EEE1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
EEE1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: EEE**1102**	
EEE**1102.1**	To utilize mean value theorems to real life problems
EEE**1102.2**	To solve the differential equations related to various engineering fields
EEE**1102.3**	To familiarize with functions Of several variables which is useful in optimization
EEE**1102.4**	To familiarize with functions of several variables which is useful in optimization
EEE**1102.5**	To apply double integration techniques in evaluating areas bounded by region
EEE**1102.6**	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: Mathematics-II	
Course Code: EEE**1103**	
EEE**1103.1**	develop the use of matrix algebra techniques that is needed by engineers for practical applications
EEE**1103.2**	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
EEE**1103.3**	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
EEE**1103.4**	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
EEE**1103.5**	apply numerical integral techniques to different Engineering problems
EEE**1103.6**	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

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Course Name: Programming for Problem Solving Using C	
Course Code: EEE**1104**	
EEE**1104.1**	Understand the basic terminology used in computer programming
EEE**1104.2**	Explain, compile and debug programs in C language. Use different data types in a computer program.
EEE**1104.3**	Design programs involving decision structures, loops and functions.
EEE**1104.4**	Explain the difference between call by value and call by reference
EEE**1104.5**	Understand the dynamics of memory by the use of pointers
EEE**1104.6**	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: EEE**1105**	
EEE**1105.1**	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
EEE**1105.2**	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
EEE**1105.3**	The objective is to make the students draw the projections of the lines inclined to both the planes.
EEE**1105.4**	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
EEE**1105.5**	The objective is to make the students draw the projections of the plane inclined to both the planes.
EEE**1105.6**	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: EEE**1106**	
EEE**1106.1**	To impart the significance of spoken English
EEE**1106.2**	To enhance the general conversation skills through different socio context
EEE**1106.3**	To acquire the ability to use functional English
EEE**1106.4**	To instil confidence by practising pronunciation and accent
EEE**1106.5**	To identifying the barriers of communication
EEE**1106.6**	To focus on common errors of English pronunciation as second language

Course Name: Electrical Engineering Workshop	
Course Code: EEE**1107**	
EEE**1107.1**	Explain the limitations, tolerances, safety aspects of electrical systems and wiring.
EEE**1107.2**	Select wires/cables and other accessories used in different types of wiring
EEE**1107.3**	Make simple lighting and power circuits

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EEE**1107.4**	Measure current, voltage and power in a circuit
EEE**1107.5**	To train the students in setting up simple wiring circuit
EEE**1107.6**	To impart methods in electrical machine wiring

Course Name: **Computer programming lab**	
Course Code:EEE**1108**	
EEE**1108.1**	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
EEE**1108.2**	Acquire knowledge about the basic concept of writing a program
EEE**1108.3**	Role of constants, variables, identifiers, operators,
EEE**1108.4**	Explain type conversion and other building blocks of C Language. •
EEE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
EEE**1108.6**	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name : Mathematics-III	
Course Code: **EEE1201**	
EEE1201.1	interpret the physical meaning of different operators such as gradient, curl and divergence
EEE1201.2	estimate the work done against a field, circulation and flux using vector calculus
EEE1201.3	apply the Laplace transform for solving differential equations
EEE1201.4	find or compute the Fourier series of periodic signals
EEE1201.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveform
EEE1201.6	identify solution methods for partial differential equations that model physical processes

Course Name: APPLIED PHYSICS	
Course Code: **EEE1202**	
EEE1202.1	Explain the need of coherent sources and the conditions for sustained interference
EEE1202.2	Understand the basic concepts of LASER light Sources
EEE1202.3	Explain the concept of dual nature of matter
EEE1202.4	Understand the significance of wave function
EEE1202.5	Explain the concept of dielectric constant and polarization in dielectric materials
EEE1202.6	Classify the energy bands of semiconductors

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Course Name: Data Structures Through C	
Course Code: **EEE1203**	
EEE1203.1	To explain data structures concepts with arrays, stacks, queues.
EEE1203.2	To understand Linked lists for stacks, queues and for other applications
EEE1203.3	Determine the traversal methods in the Trees
EEE1203.4	Discuss various algorithms available for the graphs
EEE1203.5	To understand sorting and searching in the data ret retrieval applications
EEE1203.6	Explain Traversal methods and operations.

Course Name: ELECTRICAL CIRCUIT ANALYSIS -I	
Course Code: **EEE1204**	
EEE1204.1	To study the concepts of passive elements, types of sources and various network reduction techniques.
EEE1204.2	To understand the applications of network topology to electrical circuits.
EEE1204.3	To study the concept of magnetic coupled circuit
EEE1204.4	To understand the behaviour of RLC networks for sinusoidal excitations
EEE1204.5	To study the performance of R-L, R-C and R-L-C circuits with variation of one of the parameters and to understand the concept of resonance.
EEE1204.6	To understand the applications of network theorems for analysis of electrical networks

Course Name: BASIC CIVIL AND MECHANICAL ENGINEERING	
Course Code: **EEE1205**	
EEE1205.1	Apply Shear force diagram & Bending moment diagram principles for Cantilever and Simply supported beams.
EEE1205.2	Apply concepts of Rosette analysis for strain measurement
EEE1205.3	Analyse the characteristics of common building materials.
EEE1205.4	To familiarize the sources of energy, power plant economics and environmental aspects
EEE1205.5	Compare the working characteristics of Internal Combustion engines.
EEE1205.6	Compare the differences between boiler mountings and accessories.

Course Name: APPLIED PHYSICS LAB	

Course Code: **EEE1206**	
EEE1206.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
EEE1206.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
EEE1206.3	To help students understand the role of direct observation in physics
EEE1206.4	To distinguish between interference based on theory and experiments
EEE1206.5	To introduce the concepts and techniques which have wide applications in experimental science
EEE1206.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: BASIC CIVIL AND MECHANICAL ENGINEERING LAB	
Course Code: **EEE1207**	
EEE1207.1	Solve to arrive at finding constant speed and variable speed on IC engines and interpret their performance
EEE1207.2	Estimate energy distribution by conducting heat balance test on IC engines
EEE1207.3	Explain procedure for standardization of experiments.
EEE1207.4	Determine flow discharge measuring device used in pipes channels and tanks
EEE1207.5	Determine fluid and flow properties.
EEE1207.6	Solve for drag coefficents

Course Name: DATA STRUCTURES THROUGH C LAB	
Course Code: **EEE1208**	
EEE1208.1	Be able to design and analyze the time and space efficiency of the data structure
EEE1208.2	Be capable to identity the appropriate data structure for given problem
EEE1208.3	Have practical knowledge on the applications of data structures
EEE1208.4	To develop skills to design and analyze simple linear and non linear data structures
EEE1208.5	To strengthen the ability to the students to identify and apply the suitable data structure for the given real world problem
EEE1208.6	To gain knowledge in practical applications of data structures

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Course Name: Constitution of India	
Course Code: EEE**1209**	
EEE**1209.1**	To Enable the student to understand the importance of constitution
EEE**1209.2**	To understand the structure of executive, legislature and judiciary
EEE**1209.3**	To understand philosophy of fundamental rights and duties
EEE**1209.4**	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.
EEE**1209.5**	To understand auditor general of India and election commission of India
EEE**1209.6**	To understand the central and state relation financial and administrative.

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes
Regulation R20   A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **ME1101**	
ME1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
ME1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
ME1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
ME1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
ME1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
ME1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **ME1102**	
ME1102.1	To utilize mean value theorems to real life problems
ME1102.2	To solve the differential equations related to various engineering fields
ME1102.3	To familiarize with functions ofseveral variables which is useful in optimization
ME1102.4	To familiarize with functions of several variables which is useful in optimization
ME1102.5	To apply double integration techniques in evaluating areas bounded by region
ME1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: **ME1103**	
ME1103.1	Explain the need of coherent sources and the conditions for sustained interference
ME1103.2	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
ME1103.3	Explain the concept of dielectric constant
ME1103.4	Explain polarization in dielectric materials
ME1103.5	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
ME1103.6	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

Course Name: ENGINEERING DRAWING	
Course Code: **ME1104**	
ME1104.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ME1104.2	: To introduce the students to use orthographic projections, projections of points & simple lines. To make the students draw the projections of the lines inclined to both the planes.
ME1104.3	The objective is to make the students draw the projections of the plane inclined to both the planes.
ME1104.4	The objective is to make the students draw the projections of the plane inclined to both the planes
ME1104.5	The objective is to make the students draw the projections of the various types of solids indifferent positions inclined to one of the planes
ME1104.6	: The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa

Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C	
Course Code: **ME1105**	
ME1105.1	To write algorithms and to draw flowcharts for solving problems
ME1105.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
ME1105.3	To use different operators, data types and write programs that use two-way/ multi-way selection
ME1105.4	To select the best loop construct for a given problem
ME1105.5	To design and implement programs to analyse the different pointer applications
ME1105.6	To decompose a problem into functions and to develop modular reusable code

Course Name: **English communication skills lab**	
Course Code: **ME1106**	
ME1106.1	To impart the significance of spoken English
ME1106.2	To enhance the general conversation skills through different socio context
ME1106.3	To acquire the ability to use functional English
ME1106.4	To instil confidence by practising pronunciation and accent
ME1106.5	To identifying the barriers of communication
ME1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **ME1107**	
ME1107.1	To provide an experimental foundation for the theoretical concepts introduced in

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	the lectures
ME1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ME1107.3	To help students understand the role of direct observation in physics
ME1107.4	To distinguish between interference based on theory and experiments
ME1107.5	To introduce the concepts and techniques which have wide applications in experimental science
ME1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C LAB	
Course Code: **ME1108**	
ME1108.1	Gains Knowledge on various concepts of a C language
ME1108.2	Able to draw flowcharts and write algorithms.
ME1108.3	Able design and development of C problem solving skills
ME1108.4	Able design and development of C problem solving skills
ME1108.5	Able to design and develop modular programming skills
ME1108.6	Able to trace and debug a program

Course Name: ENVIRONMENTAL SCIENCE	
Course Code: **ME1109**	
ME1109.1	Overall understanding of the natural resources
ME1109.2	Basic understanding of the ecosystem and its diversity
ME1109.3	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
ME1109.4	Discuss about Solid Waste Management
ME1109.5	An understanding of the environmental impact of developmental activities
ME1109.6	Awareness on the social issues, environmental legislation and global treaties.

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **ME1201**	
ME1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
ME1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
ME1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
ME1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae

	for equal and unequal interval
ME1201.5	apply numerical integral techniques to different Engineering problems
ME1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: ME1202	
ME1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
ME1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
ME1202.3	Synthesize nanomaterial's for modern advances of engineering technology
ME1202.4	Summarize the techniques that detect and measure changes ofstate of reaction
ME1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
ME1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: ME1203	
ME1203.1	to be exposed to the concepts of force and friction , direction and its application
ME1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
ME1203.3	Discuss the concepts of centre of gravity
ME1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
ME1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
ME1203.6	Determine the concepts of work, energy and particle motion

Course Name: Basic Electrical & Electronics Engineering	
Course Code: ME1204	

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ME1204.1	Analyse various electrical networks
ME1204.2	Understand operation of DC generators,3-point starter and DC machine testing by Swinburne's Test and Brake test.
ME1204.3	Analyse performance of single-phase transformer
ME1204.4	Acquire proper knowledge and working of3-phase alternator and 3-phase induction motors.
ME1204.5	Analyse operation of half wave, full wave bridge rectifiers and OP-AMPs.
ME1204.6	Understanding operations of CE amplifier and basic concept of feedback amplifier.

Course Name: Thermodynamics	
Course Code: **ME1205**	
ME1205.1	Acquire Basic concepts of thermodynamics
ME1205.2	Explain Laws of thermodynamics
ME1205.3	Discuss Concept of entropy
ME1205.4	Explain Property evaluation of vapours and their depiction in tables and charts
ME1205.5	Determine Elementary Treatment of the Third Law of Thermodynamics
ME1205.6	Discuss Evaluation of properties of perfect gas mixtures.

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **ME1206**	
ME1206.1	The students entering into the professional course have practically very little exposure tolab classes
ME1206.2	The experiments introduce volumetric analysis
ME1206.3	Introduce redox titrations with different indicators
ME1206.4	Exposed to a few instrumental methods of chemical analysis.
ME1206.5	Understand the student is exposed to different methods of chemical analysis
ME1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

Course Name: Workshop Practice Lab	
Course Code: **ME1207**	
ME1207.1	To Understand the basic components and peripherals of a computer.
ME1207.2	To become familiar in configuring a system
ME1207.3	To Learn the usage of productivity tools
ME1207.4	To Acquire knowledge about the netiquette.
ME1207.5	To Acquire knowledge about cyber hygiene

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ME1207.6	To Get hands on experience in trouble shooting a system

Course Name: Basic Electrical & Electronics Engineering Lab	
Course Code: ME**1208**	
ME**1208.1**	Compute the efficiency of DC shunt machine without actual loading of the machine
ME**1208.2**	Estimate the efficiency and regulation at different load conditions and power factors for single phase transformer with OC and SC tests.
ME**1208.3**	Analyse the performance characteristics and to determine efficiency of DC shunt motor
ME**1208.4**	Pre-determine the regulation of an alternator by synchronous impedance method
ME**1208.5**	Control the speed of dc shunt motor using Armature voltage and Field flux control
ME**1208.6**	Determine the ripple factor of half wave & full wave rectifiers.

Course Name: Constitution of India	
Course Code: ME**1209**	
ME**1209.1**	To Enable the student to understand the importance of constitution
ME**1209.2**	To understand the structure of executive, legislature and judiciary
ME**1209.3**	To understand philosophy of fundamental rights and duties
ME**1209.4**	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.
ME**1209.5**	To understand auditor general of India and election commission of India
ME**1209.6**	To understand the central and state relation financial and administrative.

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Course Outcomes
Regulation-R20_A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **ECE1101**	
ECE1101.1	To develop human resources and serve the society through different ways
ECE1101.2	To educate and adopt the road safety measures by means transport
ECE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
ECE1101.4	Imparting the importance of alternative energy sources to the depleting sources
ECE1101.5	Realization on how to preserve the extension of animal life
ECE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **ECE1102**	
ECE1102.1	Solve the linier differential equations of first order
ECE1102.2	Solve the linier differential equations of second and higher order
ECE1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
ECE1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
ECE1102.5	Solve partial differential equations of first order
ECE1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **ECE1103**	
ECE1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
ECE1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
ECE1103.3	Identify the reasons of corrosion and controlling methods of corrosion
ECE1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
ECE1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
ECE1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving using C

Course Code: **ECE1104**	
ECE1104.1	Understand the basic terminology used in computer programming
ECE1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
ECE1104.3	Design programs involving decision structures, loops and functions.
ECE1104.4	Explain the difference between call by value and call by reference
ECE1104.5	Understand the dynamics of memory by the use of pointers
ECE1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: **ECE1105**	
ECE1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ECE1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
ECE1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
ECE1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
ECE1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
ECES1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **ECE1106**	
ECE1106.1	To impart the significance of spoken English
ECE1106.2	To enhance the general conversation skills through different socio context
ECE1106.3	To acquire the ability to use functional English
ECE1106.4	To instil confidence by practising pronunciation and accent
ECE1106.5	To identifying the barriers of communication
ECE1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: **ECE1107**	
ECE1107.1	To explain The experiments introduce volumetric analysis
ECE1107.2	To explain redox titrations
ECE1107.3	To explain complex metric titrations by using EDTA method
ECE1107.4	To explain the instrumental methods
ECE1107.5	To explain conduct metric titrations
ECE1107.6	To acquire the knowledge on potentiometric titrations

Course Name Programming for Problem Solving Using C Lab	
Course Code:**ECE1108**	
ECE1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
ECE1108.2	Acquire knowledge about the basic concept of writing a program
ECE1108.3	Role of constants, variables, identifiers, operators,
ECE**1108.4**	Explain type conversion and other building blocks of C Language. •
ECE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
ECE**1108.6**	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: ECE**1201**	
ECE**1201.1**	Calculate the root of algebraic and transiently equation
ECE**1201.2**	Compute inter polating polynomial for the given data
ECE**1201.3**	Solve ordinary differential equation numerically using Euler's and R-K method
ECE**1201.4**	Find Fourier series for certain functions
ECE**1201.5**	Find Fourier transform for certain functions
ECE**1201.6**	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: ECE**1202**	
ECE**1202.1**	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1202.2**	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1202.3**	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
ECE**1202.4**	To explore the Nuclear Power as a reliable source required to run industries
ECE**1202.5**	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
ECE**1202.6**	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

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Course Name: Object oriented programming through java	
Course Code: ECE**1203**	
ECE**1203.1**	Show competence in the use of the Java programming language in the development of small to medium- sized application programs that demonstrate professionally acceptable coding
ECE**1203.2**	Illustrate the basic principles of the object-oriented programming
ECE**1203.3**	Demonstrate an introductory understanding of graphical user interfaces, multithreaded programming, and event-driven programming.
ECE**1203.4**	the analytical skills of object oriented programming
ECE**1203.5**	Overall development of problem solving and critical analysis
ECE**1203.6**	Formal introduction to Java programming language

Course Name: Network Analysis	
Course Code: ECE**1204**	
ECE**1204.1**	To gain the knowledge on basic network elements.
ECE**1204.2**	Will analyze the RLC circuit's behaviour in detailed.
ECE**1204.3**	Analyze the performance of periodic waveforms.
ECE**1204.4**	Gain the knowledge in characteristics of two port network parameters (Z,Y, ABCD,h&g).
ECE**1204.5**	Analyze the filter design concepts in real world applications.
ECE**1204.6**	To understand the properties of LC networks and filters.

Course Name: Basic Electrical Engineering	
Course Code: ECE**1205**	
ECE**1205.1**	To learn the basic principles of electrical circuital law's and analysis of networks.
ECE**1205.2**	To understand principle of operation and construction details of DC machines.
ECE**1205.3**	To understand principle of operation and construction details of transformers,
ECE**1205.4**	To explain alternator and 3- Phase induction motor.
ECE**1205.5**	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
ECE**1205.6**	To learn operation of PNP and NPN transistors and various amplifiers.

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Course Name: Electronic workshop	
Course Code: ECE**1206**	
ECE**1206.1**	To Understand the basic components and peripherals of a computer.
ECE**1206.2**	To become familiar in configuring a system
ECE**1206.3**	To Learn the usage of productivity tools
ECE**1206.4**	To Acquire knowledge about the netiquette.
ECE**1206.5**	To Acquire knowledge about cyber hygiene
ECE**1206.6**	To Get hands on experience in trouble shooting a system

Course Name: **Engineering physics lab**	
Course Code: ECE**1207**	
ECE**1207.1**	To provide an experimental foundation for the theoretical concepts introduced in the lectures
ECE**1207.2**	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ECE**1207.3**	To help students understand the role of direct observation in physics
ECE**1207.4**	To distinguish between interference based on theory and experiments
ECE**1207.5**	To introduce the concepts and techniques which have wide applications in experimental science
ECE**1207.6**	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name Basic Electrical Engineering Lab	
Course Code: ECE**1208**	
ECE**1208.1**	To plot the magnetizing characteristics of DC shunt generator and understand the mechanism of self-excitation
ECE**1208.2**	To control the speed of DCmotors.
ECE**1208.3**	To determine and predetermine the performance of DCmachines.
ECE**1208.4**	To predetermine the efficiency and regulation of transformers and assess their performance.
ECE**1208.5**	To analyse performance of three phase induction motor.
ECE**1208.6**	To understand the significance of regulation of an alternators using synchronous impedance method.

Course Name:	**Environmental studies**
Course Code: ECE**1109**	
ECE**1209.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
ECE**1209.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
ECE**1209.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
ECE**1209.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
ECE**1209.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
ECE**1209.6**	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CS1101**	
CS1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
CS1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
CS1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
CS1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
CS1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
CS1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **CS1102**	
CS1102.1	To utilize mean value theorems to real life problems
CS1102.2	To solve the differential equations related to various engineering fields
CS1102.3	To familiarize with functions Of several variables which is useful in optimization
CS1102.4	To familiarize with functions of several variables which is useful in optimization
CS1102.5	To apply double integration techniques in evaluating areas bounded by region
CS1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Applied physics**	
Course Code: **CS1103**	
CS1103.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CS1103.4	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.5	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.6	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.

Course Name: Programming for Problem Solving using C	
Course Code: **CS1104**	
CS1104.1	Understand the basic terminology used in computer programming
CS1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program
CS1104.3	Design programs involving decision structures, loops and functions.
CS1104.4	Explain the difference between call by value and call by reference
CS1104.5	Understand the dynamics of memory by the use of pointers
CS1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Computer Engineering Workshop	
Course Code: **CS1105**	
CS1105.1	Assemble and disassemble components of a PC
CS1105.2	Construct a fully functional virtual machine, Summarize various Linux operating system
CS1105.3	Recognize characters & extract text from scanned images, Create audio files and podcasts
CS1105.4	Explain the usage of Internet for productivity and self paced lifelong learning
CS1105.5	Describe about Compression, Multimedia and Antivirus tools
CS1105.6	Demonstrate Office Tools such as Word processors, Spreadsheets and Presentation tools

Course Name: **English communication skills lab**	
Course Code: **CS1106**	
CS1106.1	To impart the significance of spoken English
CS1106.2	To enhance the general conversation skills through different socio context
CS1106.3	To acquire the ability to use functional English
CS1106.4	To instil confidence by practising pronunciation and accent
CS1106.5	To identifying the barriers of communication
CS1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied physics lab**	
Course Code: **CS1107**	
CS1107.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CS1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CS1107.3	To help students understand the role of direct observation in physics
CS1107.4	To distinguish between interference based on theory and experiments

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CS1107.5	To introduce the concepts and techniques which have wide applications in experimental science
CS1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Computer programming lab**	
Course Code: **CS1108**	
CS1108.1	Understand the basic concept of C Programming, and its different modules that include conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CS1108.2	Acquire knowledge about the basic concept of writing a program
CS1108.3	Role of constants, variables, identifiers, operators,
CS1108.4	Explain type conversion and other building blocks of C Language. •
CS1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CS1108.6	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech I ISEM

Course Name: Mathematics – II	
Course Code: **CS1201**	
CS1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
CS1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
CS1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithms
CS1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals
CS1201.5	apply numerical integral techniques to different Engineering problems
CS1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: Applied Chemistry	
Course Code: **CS1202**	
CS1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers
CS1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
CS1202.3	Synthesize nonmaterials for modern advances of engineering technology.

CS1202.4	Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
CS1202.5	Analyze the principles of different analytical instruments and their applications.
CS1202.6	Obtain the knowledge of computational chemistry and molecular machines

Course Name: COMPUTER ORGANIZATION	
Course Code: **CS1203**	
CS1203.1	Demonstrate and understanding of the design of the functional units of a digital computer system
CS1203.2	Relate Postulates of Boolean algebra and minimize combinational functions
CS1203.3	Recognize and manipulate representations of numbers stored in digital computers
CS1203.4	Design and analyze combinational and sequential circuits
CS1203.5	Recall the internal organization of computers, CPU, memory unit and Input/Outputs and the relations between its main components
CS1203.6	Solve elementary problems by assembly language programming

Course Name: PYTHON PROGRAMMING	
Course Code: **CS1204**	
CS1204.1	Develop essential programming skills in computer programming concepts like data types, containers
CS1204.2	Apply the basics of programming in the Python language
CS1204.3	Solve coding tasks related conditional execution, loops
CS1204.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CS1204.5	To be familiarized with general computer programming concepts like conditional execution, loops & functions
CS1204.6	To be familiarized with general coding techniques and object-oriented programming

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Course Name: DATA STRUCTURES	
Course Code: **CS1205**	
CS1205.1	Summarize the properties, interfaces, and behaviours of basic abstract data types
CS1205.2	Discuss the computational efficiency of the principal algorithms for sorting & searching
CS1205.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
CS1205.4	Demonstrate different methods for traversing trees
CS1205.5	Emphasize the importance of data structures in developing and implementing efficient algorithms
CS1205.6	Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

Course Name: APPLIED CHEMISTRY LAB	
Course Code: **CS1206**	
CS1206.1	To explain The experiments introduce volumetric analysis
CS1206.2	To explain redox titrations
CS1206.3	To explain complex metric titrations by using EDTA method
CS1206.4	To explain the instrumental methods
CS1206.5	To explain conduct metric titrations
CS1206.6	To acquire the knowledge on potentiometric titrations

Course Name: PYTHON PROGRAMMING LAB	
Course Code: **CS1207**	
CS1207.1	Develop essential programming skills in computer programming concepts like data types, containers
CS1207.2	Apply the basics of programming in the Python language
CS1207.3	Solve coding tasks related conditional execution, loops
CS1207.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CS1207.5	To be familiarized with general computer programming concepts like conditional execution, loops &functions
CS1207.6	To be familiarized with general coding techniques and object-oriented programming

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Course Name: DATA STRUCTURES LAB	
Course Code: **CS1208**	
CS1208.1	Use basic data structures such as arrays and linked list.
CS1208.2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
CS1208.3	Use various searching and sorting algorithms.
CS1208.4	Demonstrate the different data structures implementation.
CS1208.5	Write C program that implement stack using arrays
CS1208.6	Write a recursive C program for traversing a binary tree in preorder, in order and post order.

Course Name: ENVIRONMENT SCIENCE	
Course Code: **CS1209**	
CS1209.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CS1209.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CS1209.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CS1209.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CS1209.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CS1209.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation-R20 A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **CSG1101**	
CSG1101.1	To develop human resources and serve the society through different ways
CSG1101.2	To educate and adopt the road safety measures by means transport
CSG1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
CSG1101.4	Imparting the importance of alternative energy sources to the depleting sources
CSG1101.5	Realization on how to preserve the extension of animal life
CSG1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **CSG1102**	
CSG1102.1	Solve the linier differential equations of first order
CSG1102.2	Solve the linier differential equations of second and higher order
CSG1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
CSG1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
CSG1102.5	Solve partial differential equations of first order
CSG1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **CSG1103**	
CSG1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
CSG1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
CSG1103.3	Identify the reasons of corrosion and controlling methods of corrosion
CSG1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
CSG1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
CSG1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving using C

Course Code:	**CSG1104**
CSG1104.1	Understand the basic terminology used in computer programming
CSG1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
CSG1104.3	Design programs involving decision structures, loops and functions.
CSG1104.4	Explain the difference between call by value and call by reference
CSG1104.5	Understand the dynamics of memory by the use of pointers
CSG1104.6	Understand the dynamics of memory by the use of pointers

Course Name:	Design Drawing and Visualization
Course Code:	**CSG1105**
CSG1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CSG1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
CSG1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
CSG1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
CSG1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
CSGS1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name:	**English communication skills lab**
Course Code:	**CSG1106**
CSG1106.1	To impart the significance of spoken English
CSG1106.2	To enhance the general conversation skills through different socio context
CSG1106.3	To acquire the ability to use functional English
CSG1106.4	To instil confidence by practising pronunciation and accent
CSG1106.5	To identifying the barriers of communication
CSG1106.6	To focus on common errors of English pronunciation as second language

Course Name:	**Applied chemistry lab**
Course Code:	**CSG1107**
CSG1107.1	To explain The experiments introduce volumetric analysis
CSG1107.2	To explain redox titrations
CSG1107.3	To explain complex metric titrations by using EDTA method
CSG1107.4	To explain the instrumental methods
CSG1107.5	To explain conduct metric titrations
CSG1107.6	To acquire the knowledge on potentiometric titrations

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Course Name Programming for Problem Solving Using C Lab	
Course Code:**CSG1108**	
CSG1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CSG1108.2	Acquire knowledge about the basic concept of writing a program
CSG1108.3	Role of constants, variables, identifiers, operators,
CSG1108.4	Explain type conversion and other building blocks of C Language. •
CSG1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CSG1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: **Environmental studies**	
Course Code: **CSG1109**	
CSG1109.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CSG1109.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CSG1109.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CSG1109.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CSG1109.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CSG1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: **CSG1201**	
CSG1201.1	Calculate the root of algebraic and transiently equation
CSG1201.2	Compute inter polating polynomial for the given data
CSG1201.3	Solve ordinary differential equation numerically using Euler's and R-K method
CSG1201.4	Find Fourier series for certain functions
CSG1201.5	Find Fourier transform for certain functions
CSG1201.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: **CSG1202**	
CSG1202.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CSG1202.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CSG1202.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CSG1202.4	To explore the Nuclear Power as a reliable source required to run industries
CSG1202.5	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
CSG1202.6	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Name: Digital Logic Design	
Course Code: **CSG1203**	
CSG1203.1	An ability to define different number systems, binary addition and subtraction, 2's Complement representation and operations with this representation.
CSG1203.2	An ability to understand the different switching algebra theorems and apply them for

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CSG1203.3	Logic functions.
	An ability to define the Karnaugh map for a few variables and perform an algorithmic
	Reduction of logic functions.
CSG1203.4	Students will be able to design various logic gates starting from simple ordinary gates
CSG1203.5	Explain complex programmable logic devices & arrays
CSG1203.6	Students will be able to design various sequential circuits starting from flip-flop to
	Registers and counters.

Course Name: PYTHON PROGRAMMING	
Course Code: **CSG1204**	
CSG1204.1	Develop essential programming skills in computer programming concepts like data types, containers
CSG1204.2	Apply the basics of programming in the Python language
CSG1204.3	Solve coding tasks related conditional execution, loops
CSG1204.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CSG1204.5	To be familiarized with general computer programming concepts like conditional execution, loops & functions
CSG1204.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: DATA STRUCTURES	
Course Code: **CSG1205**	
CSG1205.1	Summarize the properties, interfaces, and behaviours of basic abstract data types
CSG1205.2	Discuss the computational efficiency of the principal algorithms for sorting & searching
CSG1205.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
CSG1205.4	Demonstrate different methods for traversing trees
CSG1205.5	Emphasize the importance of data structures in developing and implementing efficient algorithms
CSG1205.6	Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

Course Name: PYTHON PROGRAMMING LAB

Course Code: **CSG1206**	
CSG1206.1	Develop essential programming skills in computer programming concepts like data types, containers
CSG1206.2	Apply the basics of programming in the Python language
CSG1206.3	Solve coding tasks related conditional execution, loops
CSG1206.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CSG1206.5	To be familiarized with general computer programming concepts like conditional execution, loops &functions
CSG1206.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: **Engineering physics lab**	
Course Code: **CSG1207**	
CSG1207.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CSG1207.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CSG1207.3	To help students understand the role of direct observation in physics
CSG1207.4	To distinguish between interference based on theory and experiments
CSG1207.5	To introduce the concepts and techniques which have wide applications in experimental science
CSG1207.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name DATA STRUCTURES LAB	
Course Code: **CSG1208**	
CSG1208.1	Use basic data structures such as arrays and linked list.
CSG1208.2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
CSG1208.3	Use various searching and sorting algorithms.
CSG1208.4	Demonstrate the different data structures implementation.
CSG1208.5	Write C program that implement stack using arrays
CSG1208.6	Write a recursive C program for traversing a binary tree in preorder, in order and post order.

Course Name: **Environmental studies**	
Course Code: **CSG1109**	
CSG1209.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CSG1209.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CSG1209.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CSG1209.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CSG1209.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CSG1209.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **M-I**	
Course Code: **AME1101**	
AME1101.1	Solve the linier differential equations of first order
AME1101.2	Solve the linier differential equations of second and higher order
AME1101.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
AME1101.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
AME1101.5	Solve partial differential equations of first order
AME1101.6	Solve second and higher order differential equations

Course Name: Engineering Chemistry	
Course Code: **AME1102**	
AME1102.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
AME1102.2	Outline the basics for the construction of electrochemical cells, batteries and fuel cells. Understand the mechanism of corrosion and how it can be prevented.
AME1102.3	Express the increase in demand as wide variety of advanced materials are introduced; which have excellent engineering properties
AME1102.4	discuss the materials used in major industries like steel industry, metallurgical industries and construction industries and electrical equipment manufacturing industries. Lubrication is also summarized.
AME1102.5	Relate the need of fuels as a source of energy to any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence introduced
AME1102.6	Explain the importance and usage of water as basic material in almost all the industries; interpret drawbacks of steam boilers and also how portable water is supplied for drinking purposes.

Course Name: Engineering Mechanics	
Course Code: **AME1103**	
AME1103.1	Explain the concepts of force and friction, direction and its applications
AME1103.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
AME1103.3	To explain concepts of centre of gravity
AME1103.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
AME1103.5	To explain to motion in straight line and in curvilinear paths, its velocity and

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	acceleration computation and methods of representing plane motion.
AME1103.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: : Programming for Problem Solving Using C	
Course Code: **AME1104**	
AME1104.1	Understand the basic terminology used in computer programming
AME1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
AME1104.3	Design programs involving decision structures, loops and functions.
AME1104.4	Explain the difference between call by value and call by reference
AME1104.5	Understand the dynamics of memory by the use of pointers
AME1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Communicative English	
Course Code: **AME1105**	
AME1105.1	To describe the education system that aims to enhance wisdom
AME1105.2	To promote peaceful existence and universal harmony
AME1105.3	To analyse the symptoms of cultural shock and after math consequences
AME1105.4	To provide the awareness of taboos of cultural tradition
AME1105.5	To educate the affect of environmental changes that leads to several health disorders
AME1105.6	To enhance Advancement of technology for the betterment of human life

Course Name: English Lab	
Course Code: **AME1106**	
AME1106.1	To build the initial ability of presenting their views in debating
AME1106.2	To convey the deas through Group Discussion
AME1106.3	To plan & prepare for oral presentation
AME1106.4	To develop the ability of how to face an interview
AME1106.5	To create the capability of writing skills ie., Emails &Cvs
AME1106.6	To utilise appropriate use of idiomatic Expressions

Course Name: Engineering Chemistry Laboratory	
Course Code: **AME1107**	
AME1107.1	To explain The experiments introduce volumetric analysis
AME1107.2	To explain redox titrations
AME1107.3	To explain complex metric titrations by using EDTA method
AME1107.4	To explain the instrumental methods

AME1107.5	To explain conduct metric titrations
AME1107.6	To acquire the knowledge on potentiometric titrations

Course Name: Programming for problem Solving Using C Lab	
Course Code: **AME1108**	
AME1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AME1108.2	Acquire knowledge about the basic concept of writing a program
AME1108.3	Role of constants, variables, identifiers, operators,
AME1108.4	Explain type conversion and other building blocks of C Language. •
AME1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
AME1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: Environmental Science	
Course Code: **AME1109**	
AME1109.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AME1109.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AME1109.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AME1109.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AME1109.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AME1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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Year/Sem: I B.Tech I ISEM

Course Name: Mathematics – II	
Course Code: **AME1201**	
AME1201.1	Calculate the root of algebraic and transiently equation
AME1201.2	Compute inter polating polynomial for the given data
AME1201.3	Solve ordinary differential equation numerically using Euler's and R-K method
AME1201.4	Find Fourier series for certain functions
AME1201.5	Find Fourier transform for certain functions
AME1201.6	Identify and classify and solve the different types of partial differential equations

Course Name: : Engineering Physics	
Course Code: **AME1202**	
AME1202.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
AME1202.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
AME1202.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
AME1202.4	To explore the Nuclear Power as a reliable source required to run industries
AME1202.5	To impart the knowledge of materials with characteristic utility in appliances.
AME1202.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

Course Name: Metallurgy & Materials Science	
Course Code: **AME1203**	
AME1203.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems.
AME1203.2	Study the behaviour of ferrous and non ferrous metals and alloys and their

	application in different domains
AME1203.3	Able to understand the effect of heat treatment, addition of alloying elements on Properties of ferrous metals.
AME1203.4	Grasp the methods of making of metal powders and applications of powder metallurgy
AME1203.5	Comprehend the properties and applications of ceramic,
AME1203.6	Explain composites and other advanced methods.

Course Name: **BEEE**	
Course Code: **AME1204**	
AME1204.1	To learn the basic principles of electrical circuital law's and analysis of networks.
AME1204.2	To understand principle of operation and construction details of DC machines.
AME1204.3	To understand principle of operation and construction details of transformers,
AME1204.4	To explain alternator and 3- Phase induction motor.
AME1204.5	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
AME1204.6	To learn operation of PNP and NPN transistors and various amplifiers.

Course Name: Engineering Graphics	
Course Code: **AME1205**	
AME1205.1	Student get exposed on working of sheet metal with help of development of surfaces
AME1205.2	Student understands how to know the hidden details of machine components with the help of sections and interpenetrations of solids
AME1205.3	Student shall exposed to modeling commands for generating 2D and 3D objects using computer aided drafting tools which are useful to create machine elements for computer aided analysis.
AME1205.4	The objective is to introduce various commands in AutoCAD to draw the geometric entities and to create 2D and 3D wire frame models.
AME1205.5	By going through this topic the student will be able to understand the paper-space environment thoroughly.
AME1205.6	The objective is to make the students create geometrical model of simple solids and machine parts and display the same as an Isometric, Orthographic or Perspective projection.

Course Name: Engineering Physics Laboratory	
Course Code: **AME1206**	

AME1206.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AME1206.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
AME1206.3	To help students understand the role of direct observation in physics
AME1206.4	To distinguish between interference based on theory and experiments
AME1206.5	To introduce the concepts and techniques which have wide applications in experimental science
AME1206.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Engineering Workshop & IT Workshop Laboratory	
Course Code: **AME1207**	
AME1207.1	To Understand the basic components and peripherals of a computer.
AME1207.2	To become familiar in configuring a system
AME1207.3	To Learn the usage of productivity tools
AME1207.4	To Acquire knowledge about the netiquette.
AME1207.5	To Acquire knowledge about cyber hygiene
AME1207.6	To Get hands on experience in trouble shooting a system

Course Name: Basic Electrical & Electronics Engineering Lab	
Course Code: **AME1208**	
AME1208.1	To predetermine the efficiency of dc shunt machine using Swinburne's test. To predetermine the efficiency and regulation of 1-phase transformer with O.C and S.C tests.
AME1208.2	To obtain performance characteristics of DC shunt motor &3-phase induction motor.
AME1208.3	To find out regulation of an alternator with synchronous impedance method.
AME1208.4	To control speed of dc shunt motor using Armature voltage and Field flux control methods.
AME1208.5	To find out the characteristics of PN junction diode & transistor
AME1208.6	To determine the ripple factor of half wave & full wave rectifiers.

Course Name: Constitution of India	
Course Code: **AME1209**	
AME1209.1	To Enable the student to understand the importance of constitution
AME1209.2	To understand the structure of executive, legislature and judiciary
AME1209.3	To understand philosophy of fundamental rights and duties
AME1209.4	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.

AME1209.5	To understand auditor general of India and election commission of India
AME1209.6	To understand the central and state relation financial and administrative.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2021-2022

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **AG1101**	
AG1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
AG1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
AG1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
AG1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
AG1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
AG1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **AG1102**	
AG1102.1	To utilize mean value theorems to real life problems
AG1102.2	To solve the differential equations related to various engineering fields
AG1102.3	To familiarize with functions ofseveral variables which is useful in optimization
AG1102.4	To familiarize with functions of several variables which is useful in optimization
AG1102.5	To apply double integration techniques in evaluating areas bounded by region
AG1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: **AG1103**	
AG1103.1	Explain the need of coherent sources and the conditions for sustained interference
AG1103.2	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
AG1103.3	Explain the concept of dielectric constant
AG1103.4	Explain polarization in dielectric materials
AG1103.5	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
AG1103.6	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

Course Name: Principles of Soil Science and Agronomy	
Course Code: **AG1104**	
AG1104.1	To impart Knowledge on Soil genesis, properties etc
AG1104.2	to enable students to design implements in related to soil, soil conservation, irrigation and drainage applications.
AG1104.3	to enable students to understand farming principles, to grow agricultural field and orchard crop and farming practices
AG1104.4	Irrigation water: Quality of irrigation water
AG1104.5	Explain Biotic and A biotic factors, Crop seasons Kharif, Rabi and summer seasons
AG1104.6	Explain Tillage and tilt, Objective of tillage

Course Name: Engineering Workshop and IT Workshop	
Course Code: **AG1105**	
AG1105.1	Assemble and disassemble components of a PC
AG1105.2	Construct a fully functional virtual machine, Summarize various Linux operating system
AG1105.3	Recognize characters & extract text from scanned images, Create audio files and podcasts
AG1105.4	Explain the usage of Internet for productivity and self paced lifelong learning
AG1105.5	Describe about Compression, Multimedia and Antivirus tools
AG1105.6	Demonstrate Office Tools such as Word processors, Spreadsheets and Presentation tools

Course Name: **English communication skills lab**	
Course Code: **AG1106**	
AG1106.1	To impart the significance of spoken English
AG1106.2	To enhance the general conversation skills through different socio context
AG1106.3	To acquire the ability to use functional English
AG1106.4	To instil confidence by practising pronunciation and accent
AG1106.5	To identifying the barriers of communication
AG1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **AG1107**	
AG1107.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AG1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data

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AG1107.3	To help students understand the role of direct observation in physics
AG1107.4	To distinguish between interference based on theory and experiments
AG1107.5	To introduce the concepts and techniques which have wide applications in experimental science
AG1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Soil Science and Agronomy Field Lab	
Course Code: **AG1108**	
AG1108.1	To impose the knowledge of student on soil genesis, soil farming process structure, soil organic matter and chemical operation, etc
AG1108.2	It is helpful to the student to design farm implement in relation to soil and to maintain in soil health
AG1108.3	It is fine to the students to know the analyst of irrigation water, based on quality suitable crops will be selected.
AG1108.4	To enable the students to grow suitable agricultural crops and orchard crops and all farming practices
AG1108.5	To understand the soil, crop and machine specific parameters for design and development of forms machinery equipment & implements
AG1108.6	Students will be acquainted with seed processing equipment, soil and water engineering activating for efficient water and land producing and upcoming organic farming activity

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **AG1201**	
AG1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
AG1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
AG1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
AG1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
AG1201.5	apply numerical integral techniques to different Engineering problems
AG1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: **AG1202**	

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AG1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
AG1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
AG1202.3	Synthesize nanomaterial's for modern advances of engineering technology
AG1202.4	Summarize the techniques that detect and measure changes ofstate of reaction
AG1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
AG1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: **AG1203**	
AG1203.1	to be exposed to the concepts of force and friction , direction and its application
AG1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
AG1203.3	Discuss the concepts of centre of gravity
AG1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
AG1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
AG1203.6	Determine the concepts of work, energy and particle motion

Course Name: Programming for Problem Solving Using C	
Course Code: **AG1204**	
AG1204.1	Understand the basic terminology used in computer programming
AG1204.2	Explain, compile and debug programs in C language. Use different data types in a computer program
AG1204.3	Design programs involving decision structures, loops and functions.
AG1204.4	Explain the difference between call by value and call by reference
AG1204.5	Understand the dynamics of memory by the use of pointers
AG1204.6	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: **AG1205**	
AG1205.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
AG1205.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
AG1205.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
AG1205.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
AG1205.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
AG1205.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **AG1206**	
AG1206.1	The students entering into the professional course have practically very little exposure tolab classes
AG1206.2	The experiments introduce volumetric analysis
AG1206.3	Introduce redox titrations with different indicators
AG1206.4	Exposed to a few instrumental methods of chemical analysis.
AG1206.5	Understand the student is exposed to different methods of chemical analysis
AG1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

Course Name: Programming for Problem Solving Using C Lab	
Course Code: **AG1207**	
AG1207.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AG1207.2	Acquire knowledge about the basic concept of writing a program
AG1207.3	Role of constants, variables, identifiers, operators,
AG1207.4	Explain type conversion and other building blocks of C Language. •
AG1207.5	Use of conditional expressions and looping statements to solve problems

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	associated with conditions and repetitions.
AG1207.6	To explain Role of Functions involving the idea of modularity.

Course Name: Machine Drawing and Computer Graphics	
Course Code: **AG1208**	
AG1208.1	Practical skills on preparing manual drawings of model isometric view of the objects, machine components, assembly drawings of different joint
AG1208.2	Practice on drawing of missing views; principles of dimensions and their methods
AG1208.3	Practical skills on sectioning concepts and its drawing & mechanical part
AG1208.4	Practical skills on types of rivet heads & parts, square headed and hexagonal nuts, bolts, different types lock nuts, stands machine screw
AG1208.5	Practical skills on drawing of riveted joints and thread fasteners, computer graphics in agricultural engineering applications, practice of commands in Auto CAD software.
AG1208.6	Practical skills on 2-D drawings and projects in Auto CAD.

Course Name: **Environmental studies**	
Course Code: **AG1209**	
AG1209.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AG1209.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AG1209.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AG1209.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AG1209.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AG1209.6	Explain About environmental assessment and the stages involved in EIA and the

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	environmental audit.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2020-2021

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CE1101**	
CE1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
CE1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
CE1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
CE1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
CE1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
CE1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **CE1102**	
CE1102.1	To utilize mean value theorems to real life problems
CE1102.2	To solve the differential equations related to various engineering fields
CE1102.3	To familiarize with functions ofseveral variables which is useful in optimization
CE1102.4	To familiarize with functions of several variables which is useful in optimization
CE1102.5	To apply double integration techniques in evaluating areas bounded by region
CE1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: CE**1103**	
CE**1103.1**	Explain the need of coherent sources and the conditions for sustained interference
CE**1103.2**	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
CE**1103.3**	Explain the concept of dielectric constant
CE**1103.4**	Explain polarization in dielectric materials
CE**1103.5**	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
CE**1103.6**	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

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Course Name: ENGINEERING DRAWING	
Course Code: **CE1104**	
CE1104.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CE1104.2	: To introduce the students to use orthographic projections, projections of points & simple lines. To make the students draw the projections of the lines inclined to both the planes.
CE1104.3	The objective is to make the students draw the projections of the plane inclined to both the planes.
CE1104.4	The objective is to make the students draw the projections of the plane inclined to both the planes
CE1104.5	The objective is to make the students draw the projections of the various types of solids indifferent positions inclined to one of the planes
CE1104.6	: The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa

Course Name:ENGINEERING GEOLOGY	
Course Code: **CE1105**	
CE1105.1	Identify and classify the geological minerals Measure the rock strengths of various rocks
CE1105.2	Classify and measure the earthquake prone areas to practice the hazard zonation , monitor and measure the Landslides and subsidence zonation
CE1105.3	Prepares, analyses and interpret the Engineering Geologic maps
CE1105.4	Analyses the ground conditions through geophysical surveys
CE1105.5	Test the geological material and ground to check the suitability of civil engineering project construction
CE1105.6	Investigate the project site for mega/mini civil engineering projects. Site selection for mega engineering projects like Dams, Tunnels, disposal sites etc.

Course Name: ENGINEERING GEOLOGY LAB	
Course Code: **CE1106**	
CE1106.1	Identify Megascopic minerals & their properties
CE1106.2	Identify Megascopic rocks & their properties.
CE1106.3	Identify the site parameters such as contour, slope & aspect for topography
CE1106.4	Know the occurrence of materials using the strike & dip problems.
CE1106.5	To identify the topography of the site & material selection
CE1106.6	To identify the Megascopic types of Igneous, Sedimentary, Metamorphic rocks

Course Name: **English communication skills lab**	
Course Code: **CE1107**	
CE1107.1	To impart the significance of spoken English
CE1107.2	To enhance the general conversation skills through different socio context
CE1107.3	To acquire the ability to use functional English
CE1107.4	To instil confidence by practising pronunciation and accent
CE1107.5	To identifying the barriers of communication
CE1107.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **CE1108**	
CE1108.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CE1108.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CE1108.3	To help students understand the role of direct observation in physics
CE1108.4	To distinguish between interference based on theory and experiments
CE1108.5	To introduce the concepts and techniques which have wide applications in experimental science
CE1108.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: BASICS OF CIVIL ENGG. (WORK SHOP) LAB	
Course Code:**CE1109**	
CE1109.1	Identify various components of a building and give lump-sum estimate
CE1109.2	Determine distances and irregular areas using conventional survey instruments like chain, tape, cross-staff and compass
CE1109.3	Identify different soils.
CE1109.4	Determine centre of gravity and moment of inertia of channel and I-sections.
CE1109.5	Install simple sanitary filling and find discharge/velocity in a water pipe line as density of water
CE1109.6	Know to the process of making cement mortar / concrete for nominal mix

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **CE1201**	
CE1201.1	develop the use of matrix algebra techniques that is needed by engineers for

	practical applications
CE1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
CE1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
CE1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
CE1201.5	apply numerical integral techniques to different Engineering problems
CE1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: **CE1202**	
CE1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
CE1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
CE1202.3	Synthesize nanomaterial's for modern advances of engineering technology
CE1202.4	Summarize the techniques that detect and measure changes ofstate of reaction
CE1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
CE1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: **CE1203**	
CE1203.1	to be exposed to the concepts of force and friction , direction and its application
CE1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
CE1203.3	Discuss the concepts of centre of gravity
CE1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
CE1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
CE1203.6	Determine the concepts of work, energy and particle motion

Course Name:PROGRAMMING FOR PROBLEM SOLVING USING C	
Course Code: **CE1204**	
CE1204.1	To write algorithms and to draw flowcharts for solving problems
CE1204.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
CE1204.3	To use different operators, data types and write programs that use two-way/ multi-way selection
CE1204.4	To select the best loop construct for a given problem
CE1204.5	To design and implement programs to analyse the different pointer applications
CE1204.6	To decompose a problem into functions and to develop modular reusable code

Course Name: BUILDING MATERIALS AND CONCRETE TECHNOLOGY	
Course Code: **CE1205**	
CE1205.1	Know various engineering properties of building construction materials and suggest their suitability
CE1205.2	Identify the functional role of ingredients of concrete and apply this knowledge to concrete mix design
CE1205.3	Acquire and apply fundamental knowledge in the fresh and hardened properties of concrete
CE1205.4	Explain Factors affecting workability, Measurement of workability by different tests
CE1205.5	Explain Properties of Hardened Concrete (Elasticity, Creep, Shrinkage, Poisson's ratio, Water absorption, Permeability, etc.
CE1205.6	Determine Non-destructive testing methods – Codal provisions for NDT

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **CE1206**	
CE1206.1	The students entering into the professional course have practically very little exposure tolab classes
CE1206.2	The experiments introduce volumetric analysis
CE1206.3	Introduce redox titrations with different indicators
CE1206.4	Exposed to a few instrumental methods of chemical analysis.
CE1206.5	Understand the student is exposed to different methods of chemical analysis
CE1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

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Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C LAB	
Course Code: **CE1207**	
CE1207.1	Gains Knowledge on various concepts of a C language
CE1207.2	Able to draw flowcharts and write algorithms.
CE1207.3	Able design and development of C problem solving skills
CE1207.4	Able design and development of C problem solving skills
CE1207.5	Able to design and develop modular programming skills
CE1207.6	Able to trace and debug a program

Course Name: BUILDING PLANNING AND COMPUTER AIDED BUILDING DRAWING	
Course Code: CE**1208**	
CE**1208.1**	Perform basic commands of any suitable CAD software to draw 2D drawings
CE**1208.2**	Interpret the conventions, signs and symbols from a given drawing
CE**1208.3**	Prepare line plans of residential and public buildings using principles of planning
CE**1208.4**	Prepare submission and working drawing from the given requirement for Load Bearing and Framed structures
CE**1208.5**	Draw developed plan, elevation, section, site plan from the given line plan for a load bearing
CE**1208.6**	Prepare submission drawing (including foundation plan) of the given framed structure residential building with stair case.

Course Name: ENVIRONMENTAL SCIENCE	
Course Code: CE**1209**	
CE**1209.1**	Overall understanding of the natural resources
CE**1209.2**	Basic understanding of the ecosystem and its diversity
CE**1209.3**	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
CE**1209.4**	Discuss about Solid Waste Management
CE**1209.5**	An understanding of the environmental impact of developmental activities

CE**1209.6**	Awareness on the social issues, environmental legislation and global treaties.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2020-2021

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **EEE1101**	
EEE1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
EEE1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
EEE1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
EEE1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
EEE1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
EEE1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: EEE**1102**	
EEE**1102.1**	To utilize mean value theorems to real life problems
EEE**1102.2**	To solve the differential equations related to various engineering fields
EEE**1102.3**	To familiarize with functions Of several variables which is useful in optimization
EEE**1102.4**	To familiarize with functions of several variables which is useful in optimization
EEE**1102.5**	To apply double integration techniques in evaluating areas bounded by region
EEE**1102.6**	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: Mathematics-II	
Course Code: EEE**1103**	
EEE**1103.1**	develop the use of matrix algebra techniques that is needed by engineers for practical applications
EEE**1103.2**	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
EEE**1103.3**	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
EEE**1103.4**	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal interval
EEE**1103.5**	apply numerical integral techniques to different Engineering problems
EEE**1103.6**	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

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Course Name: Programming for Problem Solving Using C	
Course Code: EEE**1104**	
EEE**1104.1**	Understand the basic terminology used in computer programming
EEE**1104.2**	Explain, compile and debug programs in C language. Use different data types in a computer program.
EEE**1104.3**	Design programs involving decision structures, loops and functions.
EEE**1104.4**	Explain the difference between call by value and call by reference
EEE**1104.5**	Understand the dynamics of memory by the use of pointers
EEE**1104.6**	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: EEE**1105**	
EEE**1105.1**	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
EEE**1105.2**	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
EEE**1105.3**	The objective is to make the students draw the projections of the lines inclined to both the planes.
EEE**1105.4**	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
EEE**1105.5**	The objective is to make the students draw the projections of the plane inclined to both the planes.
EEE**1105.6**	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: EEE**1106**	
EEE**1106.1**	To impart the significance of spoken English
EEE**1106.2**	To enhance the general conversation skills through different socio context
EEE**1106.3**	To acquire the ability to use functional English
EEE**1106.4**	To instil confidence by practising pronunciation and accent
EEE**1106.5**	To identifying the barriers of communication
EEE**1106.6**	To focus on common errors of English pronunciation as second language

Course Name: Electrical Engineering Workshop	
Course Code: EEE**1107**	
EEE**1107.1**	Explain the limitations, tolerances, safety aspects of electrical systems and wiring.
EEE**1107.2**	Select wires/cables and other accessories used in different types of wiring
EEE**1107.3**	Make simple lighting and power circuits

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EEE**1107.4**	Measure current, voltage and power in a circuit
EEE**1107.5**	To train the students in setting up simple wiring circuit
EEE**1107.6**	To impart methods in electrical machine wiring

Course Name: **Computer programming lab**	
Course Code:EEE**1108**	
EEE**1108.1**	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
EEE**1108.2**	Acquire knowledge about the basic concept of writing a program
EEE**1108.3**	Role of constants, variables, identifiers, operators,
EEE**1108.4**	Explain type conversion and other building blocks of C Language. •
EEE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
EEE**1108.6**	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name : Mathematics-III	
Course Code: **EEE1201**	
EEE1201.1	interpret the physical meaning of different operators such as gradient, curl and divergence
EEE1201.2	estimate the work done against a field, circulation and flux using vector calculus
EEE1201.3	apply the Laplace transform for solving differential equations
EEE1201.4	find or compute the Fourier series of periodic signals
EEE1201.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveform
EEE1201.6	identify solution methods for partial differential equations that model physical processes

Course Name: APPLIED PHYSICS	
Course Code: **EEE1202**	
EEE1202.1	Explain the need of coherent sources and the conditions for sustained interference
EEE1202.2	Understand the basic concepts of LASER light Sources
EEE1202.3	Explain the concept of dual nature of matter
EEE1202.4	Understand the significance of wave function
EEE1202.5	Explain the concept of dielectric constant and polarization in dielectric materials
EEE1202.6	Classify the energy bands of semiconductors

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Course Name: Data Structures Through C	
Course Code: **EEE1203**	
EEE1203.1	To explain data structures concepts with arrays, stacks, queues.
EEE1203.2	To understand Linked lists for stacks, queues and for other applications
EEE1203.3	Determine the traversal methods in the Trees
EEE1203.4	Discuss various algorithms available for the graphs
EEE1203.5	To understand sorting and searching in the data ret retrieval applications
EEE1203.6	Explain Traversal methods and operations.

Course Name: ELECTRICAL CIRCUIT ANALYSIS -I	
Course Code: **EEE1204**	
EEE1204.1	To study the concepts of passive elements, types of sources and various network reduction techniques.
EEE1204.2	To understand the applications of network topology to electrical circuits.
EEE1204.3	To study the concept of magnetic coupled circuit
EEE1204.4	To understand the behaviour of RLC networks for sinusoidal excitations
EEE1204.5	To study the performance of R-L, R-C and R-L-C circuits with variation of one of the parameters and to understand the concept of resonance.
EEE1204.6	To understand the applications of network theorems for analysis of electrical networks

Course Name: BASIC CIVIL AND MECHANICAL ENGINEERING	
Course Code: **EEE1205**	
EEE1205.1	Apply Shear force diagram & Bending moment diagram principles for Cantilever and Simply supported beams.
EEE1205.2	Apply concepts of Rosette analysis for strain measurement
EEE1205.3	Analyse the characteristics of common building materials.
EEE1205.4	To familiarize the sources of energy, power plant economics and environmental aspects
EEE1205.5	Compare the working characteristics of Internal Combustion engines.
EEE1205.6	Compare the differences between boiler mountings and accessories.

Course Name: APPLIED PHYSICS LAB

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Course Code: **EEE1206**	
EEE1206.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
EEE1206.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
EEE1206.3	To help students understand the role of direct observation in physics
EEE1206.4	To distinguish between interference based on theory and experiments
EEE1206.5	To introduce the concepts and techniques which have wide applications in experimental science
EEE1206.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: BASIC CIVIL AND MECHANICAL ENGINEERING LAB	
Course Code: **EEE1207**	
EEE1207.1	Solve to arrive at finding constant speed and variable speed on IC engines and interpret their performance
EEE1207.2	Estimate energy distribution by conducting heat balance test on IC engines
EEE1207.3	Explain procedure for standardization of experiments.
EEE1207.4	Determine flow discharge measuring device used in pipes channels and tanks
EEE1207.5	Determine fluid and flow properties.
EEE1207.6	Solve for drag coefficents

Course Name: DATA STRUCTURES THROUGH C LAB	
Course Code: **EEE1208**	
EEE1208.1	Be able to design and analyze the time and space efficiency of the data structure
EEE1208.2	Be capable to identity the appropriate data structure for given problem
EEE1208.3	Have practical knowledge on the applications of data structures
EEE1208.4	To develop skills to design and analyze simple linear and non linear data structures
EEE1208.5	To strengthen the ability to the students to identify and apply the suitable data structure for the given real world problem
EEE1208.6	To gain knowledge in practical applications of data structures

Course Name: Constitution of India	
Course Code: EEE**1209**	
EEE**1209.1**	To Enable the student to understand the importance of constitution
EEE**1209.2**	To understand the structure of executive, legislature and judiciary
EEE**1209.3**	To understand philosophy of fundamental rights and duties
EEE**1209.4**	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.
EEE**1209.5**	To understand auditor general of India and election commission of India
EEE**1209.6**	To understand the central and state relation financial and administrative.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2020-2021

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **ME1101**	
ME1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
ME1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
ME1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
ME1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
ME1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
ME1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **ME1102**	
ME1102.1	To utilize mean value theorems to real life problems
ME1102.2	To solve the differential equations related to various engineering fields
ME1102.3	To familiarize with functions ofseveral variables which is useful in optimization
ME1102.4	To familiarize with functions of several variables which is useful in optimization
ME1102.5	To apply double integration techniques in evaluating areas bounded by region
ME1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Engineering physics**	
Course Code: **ME1103**	
ME1103.1	Explain the need of coherent sources and the conditions for sustained interference
ME1103.2	Explain various types of emission of radiation (L2). Identify lasers as tools in engineeringapplications
ME1103.3	Explain the concept of dielectric constant
ME1103.4	Explain polarization in dielectric materials
ME1103.5	Explain sound waves and its propagation/absorption of construction material used in design of buildings (L2). Analyze acoustic parameters of typical materials used in buildings (L4).
ME1103.6	Interpret various crystal systems (L2) and Analyze the characterization of materials by XRD

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Course Name: ENGINEERING DRAWING	
Course Code: **ME1104**	
ME1104.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ME1104.2	: To introduce the students to use orthographic projections, projections of points & simple lines. To make the students draw the projections of the lines inclined to both the planes.
ME1104.3	The objective is to make the students draw the projections of the plane inclined to both the planes.
ME1104.4	The objective is to make the students draw the projections of the plane inclined to both the planes
ME1104.5	The objective is to make the students draw the projections of the various types of solids indifferent positions inclined to one of the planes
ME1104.6	: The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa

Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C	
Course Code: **ME1105**	
ME1105.1	To write algorithms and to draw flowcharts for solving problems
ME1105.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
ME1105.3	To use different operators, data types and write programs that use two-way/ multi-way selection
ME1105.4	To select the best loop construct for a given problem
ME1105.5	To design and implement programs to analyse the different pointer applications
ME1105.6	To decompose a problem into functions and to develop modular reusable code

Course Name: **English communication skills lab**	
Course Code: **ME1106**	
ME1106.1	To impart the significance of spoken English
ME1106.2	To enhance the general conversation skills through different socio context
ME1106.3	To acquire the ability to use functional English
ME1106.4	To instil confidence by practising pronunciation and accent
ME1106.5	To identifying the barriers of communication
ME1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering physics lab**	
Course Code: **ME1107**	
ME1107.1	To provide an experimental foundation for the theoretical concepts introduced in

	the lectures
ME1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ME1107.3	To help students understand the role of direct observation in physics
ME1107.4	To distinguish between interference based on theory and experiments
ME1107.5	To introduce the concepts and techniques which have wide applications in experimental science
ME1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: PROGRAMMING FOR PROBLEM SOLVING USING C LAB	
Course Code: **ME1108**	
ME1108.1	Gains Knowledge on various concepts of a C language
ME1108.2	Able to draw flowcharts and write algorithms.
ME1108.3	Able design and development of C problem solving skills
ME1108.4	Able design and development of C problem solving skills
ME1108.5	Able to design and develop modular programming skills
ME1108.6	Able to trace and debug a program

Course Name: ENVIRONMENTAL SCIENCE	
Course Code:**ME1109**	
ME1109.1	Overall understanding of the natural resources
ME1109.2	Basic understanding of the ecosystem and its diversity
ME1109.3	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
ME1109.4	Discuss about Solid Waste Management
ME1109.5	An understanding of the environmental impact of developmental activities
ME1109.6	Awareness on the social issues, environmental legislation and global treaties.

Year/Sem: I B.Tech IISEM

Course Name: MATHEMATICS –II	
Course Code: **ME1201**	
ME1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
ME1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
ME1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithm
ME1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae

	for equal and unequal interval
ME1201.5	apply numerical integral techniques to different Engineering problems
ME1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: ENGINEERING CHEMISTRY	
Course Code: **ME1202**	
ME1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
ME1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
ME1202.3	Synthesize nanomaterial's for modern advances of engineering technology
ME1202.4	Summarize the techniques that detect and measure changes ofstate of reaction
ME1202.5	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced
ME1202.6	Analyze the suitable methods for purification and treatment of hard water and brackish water

Course Name: ENIGINEERING MECHANICS	
Course Code: **ME1203**	
ME1203.1	to be exposed to the concepts of force and friction , direction and its application
ME1203.2	Explain the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
ME1203.3	Discuss the concepts of centre of gravity
ME1203.4	Explain the concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
ME1203.5	To be exposed to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion
ME1203.6	Determine the concepts of work, energy and particle motion

Course Name: Basic Electrical & Electronics Engineering	
Course Code: **ME1204**	

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ME1204.1	Analyse various electrical networks
ME1204.2	Understand operation of DC generators,3-point starter and DC machine testing by Swinburne's Test and Brake test.
ME1204.3	Analyse performance of single-phase transformer
ME1204.4	Acquire proper knowledge and working of3-phase alternator and 3-phase induction motors.
ME1204.5	Analyse operation of half wave, full wave bridge rectifiers and OP-AMPs.
ME1204.6	Understanding operations of CE amplifier and basic concept of feedback amplifier.

Course Name: Thermodynamics	
Course Code: **ME1205**	
ME1205.1	Acquire Basic concepts of thermodynamics
ME1205.2	Explain Laws of thermodynamics
ME1205.3	Discuss Concept of entropy
ME1205.4	Explain Property evaluation of vapours and their depiction in tables and charts
ME1205.5	Determine Elementary Treatment of the Third Law of Thermodynamics
ME1205.6	Discuss Evaluation of properties of perfect gas mixtures.

Course Name: ENGINEERING CHEMISTRY LAB	
Course Code: **ME1206**	
ME1206.1	The students entering into the professional course have practically very little exposure tolab classes
ME1206.2	The experiments introduce volumetric analysis
ME1206.3	Introduce redox titrations with different indicators
ME1206.4	Exposed to a few instrumental methods of chemical analysis.
ME1206.5	Understand the student is exposed to different methods of chemical analysis
ME1206.6	Determine some commonly employed instruments. They thus acquire some experimental skills.

Course Name: Workshop Practice Lab	
Course Code: **ME1207**	
ME1207.1	To Understand the basic components and peripherals of a computer.
ME1207.2	To become familiar in configuring a system
ME1207.3	To Learn the usage of productivity tools
ME1207.4	To Acquire knowledge about the netiquette.
ME1207.5	To Acquire knowledge about cyber hygiene

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ME1207.6	To Get hands on experience in trouble shooting a system

Course Name: Basic Electrical & Electronics Engineering Lab	
Course Code: ME1208	
ME1208.1	Compute the efficiency of DC shunt machine without actual loading of the machine
ME1208.2	Estimate the efficiency and regulation at different load conditions and power factors for single phase transformer with OC and SC tests.
ME1208.3	Analyse the performance characteristics and to determine efficiency of DC shunt motor
ME1208.4	Pre-determine the regulation of an alternator by synchronous impedance method
ME1208.5	Control the speed of dc shunt motor using Armature voltage and Field flux control
ME1208.6	Determine the ripple factor of half wave & full wave rectifiers.

Course Name: Constitution of India	
Course Code: ME1209	
ME1209.1	To Enable the student to understand the importance of constitution
ME1209.2	To understand the structure of executive, legislature and judiciary
ME1209.3	To understand philosophy of fundamental rights and duties
ME1209.4	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.
ME1209.5	To understand auditor general of India and election commission of India
ME1209.6	To understand the central and state relation financial and administrative.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation-R20_A.Y:2020-2021

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **ECE1101**	
ECE1101.1	To develop human resources and serve the society through different ways
ECE1101.2	To educate and adopt the road safety measures by means transport
ECE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
ECE1101.4	Imparting the importance of alternative energy sources to the depleting sources
ECE1101.5	Realization on how to preserve the extension of animal life
ECE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **ECE1102**	
ECE1102.1	Solve the linier differential equations of first order
ECE1102.2	Solve the linier differential equations of second and higher order
ECE1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
ECE1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
ECE1102.5	Solve partial differential equations of first order
ECE1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **ECE1103**	
ECE1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
ECE1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
ECE1103.3	Identify the reasons of corrosion and controlling methods of corrosion
ECE1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
ECE1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
ECE1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving using C

Course Code: **ECE1104**	
ECE1104.1	Understand the basic terminology used in computer programming
ECE1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
ECE1104.3	Design programs involving decision structures, loops and functions.
ECE1104.4	Explain the difference between call by value and call by reference
ECE1104.5	Understand the dynamics of memory by the use of pointers
ECE1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: **ECE1105**	
ECE1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ECE1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
ECE1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
ECE1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
ECE1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
ECES1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **ECE1106**	
ECE1106.1	To impart the significance of spoken English
ECE1106.2	To enhance the general conversation skills through different socio context
ECE1106.3	To acquire the ability to use functional English
ECE1106.4	To instil confidence by practising pronunciation and accent
ECE1106.5	To identifying the barriers of communication
ECE1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: **ECE1107**	
ECE1107.1	To explain The experiments introduce volumetric analysis
ECE1107.2	To explain redox titrations
ECE1107.3	To explain complex metric titrations by using EDTA method
ECE1107.4	To explain the instrumental methods
ECE1107.5	To explain conduct metric titrations
ECE1107.6	To acquire the knowledge on potentiometric titrations

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Course Name Programming for Problem Solving Using C Lab	
Course Code:**ECE1108**	
ECE1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
ECE1108.2	Acquire knowledge about the basic concept of writing a program
ECE1108.3	Role of constants, variables, identifiers, operators,
ECE**1108.4**	Explain type conversion and other building blocks of C Language. •
ECE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
ECE**1108.6**	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: ECE**1201**	
ECE**1201.1**	Calculate the root of algebraic and transiently equation
ECE**1201.2**	Compute inter polating polynomial for the given data
ECE**1201.3**	Solve ordinary differential equation numerically using Euler's and R-K method
ECE**1201.4**	Find Fourier series for certain functions
ECE**1201.5**	Find Fourier transform for certain functions
ECE**1201.6**	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: ECE**1202**	
ECE**1202.1**	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1202.2**	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1202.3**	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
ECE**1202.4**	To explore the Nuclear Power as a reliable source required to run industries
ECE**1202.5**	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
ECE**1202.6**	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

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Course Name: Object oriented programming through java	
Course Code: ECE**1203**	
ECE**1203.1**	Show competence in the use of the Java programming language in the development of small to medium- sized application programs that demonstrate professionally acceptable coding
ECE**1203.2**	Illustrate the basic principles of the object-oriented programming
ECE**1203.3**	Demonstrate an introductory understanding of graphical user interfaces, multithreaded programming, and event-driven programming.
ECE**1203.4**	the analytical skills of object oriented programming
ECE**1203.5**	Overall development of problem solving and critical analysis
ECE**1203.6**	Formal introduction to Java programming language

Course Name: Network Analysis	
Course Code: ECE**1204**	
ECE**1204.1**	To gain the knowledge on basic network elements.
ECE**1204.2**	Will analyze the RLC circuit's behaviour in detailed.
ECE**1204.3**	Analyze the performance of periodic waveforms.
ECE**1204.4**	Gain the knowledge in characteristics of two port network parameters (Z,Y, ABCD,h&g).
ECE**1204.5**	Analyze the filter design concepts in real world applications.
ECE**1204.6**	To understand the properties of LC networks and filters.

Course Name: Basic Electrical Engineering	
Course Code: ECE**1205**	
ECE**1205.1**	To learn the basic principles of electrical circuital law's and analysis of networks.
ECE**1205.2**	To understand principle of operation and construction details of DC machines.
ECE**1205.3**	To understand principle of operation and construction details of transformers,
ECE**1205.4**	To explain alternator and 3- Phase induction motor.
ECE**1205.5**	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
ECE**1205.6**	To learn operation of PNP and NPN transistors and various amplifiers.

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Course Name: Electronic workshop	
Course Code: ECE**1206**	
ECE**1206.1**	To Understand the basic components and peripherals of a computer.
ECE**1206.2**	To become familiar in configuring a system
ECE**1206.3**	To Learn the usage of productivity tools
ECE**1206.4**	To Acquire knowledge about the netiquette.
ECE**1206.5**	To Acquire knowledge about cyber hygiene
ECE**1206.6**	To Get hands on experience in trouble shooting a system

Course Name: **Engineering physics lab**	
Course Code: ECE**1207**	
ECE**1207.1**	To provide an experimental foundation for the theoretical concepts introduced in the lectures
ECE**1207.2**	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ECE**1207.3**	To help students understand the role of direct observation in physics
ECE**1207.4**	To distinguish between interference based on theory and experiments
ECE**1207.5**	To introduce the concepts and techniques which have wide applications in experimental science
ECE**1207.6**	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name Basic Electrical Engineering Lab	
Course Code: ECE**1208**	
ECE**1208.1**	To plot the magnetizing characteristics of DC shunt generator and understand the mechanism of self-excitation
ECE**1208.2**	To control the speed of DCmotors.
ECE**1208.3**	To determine and predetermine the performance of DCmachines.
ECE**1208.4**	To predetermine the efficiency and regulation of transformers and assess their performance.
ECE**1208.5**	To analyse performance of three phase induction motor.
ECE**1208.6**	To understand the significance of regulation of an alternators using synchronous impedance method.

Course Name: **Environmental studies**	
Course Code: ECE**1109**	
ECE**1209.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
ECE**1209.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
ECE**1209.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
ECE**1209.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
ECE**1209.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
ECE**1209.6**	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2020-2021

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CS1101**	
CS1101.1	To Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
CS1101.2	To Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
CS1101.3	To Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
CS1101.4	To improve participation in activities such as role plays, discussions and structured talks/oral presentations
CS1101.5	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
CS1101.6	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Course Name: **Mathematics –I**	
Course Code: **CS1102**	
CS1102.1	To utilize mean value theorems to real life problems
CS1102.2	To solve the differential equations related to various engineering fields
CS1102.3	To familiarize with functions Of several variables which is useful in optimization
CS1102.4	To familiarize with functions of several variables which is useful in optimization
CS1102.5	To apply double integration techniques in evaluating areas bounded by region
CS1102.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

Course Name: **Applied physics**	
Course Code: **CS1103**	
CS1103.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CS1103.4	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.5	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS1103.6	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.

Course Name: Programming for Problem Solving using C	
Course Code: **CS1104**	
CS1104.1	Understand the basic terminology used in computer programming
CS1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program
CS1104.3	Design programs involving decision structures, loops and functions.
CS1104.4	Explain the difference between call by value and call by reference
CS1104.5	Understand the dynamics of memory by the use of pointers
CS1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Computer Engineering Workshop	
Course Code: **CS1105**	
CS1105.1	Assemble and disassemble components of a PC
CS1105.2	Construct a fully functional virtual machine, Summarize various Linux operating system
CS1105.3	Recognize characters & extract text from scanned images, Create audio files and podcasts
CS1105.4	Explain the usage of Internet for productivity and self paced lifelong learning
CS1105.5	Describe about Compression, Multimedia and Antivirus tools
CS1105.6	Demonstrate Office Tools such as Word processors, Spreadsheets and Presentation tools

Course Name: **English communication skills lab**	
Course Code: **CS1106**	
CS1106.1	To impart the significance of spoken English
CS1106.2	To enhance the general conversation skills through different socio context
CS1106.3	To acquire the ability to use functional English
CS1106.4	To instil confidence by practising pronunciation and accent
CS1106.5	To identifying the barriers of communication
CS1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied physics lab**	
Course Code: **CS1107**	
CS1107.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CS1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CS1107.3	To help students understand the role of direct observation in physics
CS1107.4	To distinguish between interference based on theory and experiments

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CS1107.5	To introduce the concepts and techniques which have wide applications in experimental science
CS1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Computer programming lab**	
Course Code: **CS1108**	
CS1108.1	Understand the basic concept of C Programming, and its different modules that include conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CS1108.2	Acquire knowledge about the basic concept of writing a program
CS1108.3	Role of constants, variables, identifiers, operators,
CS1108.4	Explain type conversion and other building blocks of C Language. •
CS1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CS1108.6	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech I ISEM

Course Name: Mathematics – II	
Course Code: **CS1201**	
CS1201.1	develop the use of matrix algebra techniques that is needed by engineers for practical applications
CS1201.2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
CS1201.3	evaluate the approximate roots of polynomial and transcendental equations by different algorithms
CS1201.4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals
CS1201.5	apply numerical integral techniques to different Engineering problems
CS1201.6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations

Course Name: Applied Chemistry	
Course Code: **CS1202**	
CS1202.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers
CS1202.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
CS1202.3	Synthesize nonmaterials for modern advances of engineering technology.

CS1202.4	Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
CS1202.5	Analyze the principles of different analytical instruments and their applications.
CS1202.6	Obtain the knowledge of computational chemistry and molecular machines

Course Name: COMPUTER ORGANIZATION	
Course Code: **CS1203**	
CS1203.1	Demonstrate and understanding of the design of the functional units of a digital computer system
CS1203.2	Relate Postulates of Boolean algebra and minimize combinational functions
CS1203.3	Recognize and manipulate representations of numbers stored in digital computers
CS1203.4	Design and analyze combinational and sequential circuits
CS1203.5	Recall the internal organization of computers, CPU, memory unit and Input/Outputs and the relations between its main components
CS1203.6	Solve elementary problems by assembly language programming

Course Name: PYTHON PROGRAMMING	
Course Code: **CS1204**	
CS1204.1	Develop essential programming skills in computer programming concepts like data types, containers
CS1204.2	Apply the basics of programming in the Python language
CS1204.3	Solve coding tasks related conditional execution, loops
CS1204.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CS1204.5	To be familiarized with general computer programming concepts like conditional execution, loops & functions
CS1204.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: DATA STRUCTURES	
Course Code: **CS1205**	
CS1205.1	Summarize the properties, interfaces, and behaviours of basic abstract data types
CS1205.2	Discuss the computational efficiency of the principal algorithms for sorting & searching
CS1205.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
CS1205.4	Demonstrate different methods for traversing trees
CS1205.5	Emphasize the importance of data structures in developing and implementing efficient algorithms
CS1205.6	Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

Course Name: APPLIED CHEMISTRY LAB	
Course Code: **CS1206**	
CS1206.1	To explain The experiments introduce volumetric analysis
CS1206.2	To explain redox titrations
CS1206.3	To explain complex metric titrations by using EDTA method
CS1206.4	To explain the instrumental methods
CS1206.5	To explain conduct metric titrations
CS1206.6	To acquire the knowledge on potentiometric titrations

Course Name: PYTHON PROGRAMMING LAB	
Course Code: **CS1207**	
CS1207.1	Develop essential programming skills in computer programming concepts like data types, containers
CS1207.2	Apply the basics of programming in the Python language
CS1207.3	Solve coding tasks related conditional execution, loops
CS1207.4	Solve coding tasks related to the fundamental notions and techniques used in object oriented programming
CS1207.5	To be familiarized with general computer programming concepts like conditional execution, loops &functions
CS1207.6	To be familiarized with general coding techniques and object-oriented programming

Course Name: DATA STRUCTURES LAB	
Course Code: **CS1208**	
CS1208.1	Use basic data structures such as arrays and linked list.
CS1208.2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
CS1208.3	Use various searching and sorting algorithms.
CS1208.4	Demonstrate the different data structures implementation.
CS1208.5	Write C program that implement stack using arrays
CS1208.6	Write a recursive C program for traversing a binary tree in preorder, in order and post order.

Course Name: ENVIRONMENT SCIENCE	
Course Code: **CS1209**	
CS1209.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CS1209.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CS1209.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CS1209.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CS1209.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CS1209.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R20   A.Y:2020-2021

Year/Sem: I B.Tech I SEM

Course Name: **M-I**	
Course Code: **AME1101**	
AME1101.1	Solve the linier differential equations of first order
AME1101.2	Solve the linier differential equations of second and higher order
AME1101.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
AME1101.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
AME1101.5	Solve partial differential equations of first order
AME1101.6	Solve second and higher order differential equations

Course Name: Engineering Chemistry	
Course Code: **AME1102**	
AME1102.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
AME1102.2	Outline the basics for the construction of electrochemical cells, batteries and fuel cells. Understand the mechanism of corrosion and how it can be prevented.
AME1102.3	Express the increase in demand as wide variety of advanced materials are introduced; which have excellent engineering properties
AME1102.4	discuss the materials used in major industries like steel industry, metallurgical industries and construction industries and electrical equipment manufacturing industries. Lubrication is also summarized.
AME1102.5	Relate the need of fuels as a source of energy to any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence introduced
AME1102.6	Explain the importance and usage of water as basic material in almost all the industries; interpret drawbacks of steam boilers and also how portable water is supplied for drinking purposes.

Course Name: Engineering Mechanics	
Course Code: **AME1103**	
AME1103.1	Explain the concepts of force and friction, direction and its applications
AME1103.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
AME1103.3	To explain concepts of centre of gravity
AME1103.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
AME1103.5	To explain to motion in straight line and in curvilinear paths, its velocity and

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	acceleration computation and methods of representing plane motion.
AME1103.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: : Programming for Problem Solving Using C	
Course Code: **AME1104**	
AME1104.1	Understand the basic terminology used in computer programming
AME1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
AME1104.3	Design programs involving decision structures, loops and functions.
AME1104.4	Explain the difference between call by value and call by reference
AME1104.5	Understand the dynamics of memory by the use of pointers
AME1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Communicative English	
Course Code: **AME1105**	
AME1105.1	To describe the education system that aims to enhance wisdom
AME1105.2	To promote peaceful existence and universal harmony
AME1105.3	To analyse the symptoms of cultural shock and after math consequences
AME1105.4	To provide the awareness of taboos of cultural tradition
AME1105.5	To educate the affect of environmental changes that leads to several health disorders
AME1105.6	To enhance Advancement of technology for the betterment of human life

Course Name: English Lab	
Course Code: **AME1106**	
AME1106.1	To build the initial ability of presenting their views in debating
AME1106.2	To convey the deas through Group Discussion
AME1106.3	To plan & prepare for oral presentation
AME1106.4	To develop the ability of how to face an interview
AME1106.5	To create the capability of writing skills ie., Emails &Cvs
AME1106.6	To utilise appropriate use of idiomatic Expressions

Course Name: Engineering Chemistry Laboratory	
Course Code: **AME1107**	
AME1107.1	To explain The experiments introduce volumetric analysis
AME1107.2	To explain redox titrations
AME1107.3	To explain complex metric titrations by using EDTA method
AME1107.4	To explain the instrumental methods

AME1107.5	To explain conduct metric titrations
AME1107.6	To acquire the knowledge on potentiometric titrations

Course Name: Programming for problem Solving Using C Lab	
Course Code: **AME1108**	
AME1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AME1108.2	Acquire knowledge about the basic concept of writing a program
AME1108.3	Role of constants, variables, identifiers, operators,
AME1108.4	Explain type conversion and other building blocks of C Language. •
AME1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
AME1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: Environmental Science	
Course Code: **AME1109**	
AME1109.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AME1109.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AME1109.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AME1109.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AME1109.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AME1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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Year/Sem: I B.Tech I ISEM

Course Name: Mathematics – II	
Course Code: **AME1201**	
AME1201.1	Calculate the root of algebraic and transiently equation
AME1201.2	Compute inter polating polynomial for the given data
AME1201.3	Solve ordinary differential equation numerically using Euler's and R-K method
AME1201.4	Find Fourier series for certain functions
AME1201.5	Find Fourier transform for certain functions
AME1201.6	Identify and classify and solve the different types of partial differential equations

Course Name: : Engineering Physics	
Course Code: **AME1202**	
AME1202.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
AME1202.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
AME1202.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
AME1202.4	To explore the Nuclear Power as a reliable source required to run industries
AME1202.5	To impart the knowledge of materials with characteristic utility in appliances.
AME1202.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

Course Name: Metallurgy & Materials Science	
Course Code: **AME1203**	
AME1203.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems.
AME1203.2	Study the behaviour of ferrous and non ferrous metals and alloys and their

	application in different domains
AME1203.3	Able to understand the effect of heat treatment, addition of alloying elements on Properties of ferrous metals.
AME1203.4	Grasp the methods of making of metal powders and applications of powder metallurgy
AME1203.5	Comprehend the properties and applications of ceramic,
AME1203.6	Explain composites and other advanced methods.

Course Name: **BEEE**	
Course Code: **AME1204**	
AME1204.1	To learn the basic principles of electrical circuital law's and analysis of networks.
AME1204.2	To understand principle of operation and construction details of DC machines.
AME1204.3	To understand principle of operation and construction details of transformers,
AME1204.4	To explain alternator and 3- Phase induction motor.
AME1204.5	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
AME1204.6	To learn operation of PNP and NPN transistors and various amplifiers.

Course Name: Engineering Graphics	
Course Code: **AME1205**	
AME1205.1	Student get exposed on working of sheet metal with help of development of surfaces
AME1205.2	Student understands how to know the hidden details of machine components with the help of sections and interpenetrations of solids
AME1205.3	Student shall exposed to modeling commands for generating 2D and 3D objects using computer aided drafting tools which are useful to create machine elements for computer aided analysis.
AME1205.4	The objective is to introduce various commands in AutoCAD to draw the geometric entities and to create 2D and 3D wire frame models.
AME1205.5	By going through this topic the student will be able to understand the paper-space environment thoroughly.
AME1205.6	The objective is to make the students create geometrical model of simple solids and machine parts and display the same as an Isometric, Orthographic or Perspective projection.

Course Name: Engineering Physics Laboratory	
Course Code: **AME1206**	

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AME1206.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AME1206.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
AME1206.3	To help students understand the role of direct observation in physics
AME1206.4	To distinguish between interference based on theory and experiments
AME1206.5	To introduce the concepts and techniques which have wide applications in experimental science
AME1206.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Engineering Workshop & IT Workshop Laboratory	
Course Code: **AME1207**	
AME1207.1	To Understand the basic components and peripherals of a computer.
AME1207.2	To become familiar in configuring a system
AME1207.3	To Learn the usage of productivity tools
AME1207.4	To Acquire knowledge about the netiquette.
AME1207.5	To Acquire knowledge about cyber hygiene
AME1207.6	To Get hands on experience in trouble shooting a system

Course Name: Basic Electrical & Electronics Engineering Lab	
Course Code: **AME1208**	
AME1208.1	To predetermine the efficiency of dc shunt machine using Swinburne's test. To predetermine the efficiency and regulation of 1-phase transformer with O.C and S.C tests.
AME1208.2	To obtain performance characteristics of DC shunt motor &3-phase induction motor.
AME1208.3	To find out regulation of an alternator with synchronous impedance method.
AME1208.4	To control speed of dc shunt motor using Armature voltage and Field flux control methods.
AME1208.5	To find out the characteristics of PN junction diode & transistor
AME1208.6	To determine the ripple factor of half wave & full wave rectifiers.

Course Name: Constitution of India	
Course Code: **AME1209**	
AME1209.1	To Enable the student to understand the importance of constitution
AME1209.2	To understand the structure of executive, legislature and judiciary
AME1209.3	To understand philosophy of fundamental rights and duties
AME1209.4	To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller.

AME1209.5	To understand auditor general of India and election commission of India
AME1209.6	To understand the central and state relation financial and administrative.

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes
Regulation R19   A.Y:2019-2020

Year/Sem: I B.Tech I SEM

Course Name: **M-I**	
Course Code: **CE1101**	
CE1101.1	Solve the linier differential equations of first order
CE1101.2	Solve the linier differential equations of second and higher order
CE1101.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
CE1101.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
CE1101.5	Solve partial differential equations of first order
CE1101.6	Solve second and higher order differential equations

Course Name: **Mathematics –II**	
Course Code: **CE1102**	
CE1102.1	Calculate the root of algebraic and transiently equation
CE1102.2	Compute inter polating polynomial for the given data
CE1102.3	Solve ordinary differential equation numerically using Euler's and R-K method
CE1102.4	Find Fourier series for certain functions
CE1102.5	Find Fourier transform for certain functions
CE1102.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Engineering physics**	
Course Code: **CE1103**	
CE1103.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CE1103.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
CE1103.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CE1103.4	To explore the Nuclear Power as a reliable source required to run industries
CE1103.5	To impart the knowledge of materials with characteristic utility in appliances.
CE1103.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

Course Name: : **Engineering mechanics**	
Course Code: **CE1104**	
CE1104.1	Explain the concepts of force and friction, direction and its applications

CE1104.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
CE1104.3	To explain concepts of centre of gravity
CE1104.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
CE1104.5	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
CE1104.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: Engineering drawing	
Course Code: **CE1105**	
CE1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CE1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
CE1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
CE1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
CE1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
CE1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: English Lab	
Course Code: **CE1106**	
CE1106.1	To build the initial ability of presenting their views in debating
CE1106.2	To convey the deas through Group Discussion
CE1106.3	To plan & prepare for oral presentation
CE1106.4	To develop the ability of how to face an interview
CE1106.5	To create the capability of writing skills ie., Emails &Cvs
CE1106.6	To utilise appropriate use of idiomatic Expressions

Course Name: Engineering Physics Lab	
Course Code: **CE1107**	
CE1107.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CE1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CE1107.3	To help students understand the role of direct observation in physics
CE1107.4	To distinguish between interference based on theory and experiments
CE1107.5	To introduce the concepts and techniques which have wide applications in

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	experimental science
CE1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Year/Sem: I B.Tech I ISEM

Course Name: English	
Course Code: **CE1201**	
CE1201.1	To describe the education system that aims to enhance wisdom
CE1201.2	To promote peaceful existence and universal harmony
CE1201.3	To analyse the symptoms of cultural shock and after math consequences
CE1201.4	To provide the awareness of taboos of cultural tradition
CE1201.5	To educate the affect of environmental changes that leads to several health disorders
CE1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-III**	
Course Code: **CE1202**	
CE1202.1	Determine rank and solve simultaneous linier equations
CE1202.2	Solve simultaneous linier equations numerically using various matrix methods
CE1202.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
CE1202.4	Determine double integral over the region and triple integral over a volume
CE1202.5	Determine special functions and evolution of improper integrals
CE1202.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: Engineering Chemistry	
Course Code: **CE1203**	
CE1203.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
CE1203.2	Outline the basics for the construction of electrochemical cells, batteries and fuel cells. Understand the mechanism of corrosion and how it can be prevented.
CE1203.3	Express the increase in demand as wide variety of advanced materials are introduced; which have excellent engineering properties
CE1203.4	discuss the materials used in major industries like steel industry, metallurgical

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	industries and construction industries and electrical equipment manufacturing industries. Lubrication is also summarized.
CE1203.5	Relate the need of fuels as a source of energy to any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence introduced
CE1203.6	Explain the importance and usage of water as basic material in almost all the industries; interpret drawbacks of steam boilers and also how portable water is supplied for drinking purposes.

Course Name: **Computer programming**	
Course Code: **CE1204**	
CE1204.1	Understand the basic terminology used in computer programming
CE1204.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
CE1204.3	Design programs involving decision structures, loops and functions.
CE1204.4	Explain the difference between call by value and call by reference
CE1204.5	Understand the dynamics of memory by the use of pointers
CE1204.6	Understand the dynamics of memory by the use of pointers

Course Name: Computer Aided Engineering Drawing	
Course Code: **CE1205**	
CE1205.1	Student get exposed on working of sheet metal with help of development of surfaces
CE1205.2	Student understands how to know the hidden details of machine components with the help of sections and interpenetrations of solids
CE1205.3	Student shall exposed to modeling commands for generating 2D and 3D objects using computer aided drafting tools which are useful to create machine elements for computer aided analysis.
CE1205.4	The objective is to introduce various commands in AutoCAD to draw the geometric entities and to create 2D and 3D wire frame models.
CE1205.5	By going through this topic the student will be able to understand the paper-space environment thoroughly.
CE1205.6	The objective is to make the students create geometrical model of simple solids and machine parts and display the same as an Isometric, Orthographic or Perspective projection.

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Course Name: Programming for problem Solving Using C Lab	
Course Code: **CE1206**	
CE1206.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CE1206.2	Acquire knowledge about the basic concept of writing a program
CE1206.3	Role of constants, variables, identifiers, operators,
CE1206.4	Explain type conversion and other building blocks of C Language. •
CE1206.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CE1206.6	To explain Role of Functions involving the idea of modularity.

Course Name: Engineering Chemistry Lab	
Course Code: **CE1207**	
CE1207.1	To explain The experiments introduce volumetric analysis
CE1207.2	To explain redox titrations
CE1207.3	To explain complex metric titrations by using EDTA method
CE1207.4	To explain the instrumental methods
CE1207.5	To explain conduct metric titrations
CE1207.6	To acquire the knowledge on potentiometric titrations

Course Name: Communication Skills Lab	
Course Code: **CE1208**	
CE1208.1	To build the initial ability of presenting their views in debating
CE1208.2	To convey the Ideas through Group Discussion
CE1208.3	To plan & prepare for oral presentation
CE1208.4	To develop the ability of how to face an interview
CE1208.5	To create the capability of writing skills ie., Emails & Cvs
CE1208.6	To utilise appropriate use of idiomatic Expressions

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Course Name: Workshop Practice Lab	
Course Code: **CE1209**	
CE1209.1	To Understand the basic components and peripherals of a computer.
CE1209.2	To become familiar in configuring a system
CE1209.3	To Learn the usage of productivity tools
CE1209.4	To Acquire knowledge about the netiquette.
CE1209.5	To Acquire knowledge about cyber hygiene
CE1209.6	To Get hands on experience in trouble shooting a system

Course Name: **Environmental studies**	
Course Code: **CE12010**	
CE12010.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CE12010.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CE12010.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CE12010.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CE12010.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CE12010.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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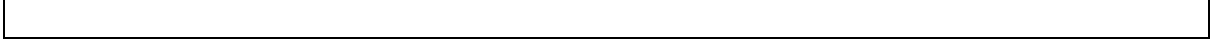www.eswarcollegeofengg.org, email:eswarcollegeofengg@gmail.com

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R19   A.Y:2019-2020

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **EEE1101**	
EEE1101.1	To develop human resources and serve the society through different ways
EEE1101.2	To educate and adopt the road safety measures by means transport
EEE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
EEE1101.4	Imparting the importance of alternative energy sources to the depleting sources
EEE1101.5	Realization on how to preserve the extension of animal life
EEE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: EEE**1102**	
EEE**1102.1**	Solve the linier differential equations of first order
EEE**1102.2**	Solve the linier differential equations of second and higher order
EEE**1102.3**	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
EEE**1102.4**	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
EEE**1102.5**	Solve partial differential equations of first order
EEE**1102.6**	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: EEE**1103**	
EEE**1103.1**	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
EEE**1103.2**	Discuss the the advantages of fuels and how to prepare synthetic petrol
EEE**1103.3**	Identify the reasons of corrosion and controlling methods of corrosion
EEE**1103.4**	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
EEE**1103.5**	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
EEE**1103.6**	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving Using C

Course Code: EEE**1104**	
EEE**1104.1**	Understand the basic terminology used in computer programming
EEE**1104.2**	Explain, compile and debug programs in C language. Use different data types in a computer program.
EEE**1104.3**	Design programs involving decision structures, loops and functions.
EEE**1104.4**	Explain the difference between call by value and call by reference
EEE**1104.5**	Understand the dynamics of memory by the use of pointers
EEE**1104.6**	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: EEE**1105**	
EEE**1105.1**	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
EEE**1105.2**	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
EEE**1105.3**	The objective is to make the students draw the projections of the lines inclined to both the planes.
EEE**1105.4**	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
EEE**1105.5**	The objective is to make the students draw the projections of the plane inclined to both the planes.
EEE**1105.6**	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: EEE**1106**	
EEE**1106.1**	To impart the significance of spoken English
EEE**1106.2**	To enhance the general conversation skills through different socio context
EEE**1106.3**	To acquire the ability to use functional English
EEE**1106.4**	To instil confidence by practising pronunciation and accent
EEE**1106.5**	To identifying the barriers of communication
EEE**1106.6**	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: EEE**1107**	
EEE**1107.1**	To explain The experiments introduce volumetric analysis
EEE**1107.2**	To explain redox titrations
EEE**1107.3**	To explain complex metric titrations by using EDTA method
EEE**1107.4**	To explain the instrumental methods
EEE**1107.5**	To explain conduct metric titrations
EEE**1107.6**	To acquire the knowledge on potentiometric titrations

Course Name: **Computer programming lab**	
Course Code:EEE**1108**	
EEE**1108.1**	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
EEE**1108.2**	Acquire knowledge about the basic concept of writing a program
EEE**1108.3**	Role of constants, variables, identifiers, operators,
EEE**1108.4**	Explain type conversion and other building blocks of C Language. •
EEE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
EEE**1108.6**	To explain Role of Functions involving the idea of modularity.

Course Name: **Environmental studies**	
Course Code: EEE**1109**	
EEE**1109.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
EEE**1109.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
EEE**1109.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
EEE**1109.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
EEE**1109.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
EEE1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: **EEE1201**	
EEE1201.1	Calculate the root of algebraic and transiently equation
EEE1201.2	Compute inter polating polynomial for the given data
EEE1201.3	Solve ordinary differential equation numerically using Euler's and R-K method
EEE1201.4	Find Fourier series for certain functions
EEE1201.5	Find Fourier transform for certain functions
EEE1201.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Mathematics-III**	
Course Code: **EEE1202**	
EEE1202.1	Determine rank and solve simultaneous linier equations
EEE1202.2	Solve simultaneous linier equations numerically using various matrix methods
EEE1202.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
EEE1202.4	Determine double integral over the region and triple integral over a volume
EEE1202.5	Determine special functions and evolution of improper integrals
EEE1202.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Applied physics**	
Course Code: **EEE1203**	
EEE1203.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
EEE1203.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
EEE1203.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
EEE1203.4	To explore the Nuclear Power as a reliable source required to run industries
EEE1203.5	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.

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EEE1203.6	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Name: Fundamentals of Computers	
Course Code: **EEE1204**	
EEE1204.1	Explain the concepts of computers and classify based on type and generation.
EEE1204.2	Demonstrate the techniques of writing algorithms pseudo codes & schematic flow of logic in software development process .
EEE1204.3	Teach about the purpose of networks and types of networks and media to connect the computers
EEE1204.4	Teach about Operating Systems and its concepts.
EEE1204.5	Illustrate about database architecture and its components
EEE1204.6	Illustrate about distributed computing, peer to peer, grid, cloud on demand and utility computing.

Course Name: **ECA-1**	
Course Code: **EEE1205**	
EEE1205.1	To study the concepts of passive elements, types of sources and various network reduction techniques.
EEE1205.2	To understand the applications of network topology to electrical circuits.
EEE1205.3	To study the concept of magnetic coupled circuit
EEE1205.4	To understand the behaviour of RLC networks for sinusoidal excitations
EEE1205.5	To study the performance of R-L, R-C and R-L-C circuits with variation of one of the parameters and to understand the concept of resonance.
EEE1205.6	To understand the applications of network theorems for analysis of electrical networks

Course Name: Electrical Engineering Workshop	
Course Code: **EEE1206**	
EEE1206.1	To Understand the basic components and peripherals of a computer.
EEE1206.2	To become familiar in configuring a system
EEE1206.3	To Learn the usage of productivity tools
EEE1206.4	To Acquire knowledge about the netiquette.
EEE1206.5	To Acquire knowledge about cyber hygiene
EEE1206.6	To Get hands on experience in trouble shooting a system

Course Name: **English communication skills lab**	
Course Code: **EEE1205**	
EEE1207.1	To build the initial ability of presenting their views in debating
EEE1207.2	To convey the Ideas through Group Discussion
EEE1207.3	To plan & prepare for oral presentation
EEE1207.4	To develop the ability of how to face an interview
EEE1207.5	To create the capability of writing skills ie., Emails &Cvs
EEE1207.6	To utilise appropriate use of idiomatic Expressions

Course Name: **Engineering physics lab**	
Course Code: **EEE1208**	
EEE1208.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
EEE1208.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
EEE1208.3	To help students understand the role of direct observation in physics
EEE1208.4	To distinguish between interference based on theory and experiments
EEE1208.5	To introduce the concepts and techniques which have wide applications in experimental science
EEE1208.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R19   A.Y:2019-2020

Year/Sem: I B.Tech I SEM

Course Name: **M-I**	
Course Code: **ME1101**	
ME1101.1	Solve the linier differential equations of first order
ME1101.2	Solve the linier differential equations of second and higher order
ME1101.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
ME1101.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
ME1101.5	Solve partial differential equations of first order
ME1101.6	Solve second and higher order differential equations

Course Name: **Mathematics –II**	
Course Code: **ME1102**	
ME1102.1	Calculate the root of algebraic and transiently equation
ME1102.2	Compute inter polating polynomial for the given data
ME1102.3	Solve ordinary differential equation numerically using Euler's and R-K method
ME1102.4	Find Fourier series for certain functions
ME1102.5	Find Fourier transform for certain functions
ME1102.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Engineering physics**	
Course Code: **ME1103**	
ME1103.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ME1103.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
ME1103.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
ME1103.4	To explore the Nuclear Power as a reliable source required to run industries
ME1103.5	To impart the knowledge of materials with characteristic utility in appliances.
ME1103.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

Course Name: : Programming for Problem Solving Using C	
Course Code: **ME1104**	
ME1104.1	Understand the basic terminology used in computer programming

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ME1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
ME1104.3	Design programs involving decision structures, loops and functions.
ME1104.4	Explain the difference between call by value and call by reference
ME1104.5	Understand the dynamics of memory by the use of pointers
ME1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Engineering drawing	
Course Code: **ME1105**	
ME1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ME1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
ME1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
ME1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
ME1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
ME1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: English Lab	
Course Code: **ME1106**	
ME1106.1	To build the initial ability of presenting their views in debating
ME1106.2	To convey the deas through Group Discussion
ME1106.3	To plan & prepare for oral presentation
ME1106.4	To develop the ability of how to face an interview
ME1106.5	To create the capability of writing skills ie., Emails &Cvs
ME1106.6	To utilise appropriate use of idiomatic Expressions

Course Name: Engineering Physics Lab	
Course Code: **ME1107**	
ME1107.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
ME1107.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ME1107.3	To help students understand the role of direct observation in physics
ME1107.4	To distinguish between interference based on theory and experiments
ME1107.5	To introduce the concepts and techniques which have wide applications in

	experimental science
ME1107.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Programming for problem Solving Using C Lab	
Course Code: **ME1108**	
ME1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
ME1108.2	Acquire knowledge about the basic concept of writing a program
ME1108.3	Role of constants, variables, identifiers, operators,
ME1108.4	Explain type conversion and other building blocks of C Language. •
ME1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
ME1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: Constitution of India	
Course Code: **ME1109**	
ME1109.1	To Enable the student to understand the importance of constitution
ME1109.2	To understand the structure of executive, legislature and judiciary
ME1109.3	To understand philosophy of fundamental rights and duties
ME1109.4	To understand the autonomous nature of constitutional bodies like Supreme Court and high court .
ME1109.5	To understand controller and auditor general of India and election commission of India
ME1109.6	To understand the central and state relation financial and administrative.

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Year/Sem: I B.Tech I ISEM

Course Name: English	
Course Code: **ME1201**	
ME1201.1	To describe the education system that aims to enhance wisdom
ME1201.2	To promote peaceful existence and universal harmony
ME1201.3	To analyse the symptoms of cultural shock and after math consequences
ME1201.4	To provide the awareness of taboos of cultural tradition
ME1201.5	To educate the affect of environmental changes that leads to several health disorders
ME1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: : Engineering Chemistry	
Course Code: **ME1202**	
ME1202.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
ME1202.2	Outline the basics for the construction of electrochemical cells, batteries and fuel cells. Understand the mechanism of corrosion and how it can be prevented.
ME1202.3	Express the increase in demand as wide variety of advanced materials are introduced; which have excellent engineering properties
ME1202.4	discuss the materials used in major industries like steel industry, metallurgical industries and construction industries and electrical equipment manufacturing industries. Lubrication is also summarized.
ME1202.5	Relate the need of fuels as a source of energy to any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence introduced
ME1202.6	Explain the importance and usage of water as basic material in almost all the industries; interpret drawbacks of steam boilers and also how portable water is supplied for drinking purposes.

Course Name: Engineering mechanics	
Course Code: **ME1203**	
ME1203.1	Explain the concepts of force and friction, direction and its applications

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ME1203.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
ME1203.3	To explain concepts of centre of gravity
ME1203.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
ME1203.5	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
ME1203.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: **BEEE**	
Course Code: **ME1204**	
ME1204.1	To learn the basic principles of electrical circuital law's and analysis of networks.
ME1204.2	To understand principle of operation and construction details of DC machines.
ME1204.3	To understand principle of operation and construction details of transformers,
ME1204.4	To explain alternator and 3- Phase induction motor.
ME1204.5	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
ME1204.6	To learn operation of PNP and NPN transistors and various amplifiers.

Course Name: Computer Aided Engineering Drawing	
Course Code: **ME1205**	
ME1205.1	Student get exposed on working of sheet metal with help of development of surfaces
ME1205.2	Student understands how to know the hidden details of machine components with the help of sections and interpenetrations of solids
ME1205.3	Student shall exposed to modeling commands for generating 2D and 3D objects using computer aided drafting tools which are useful to create machine elements for computer aided analysis.
ME1205.4	The objective is to introduce various commands in AutoCAD to draw the geometric entities and to create 2D and 3D wire frame models.
ME1205.5	By going through this topic the student will be able to understand the paper-space environment thoroughly.
ME1205.6	The objective is to make the students create geometrical model of simple solids and machine parts and display the same as an Isometric, Orthographic or Perspective projection.

Course Name: Engineering Chemistry Lab

Course Code: **ME1206**	
ME1206.1	To explain The experiments introduce volumetric analysis
ME1206.2	To explain redox titrations
ME1206.3	To explain complex metric titrations by using EDTA method
ME1206.4	To explain the instrumental methods
ME1206.5	To explain conduct metric titrations
ME1206.6	To acquire the knowledge on potentiometric titrations

Course Name: Communication Skills Lab	
Course Code: **ME1207**	
ME1207.1	To build the initial ability of presenting their views in debating
ME1207.2	To convey the Ideas through Group Discussion
ME1207.3	To plan & prepare for oral presentation
ME1207.4	To develop the ability of how to face an interview
ME1207.5	To create the capability of writing skills ie., Emails & Cvs
ME1207.6	To utilise appropriate use of idiomatic Expressions

Course Name: Basic Electrical & Electronics Engineering Lab	
Course Code: **ME1208**	
ME1208.1	To predetermine the efficiency of dc shunt machine using Swinburne's test. To predetermine the efficiency and regulation of 1-phase transformer with O.C and S.C tests.
ME1208.2	To obtain performance characteristics of DC shunt motor &3-phase induction motor.
ME1208.3	To find out regulation of an alternator with synchronous impedance method.
ME1208.4	To control speed of dc shunt motor using Armature voltage and Field flux control methods.
ME1208.5	To find out the characteristics of PN junction diode & transistor
ME1208.6	To determine the ripple factor of half wave & full wave rectifiers.

Course Name: Workshop Practice Lab	
Course Code: **ME1209**	
ME1209.1	To Understand the basic components and peripherals of a computer.
ME1209.2	To become familiar in configuring a system
ME1209.3	To Learn the usage of productivity tools
ME1209.4	To Acquire knowledge about the netiquette.
ME1209.5	To Acquire knowledge about cyber hygiene
ME1209.6	To Get hands on experience in trouble shooting a system

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation-R19 A.Y:2019-2020

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **ECE1101**	
ECE1101.1	To develop human resources and serve the society through different ways
ECE1101.2	To educate and adopt the road safety measures by means transport
ECE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
ECE1101.4	Imparting the importance of alternative energy sources to the depleting sources
ECE1101.5	Realization on how to preserve the extension of animal life
ECE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **ECE1102**	
ECE1102.1	Solve the linier differential equations of first order
ECE1102.2	Solve the linier differential equations of second and higher order
ECE1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
ECE1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
ECE1102.5	Solve partial differential equations of first order
ECE1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **ECE1103**	
ECE1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
ECE1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
ECE1103.3	Identify the reasons of corrosion and controlling methods of corrosion
ECE1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
ECE1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
ECE1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Programming for Problem Solving using C

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Course Code: **ECE1104**	
ECE1104.1	Understand the basic terminology used in computer programming
ECE1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.
ECE1104.3	Design programs involving decision structures, loops and functions.
ECE1104.4	Explain the difference between call by value and call by reference
ECE1104.5	Understand the dynamics of memory by the use of pointers
ECE1104.6	Understand the dynamics of memory by the use of pointers

Course Name: Engineering Drawing	
Course Code: **ECE1105**	
ECE1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ECE1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
ECE1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
ECE1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
ECE1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
ECES1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **ECE1106**	
ECE1106.1	To impart the significance of spoken English
ECE1106.2	To enhance the general conversation skills through different socio context
ECE1106.3	To acquire the ability to use functional English
ECE1106.4	To instil confidence by practising pronunciation and accent
ECE1106.5	To identifying the barriers of communication
ECE1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: **ECE1107**	
ECE1107.1	To explain The experiments introduce volumetric analysis
ECE1107.2	To explain redox titrations
ECE1107.3	To explain complex metric titrations by using EDTA method
ECE1107.4	To explain the instrumental methods
ECE1107.5	To explain conduct metric titrations
ECE1107.6	To acquire the knowledge on potentiometric titrations

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Course Name Programming for Problem Solving Using C Lab	
Course Code:**ECE1108**	
ECE1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
ECE1108.2	Acquire knowledge about the basic concept of writing a program
ECE1108.3	Role of constants, variables, identifiers, operators,
ECE**1108.4**	Explain type conversion and other building blocks of C Language. •
ECE**1108.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
ECE**1108.6**	To explain Role of Functions involving the idea of modularity.

Course Name: **Environmental studies**	
Course Code: ECE**1109**	
ECE**1109.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
ECE**1109.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
ECE**1109.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
ECE**1109.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
ECE**1109.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
ECE**1109.6**	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

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Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: ECE**1201**	
ECE**1201.1**	Calculate the root of algebraic and transiently equation
ECE**1201.2**	Compute inter polating polynomial for the given data
ECE**1201.3**	Solve ordinary differential equation numerically using Euler's and R-K method
ECE**1201.4**	Find Fourier series for certain functions
ECE**1201.5**	Find Fourier transform for certain functions
ECE**1201.6**	Identify and classify and solve the different types of partial differential equations

Course Name: **Mathematics-III**	
Course Code: ECE**1202**	
ECE**1202.1**	Determine rank and solve simultaneous linier equations
ECE**1202.2**	Solve simultaneous linier equations numerically using various matrix methods
ECE**1202.3**	Determine Eigen values and Eigen vectors and nature of the quadratic forms
ECE**1202.4**	Determine double integral over the region and triple integral over a volume
ECE**1202.5**	Determine special functions and evolution of improper integrals
ECE**1202.6**	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Applied physics**	
Course Code: ECE**1203**	
ECE**1203.1**	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1203.2**	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
ECE**1203.3**	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
ECE**1203.4**	To explore the Nuclear Power as a reliable source required to run industries
ECE**1203.5**	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.

ECE**1203.6**	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Name: Network Analysis	
Course Code: ECE**1204**	
ECE**1204.1**	To gain the knowledge on basic network elements.
ECE**1204.2**	Will analyze the RLC circuit's behaviour in detailed.
ECE**1204.3**	Analyze the performance of periodic waveforms.
ECE**1204.4**	Gain the knowledge in characteristics of two port network parameters (Z,Y, ABCD,h&g).
ECE**1204.5**	Analyze the filter design concepts in real world applications.
ECE**1204.6**	To understand the properties of LC networks and filters.

Course Name: Basic Electrical Engineering	
Course Code: ECE**1205**	
ECE**1205.1**	To learn the basic principles of electrical circuital law's and analysis of networks.
ECE**1205.2**	To understand principle of operation and construction details of DC machines.
ECE**1205.3**	To understand principle of operation and construction details of transformers,
ECE**1205.4**	To explain alternator and 3- Phase induction motor.
ECE**1205.5**	To study operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
ECE**1205.6**	To learn operation of PNP and NPN transistors and various amplifiers.

Course Name: Electronic workshop	
Course Code: ECE**1206**	
ECE**1206.1**	To Understand the basic components and peripherals of a computer.
ECE**1206.2**	To become familiar in configuring a system
ECE**1206.3**	To Learn the usage of productivity tools
ECE**1206.4**	To Acquire knowledge about the netiquette.
ECE**1206.5**	To Acquire knowledge about cyber hygiene
ECE**1206.6**	To Get hands on experience in trouble shooting a system

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Course Name: **Engineering physics lab**	
Course Code: ECE**1207**	
ECE**1207.1**	To provide an experimental foundation for the theoretical concepts introduced in the lectures
ECE**1207.2**	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ECE**1207.3**	To help students understand the role of direct observation in physics
ECE**1207.4**	To distinguish between interference based on theory and experiments
ECE**1207.5**	To introduce the concepts and techniques which have wide applications in experimental science
ECE**1207.6**	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name Basic Electrical Engineering Lab	
Course Code: ECE**1208**	
ECE**1208.1**	To plot the magnetizing characteristics of DC shunt generator and understand the mechanism of self-excitation
ECE**1208.2**	To control the speed of DCmotors.
ECE**1208.3**	To determine and predetermine the performance of DCmachines.
ECE**1208.4**	To predetermine the efficiency and regulation of transformers and assess their performance.
ECE**1208.5**	To analyse performance of three phase induction motor.
ECE**1208.6**	To understand the significance of regulation of an alternators using synchronous impedance method.

Course Name: Communication Skills Lab	
Course Code: ECE**1109**	
ECE**1209.1**	To Build mindsets & foundations essential for designers
ECE**1209.2**	To Learn about the Human-Cantered Design methodology and understand their real-world applications
ECE**1209.3**	Use Design Thinking for problem solving methodology for investigating ill-defined problems.
ECE**1209.4**	Undergo several design challenges and work towards the final design challenge
ECE**1209.5**	To create the capability of writing skills i.e., Emails &Cvs
ECE**1209.6**	To utilise appropriate use of idiomatic Expressions

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R19   A.Y:2019-2020

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH**	
Course Code: **CS1101**	
CS1101.1	To develop human resources and serve the society through different ways
CS1101.2	To educate and adopt the road safety measures by means transport
CS1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
CS1101.4	Imparting the importance of alternative energy sources to the depleting sources
CS1101.5	Realization on how to preserve the extension of animal life
CS1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **CS1102**	
CS1102.1	Solve the linier differential equations of first order
CS1102.2	Solve the linier differential equations of second and higher order
CS1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
CS1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
CS1102.5	Solve partial differential equations of first order
CS1102.6	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: **CS1103**	
CS1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
CS1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
CS1103.3	Identify the reasons of corrosion and controlling methods of corrosion
CS1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
CS1103.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
CS1103.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: Fundamentals of Computers

Course Code: **CS1104**	
CS1104.1	Explain the concepts of computers and classify based on type and generation.
CS1104.2	Demonstrate the techniques of writing algorithms pseudo codes & schematic flow of logic in software development process .
CS1104.3	Teach about the purpose of networks and types of networks and media to connect the computers
CS1104.4	Teach about Operating Systems and its concepts.
CS1104.5	Illustrate about database architecture and its components
CS1104.6	Illustrate about distributed computing, peer to peer, grid, cloud on demand and utility computing.

Course Name: Engineering Drawing	
Course Code: **CS1105**	
CS1105.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CS1105.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
CS1105.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
CS1105.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
CS1105.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
CS1105.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **CS1106**	
CS1106.1	To impart the significance of spoken English
CS1106.2	To enhance the general conversation skills through different socio context
CS1106.3	To acquire the ability to use functional English
CS1106.4	To instil confidence by practising pronunciation and accent
CS1106.5	To identifying the barriers of communication
CS1106.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: CS**1107**	
CS1107.1	To explain The experiments introduce volumetric analysis
CS1107.2	To explain redox titrations

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CS**1107.3**	To explain complex metric titrations by using EDTA method
CS**1107.4**	To explain the instrumental methods
CS**1107.5**	To explain conduct metric titrations
CS**1107.6**	To acquire the knowledge on potentiometric titrations

Course Name IT Workshop	
Course Code:CS**1108**	
CS**1108.1**	Assemble and disassemble components of a PC
CS**1108.2**	Construct a fully functional virtual machine, Summarize various Linux operating system commands,
CS**1108.3**	Secure a computer from cyber threats,
CS**1108.4**	Learn and practice programming skill in Github, Hacker rank, Code chef, Hacker Earth etc.
CS**1108.5**	Recognize characters & extract text from scanned images, Create audio files and podcasts
CS**1108.6**	Create video tutorials and publishing, Use office tools for documentation, Build interactive presentations, Build websites, Create quizzes & analyze responses.

Course Name: **Environmental studies**	
Course Code: CS**1109**	
CS**1109.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CS**1109.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CS**1109.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CS**1109.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CS**1109.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CS**1109.6**	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Year/Sem: I B.Tech IISEM

Course Name: **Mathematics-II**	
Course Code: CS**1201**	
CS**1201.1**	Calculate the root of algebraic and transiently equation
CS**1201.2**	Compute inter polating polynomial for the given data
CS**1201.3**	Solve ordinary differential equation numerically using Euler's and R-K method
CS**1201.4**	Find Fourier series for certain functions
CS**1201.5**	Find Fourier transform for certain functions
CS**1201.6**	Identify and classify and solve the different types of partial differential equations

Course Name: **Mathematics-III**	
Course Code: CS**1202**	
CS**1202.1**	Determine rank and solve simultaneous linier equations
CS**1202.2**	Solve simultaneous linier equations numerically using various matrix methods
CS**1202.3**	Determine Eigen values and Eigen vectors and nature of the quadratic forms
CS**1202.4**	Determine double integral over the region and triple integral over a volume
CS**1202.5**	Determine special functions and evolution of improper integrals
CS**1202.6**	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Applied physics**	
Course Code: CS**1203**	
CS**1203.1**	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS**1203.2**	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS**1203.3**	Tap the Simple harmonic motion and its adaptability for improved acoustic quality

	of concert halls.
CS**1203.4**	To explore the Nuclear Power as a reliable source required to run industries
CS**1203.5**	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
CS**1203.6**	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Name: Programming for Problem Solving using C	
Course Code: CS**1204**	
CS**1204.1**	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CS**1204.2**	Acquire knowledge about the basic concept of writing a program
CS**1204.3**	Role of constants, variables, identifiers, operators,
CS**1204.4**	Explain type conversion and other building blocks of C Language. •
CS**1204.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CS**1204.6**	To explain Role of Functions involving the idea of modularity.

Course Name: Digital Logic Design	
Course Code: CS**1205**	
CS**1205.1**	An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.
CS**1205.2**	An ability to understand the different switching algebra theorems and apply them for logic functions
CS**1205.3**	An ability to define the Karnaugh map for a few variables
CS**1205.4**	To explain and to perform an algorithmic reduction of logic functions.
CS**1205.5**	Students will be able to design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays
CS**1205.6**	Students will be able to design various sequential circuits starting from flip-flop to registers and counters.

Course Name: **English communication skills lab**	
Course Code: CS**1206**	
CS1206.1	To build the initial ability of presenting their views in debating
CS1206.2	To convey the Ideas through Group Discussion
CS1206.3	To plan & prepare for oral presentation
CS1206.4	To develop the ability of how to face an interview
CS1206.5	To create the capability of writing skills ie., Emails &Cvs

CS1206.6	To utilise appropriate use of idiomatic Expressions

Course Name: **Engineering physics lab**	
Course Code: **CS1207**	
CS1207.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CS1207.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CS1207.3	To help students understand the role of direct observation in physics
CS1207.4	To distinguish between interference based on theory and experiments
CS1207.5	To introduce the concepts and techniques which have wide applications in experimental science
CS1207.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Programming for problem Solving Using C Lab	
Course Code: **CS1208**	
CS1208.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CS1208.2	Acquire knowledge about the basic concept of writing a program
CS1208.3	Role of constants, variables, identifiers, operators,
CS1208.4	Explain type conversion and other building blocks of C Language. •
CS1208.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CS1208.6	To explain Role of Functions involving the idea of modularity.

Course Name: Constitution of India	
Course Code: **CS1109**	
CS1209.1	To Enable the student to understand the importance of constitution
CS1209.2	To understand the structure of executive, legislature and judiciary
CS1209.3	To understand philosophy of fundamental rights and duties
CS1209.4	To understand the autonomous nature of constitutional bodies like Supreme Court and high court .

CS1209.5	To understand controller and auditor general of India and election commission of India
CS1209.6	To understand the central and state relation financial and administrative.

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R19   A.Y:2019-2020

Year/Sem: I B.Tech I SEM

Course Name: **M-I**	
Course Code: **AME1101**	
AME1101.1	Solve the linier differential equations of first order
AME1101.2	Solve the linier differential equations of second and higher order
AME1101.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
AME1101.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
AME1101.5	Solve partial differential equations of first order
AME1101.6	Solve second and higher order differential equations

Course Name: **Mathematics –II**	
Course Code: **AME1102**	
AME1102.1	Calculate the root of algebraic and transiently equation
AME1102.2	Compute inter polating polynomial for the given data
AME1102.3	Solve ordinary differential equation numerically using Euler's and R-K method
AME1102.4	Find Fourier series for certain functions
AME1102.5	Find Fourier transform for certain functions
AME1102.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Engineering chemistry**	
Course Code: **AME1103**	
AME1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
AME1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
AME1103.3	Identify the reasons of corrosion and controlling methods of corrosion
AME1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
AME1103.5	To explain the importance of water and its purification methods
AME1103.6	Discuss the preparation of cement and types of refractories

Course Name: Programming for Problem Solving Using C	
Course Code: **AME1104**	
AME1104.1	Understand the basic terminology used in computer programming
AME1104.2	Explain, compile and debug programs in C language. Use different data types in a computer program.•

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AME1104.3	Design programs involving decision structures, loops and functions.
AME1104.4	Explain the difference between call by value and call by reference
AME1104.5	Understand the dynamics of memory by the use of pointers
AME1104.6	Understand the dynamics of memory by the use of pointers

Course Name: **Engineering mechanics**	
Course Code: **AME1105**	
AME1105.1	Explain the concepts of force and friction, direction and its applications
AME1105.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
AME1105.3	To explain concepts of centre of gravity
AME1105.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
AME1105.5	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
AME1105.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: English Lab	
Course Code: **AME1106**	
AME1106.1	To build the initial ability of presenting their views in debating
AME1106.2	To convey the deas through Group Discussion
AME1106.3	To plan & prepare for oral presentation
AME1106.4	To develop the ability of how to face an interview
AME1106.5	To create the capability of writing skills ie., Emails &Cvs
AME1106.6	To utilise appropriate use of idiomatic Expressions

Course Name: Engineering Chemistry Laboratory	
Course Code: **AME1107**	
AME1107.1	To explain The experiments introduce volumetric analysis
AME1107.2	To explain redox titrations
AME1107.3	To explain complex metric titrations by using EDTA method
AME1107.4	To explain the instrumental methods
AME1107.5	To explain conduct metric titrations
AME1107.6	To acquire the knowledge on potentiometric titrations

Course Name: Programming for Problem Solving Using C Lab	
Course Code: **AME1108**	
AME1108.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AME1108.2	Acquire knowledge about the basic concept of writing a program

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AME1108.3	Role of constants, variables, identifiers, operators,
AME1108.4	Explain type conversion and other building blocks of C Language. •
AME1108.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
AME1108.6	To explain Role of Functions involving the idea of modularity.

Course Name: Environmental Science	
Course Code: **AME1109**	
AME1109.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AME1109.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AME1109.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AME1109.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AME1109.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AME1109.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Year/Sem: I B.Tech I ISEM

Course Name: **English**	
Course Code: **AME1201**	
AME1201.1	To describe the education system that aims to enhance wisdom
AME1201.2	To promote peaceful existence and universal harmony
AME1201.3	To analyse the symptoms of cultural shock and after math consequences
AME1201.4	To provide the awareness of taboos of cultural tradition
AME1201.5	To educate the affect of environmental changes that leads to several health disorders
AME1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-III**	
Course Code: **AME1202**	
AME1202.1	Determine rank and solve simultaneous linier equations
AME1202.2	Solve simultaneous linier equations numerically using various matrix methods
AME1202.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
AME1202.4	Determine double integral over the region and triple integral over a volume

AME1202.5	Determine special functions and evolution of improper integrals
AME1202.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: Engineering Physics	
Course Code: **AME1203**	
AME1203.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
AME1203.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
AME1203.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
AME1203.4	To explore the Nuclear Power as a reliable source required to run industries
AME1203.5	To impart the knowledge of materials with characteristic utility in appliances.
AME1203.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

Course Name: Basic Electrical & Electrical Engineering	
Course Code: **AME1204**	
AME1204.1	To learn the basic principles of electrical circuital law's and analysis of networks
AME1204.2	To understand the principle of operation and construction details of DC machines & Transformers
AME1204.3	To understand the principle of operation and construction details of alternator
AME1204.4	To explain the 3-Phase induction motor. •
AME1204.5	To study the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs
AME1204.6	To learn the operation of PNP and NPN transistors and various amplifiers

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Course Name: Engineering Drawing	
Course Code: **AME1205**	
AME1205.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
AME1205.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
AME1205.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
AME1205.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
AME1205.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
AME1205.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: Communication Skills Lab	
Course Code: **AME1206**	
AME1206.1	To build the initial ability of presenting their views in debating
AME1206.2	To convey the Ideas through Group Discussion
AME1206.3	To plan & prepare for oral presentation
AME1206.4	To develop the ability of how to face an interview
AME1206.5	To create the capability of writing skills ie., Emails & Cvs
AME1206.6	To utilise appropriate use of idiomatic Expressions

Course Name: Engineering Physics Lab	
Course Code: **AME1207**	
AME1207.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AME1207.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
AME1207.3	To help students understand the role of direct observation in physics
AME1207.4	To distinguish between interference based on theory and experiments
AME1207.5	To introduce the concepts and techniques which have wide applications in experimental science
AME1207.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: Electrical and Electronics Engineering lab	
Course Code: **AME1208**	
AME1208.1	To predetermine the efficiency of dc shunt machine using Swinburne's test. To predetermine the efficiency and regulation of 1-phase transformer with O.C and S.C tests.
AME1208.2	To obtain performance characteristics of DC shunt motor &3-phase induction motor.
AME1208.3	To find out regulation of an alternator with synchronous impedance method.
AME1208.4	To control speed of dc shunt motor using Armature voltage and Field flux control methods.
AME1208.5	To find out the characteristics of PN junction diode & transistor
AME1208.6	To determine the ripple factor of half wave & full wave rectifiers.

Course Name: Engineering Workshop & IT Workshop	
Course Code: **AME1209**	
AME1209.1	To Understand the basic components and peripherals of a computer.
AME1209.2	To become familiar in configuring a system
AME1209.3	To Learn the usage of productivity tools
AME1209.4	To Acquire knowledge about the netiquette.
AME1209.5	To Acquire knowledge about cyber hygiene
AME1209.6	To Get hands on experience in trouble shooting a system

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R16   A.Y:2018-2019

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CE1101**	
CE1101.1	To develop human resources and serve the society through different ways
CE1101.2	To educate and adopt the road safety measures by means transport
CE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
CE1101.4	Imparting the importance of alternative energy sources to the depleting sources
CE1101.5	Realization on how to preserve the extension of animal life
CE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **CE1102**	
CE1102.1	Solve the linier differential equations of first order
CE1102.2	Solve the linier differential equations of second and higher order
CE1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
CE1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
CE1102.5	Solve partial differential equations of first order
CE1102.6	Solve second and higher order differential equations

Course Name: **Engineering Chemistry**	
Course Code: CE**1103**	
CE**1103.1**	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
CE**1103.2**	Discuss the the advantages of fuels and how to prepare synthetic petrol
CE**1103.3**	Identify the reasons of corrosion and controlling methods of corrosion
CE**1103.4**	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
CE**1103.5**	To explain the importance of water and its purification methods
CE**1103.6**	Discuss the preparation of cement and types of refractories

Course Name: **Engineering Mechanics**	
Course Code: **CE1104**	
CE1104.1	Explain the concepts of force and friction, direction and its applications

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CE1104.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
CE1104.3	To explain concepts of centre of gravity
CE1104.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
CE1104.5	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
CE1104.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: **Computer programming**	
Course Code: **CE1105**	
CE1105.1	Understand the basic terminology used in computer programming
CE1105.2	Explain, compile and debug programs in C language. Use different data types in a computer program.●
CE1105.3	Design programs involving decision structures, loops and functions.
CE1105.4	Explain the difference between call by value and call by reference
CE1105.5	Understand the dynamics of memory by the use of pointers
CE1105.6	Understand the dynamics of memory by the use of pointers

Course Name: **Environmental studies**	
Course Code: **CE1106**	
CE1106.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CE1106.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CE1106.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CE1106.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CE1106.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CE1106.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Course Name: **English communication skills lab**	
Course Code: **CE1107**	
CE1107.1	To impart the significance of spoken English
CE1107.2	To enhance the general conversation skills through different socio context
CE1107.3	To acquire the ability to use functional English
CE1107.4	To instil confidence by practising pronunciation and accent
CE1107.5	To identifying the barriers of communication

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CE1107.6	To focus on common errors of English pronunciation as second language

Course Name: **Engineering chemistry lab**	
Course Code: **CE1108**	
CE1108.1	To explain The experiments introduce volumetric analysis
CE1108.2	To explain redox titrations
CE1108.3	To explain complex metric titrations by using EDTA method
CE1108.4	To explain the instrumental methods
CE1108.5	To explain conduct metric titrations
CE1108.6	To acquire the knowledge on potentiometric titrations

Course Name: **Computer programming lab**	
Course Code:**CE1109**	
CE1109.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CE1109.2	Acquire knowledge about the basic concept of writing a program
CE1109.3	Role of constants, variables, identifiers, operators,
CE1109.4	Explain type conversion and other building blocks of C Language. •
CE1109.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CE1109.6	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **English-II**	
Course Code: **CE1201**	
CE1201.1	To describe the education system that aims to enhance wisdom
CE1201.2	To promote peaceful existence and universal harmony
CE1201.3	To analyse the symptoms of cultural shock and after math consequences
CE1201.4	To provide the awareness of taboos of cultural tradition
CE1201.5	To educate the affect of environmental changes that leads to several health disorders
CE1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-II**	
Course Code: **CE1202**	
CE1202.1	Calculate the root of algebraic and transiently equation
CE1202.2	Compute inter polating polynomial for the given data
CE1202.3	Solve ordinary differential equation numerically using Euler's and R-K method

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CE1202.4	Find Fourier series for certain functions
CE1202.5	Find Fourier transform for certain functions
CE1202.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Mathematics-III**	
Course Code: **CE1203**	
CE1203.1	Determine rank and solve simultaneous linier equations
CE1203.2	Solve simultaneous linier equations numerically using various matrix methods
CE1203.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
CE1203.4	Determine double integral over the region and triple integral over a volume
CE1203.5	Determine special functions and evolution of improper integrals
CE1203.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Engineering physics**	
Course Code: **CE1204**	
CE1204.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CE1204.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
CE1204.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CE1204.4	To explore the Nuclear Power as a reliable source required to run industries
CE1204.5	To impart the knowledge of materials with characteristic utility in appliances.
CE1204.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

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Course Name: **EME**	
Course Code: **CE1205**	
CE1205.1	The stress/strain of a mechanical component subjected to loading
CE1205.2	Discuss the types of supports and explain theory of simple bending
CE1205.3	Discuss about thin and thick cylinder shells
CE1205.4	To discuss Steam boilers and Reciprocating air compressors
CE1205.5	To explain The performance of components like Boiler, I.C. Engine, Compressor, Steam/Hydraulic turbine, Belt, Rope and Gear
CE1205.6	Discuss The type of mechanical component suitable for the required power transmission.

Course Name: ED	
Course Code: **CE1205**	
CE1206.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CE1206.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
CE1206.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
CE1206.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
CE1206.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
CE1206.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **CE1205**	
CE1207.1	To build the initial ability of presenting their views in debating
CE1207.2	To convey the deas through Group Discussion
CE1207.3	To plan & prepare for oral presentation
CE1207.4	To develop the ability of how to face an interview
CE1207.5	To create the capability of writing skills ie., Emails &Cvs
CE1207.6	To utilise appropriate use of idiomatic Expressions

Course Name: **Engineering physics lab**	
Course Code: CE**1208**	
CE**1208.1**	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CE**1208.2**	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CE**1208.3**	To help students understand the role of direct observation in physics
CE**1208.4**	To distinguish between interference based on theory and experiments
CE**1208.5**	To introduce the concepts and techniques which have wide applications in experimental science
CE**1208.6**	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Engineering work shop & IT work shop**	
Course Code: CE**1209**	
CE**1209.1**	To Understand the basic components and peripherals of a computer.
CE**1209.2**	To become familiar in configuring a system
CE**1209.3**	To Learn the usage of productivity tools
CE**1209.4**	To Acquire knowledge about the netiquette.
CE**1209.5**	To Acquire knowledge about cyber hygiene
CE**1209.6**	To Get hands on experience in trouble shooting a system

DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R16   A.Y:2018-2019

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **EEE1101**	
EEE1101.1	To develop human resources and serve the society through different ways
EEE1101.2	To educate and adopt the road safety measures by means transport
EEE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
EEE1101.4	Imparting the importance of alternative energy sources to the depleting sources
EEE1101.5	Realization on how to preserve the extension of animal life
EEE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: EEE**1102**	
EEE**1102.1**	Solve the linier differential equations of first order
EEE**1102.2**	Solve the linier differential equations of second and higher order
EEE**1102.3**	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
EEE**1102.4**	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
EEE**1102.5**	Solve partial differential equations of first order
EEE**1102.6**	Solve second and higher order differential equations

Course Name: **Applied Chemistry**	
Course Code: EEE**1103**	
EEE**1103.1**	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
EEE**1103.2**	Discuss the the advantages of fuels and how to prepare synthetic petrol
EEE**1103.3**	Identify the reasons of corrosion and controlling methods of corrosion
EEE**1103.4**	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
EEE**1103.5**	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
EEE**1103.6**	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: **Engineering Mechanics**

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Course Code: EEE**1104**	
EEE**1104.1**	Explain the concepts of force and friction, direction and its applications
EEE**1104.2**	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
EEE**1104.3**	To explain concepts of centre of gravity
EEE**1104.4**	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
EEE**1104.5**	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
EEE**1104.6**	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: **Computer programming**	
Course Code: EEE**1105**	
EEE**1105.1**	Understand the basic terminology used in computer programming
EEE**1105.2**	Explain, compile and debug programs in C language. Use different data types in a computer program.•
EEE**1105.3**	Design programs involving decision structures, loops and functions.
EEE**1105.4**	Explain the difference between call by value and call by reference
EEE**1105.5**	Understand the dynamics of memory by the use of pointers
EEE**1105.6**	Understand the dynamics of memory by the use of pointers

Course Name: **Environmental studies**	
Course Code: EEE**1106**	
EEE**1106.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
EEE**1106.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
EEE**1106.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
EEE**1106.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
EEE**1106.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
EEE1106.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Course Name: **English communication skills lab**	
Course Code: EEE**1107**	
EEE**1107.1**	To impart the significance of spoken English
EEE**1107.2**	To enhance the general conversation skills through different socio context
EEE**1107.3**	To acquire the ability to use functional English

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EEE1107.4	To instil confidence by practising pronunciation and accent
EEE1107.5	To identifying the barriers of communication
EEE1107.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: EEE1108	
EEE1108.1	To explain The experiments introduce volumetric analysis
EEE1108.2	To explain redox titrations
EEE1108.3	To explain complex metric titrations by using EDTA method
EEE1108.4	To explain the instrumental methods
EEE1108.5	To explain conduct metric titrations
EEE1108.6	To acquire the knowledge on potentiometric titrations

Course Name: **Computer programming lab**	
Course Code:EEE1109	
EEE1109.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
EEE1109.2	Acquire knowledge about the basic concept of writing a program
EEE1109.3	Role of constants, variables, identifiers, operators,
EEE1109.4	Explain type conversion and other building blocks of C Language. •
EEE1109.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
EEE1109.6	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **English-II**	
Course Code: **EEE1201**	
EEE1201.1	To describe the education system that aims to enhance wisdom
EEE1201.2	To promote peaceful existence and universal harmony
EEE1201.3	To analyse the symptoms of cultural shock and after math consequences
EEE1201.4	To provide the awareness of taboos of cultural tradition
EEE1201.5	To educate the affect of environmental changes that leads to several health disorders
EEE1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-II**	
Course Code: **EEE1202**	
EEE1202.1	Calculate the root of algebraic and transiently equation

EEE1202.2	Compute inter polating polynomial for the given data
EEE1202.3	Solve ordinary differential equation numerically using Euler's and R-K method
EEE1202.4	Find Fourier series for certain functions
EEE1202.5	Find Fourier transform for certain functions
EEE1202.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Mathematics-III**	
Course Code: **EEE1203**	
EEE1203.1	Determine rank and solve simultaneous linier equations
EEE1203.2	Solve simultaneous linier equations numerically using various matrix methods
EEE1203.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
EEE1203.4	Determine double integral over the region and triple integral over a volume
EEE1203.5	Determine special functions and evolution of improper integrals
EEE1203.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Applied physics**	
Course Code: **EEE1204**	
EEE1204.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
EEE1204.2	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
EEE1204.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
EEE1204.4	To explore the Nuclear Power as a reliable source required to run industries
EEE1204.5	To Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
EEE1204.6	To Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

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Course Name: **ECA-1**	
Course Code: **EEE1205**	
EEE1205.1	To study the concepts of passive elements, types of sources and various network reduction techniques.
EEE1205.2	To understand the applications of network topology to electrical circuits.
EEE1205.3	To study the concept of magnetic coupled circuit
EEE1205.4	To understand the behaviour of RLC networks for sinusoidal excitations
EEE1205.5	To study the performance of R-L, R-C and R-L-C circuits with variation of one of the parameters and to understand the concept of resonance.
EEE1205.6	To understand the applications of network theorems for analysis of electrical networks

Course Name: ED	
Course Code: **EEE1205**	
EEE1206.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
EEE1206.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
EEE1206.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
EEE1206.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
EEE1206.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
EEE1206.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **EEE1205**	
EEE1207.1	To build the initial ability of presenting their views in debating
EEE1207.2	To convey the Ideas through Group Discussion
EEE1207.3	To plan & prepare for oral presentation
EEE1207.4	To develop the ability of how to face an interview
EEE1207.5	To create the capability of writing skills ie., Emails &Cvs
EEE1207.6	To utilise appropriate use of idiomatic Expressions

Course Name: **Engineering physics lab**	
Course Code: **EEE1208**	
EEE1208.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
EEE1208.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
EEE1208.3	To help students understand the role of direct observation in physics
EEE1208.4	To distinguish between interference based on theory and experiments
EEE1208.5	To introduce the concepts and techniques which have wide applications in experimental science
EEE1208.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Engineering work shop & IT work shop**	
Course Code: **EEE1209**	
EEE1209.1	To Understand the basic components and peripherals of a computer.
EEE1209.2	To become familiar in configuring a system
EEE1209.3	To Learn the usage of productivity tools
EEE1209.4	To Acquire knowledge about the netiquette.
EEE1209.5	To Acquire knowledge about cyber hygiene
EEE1209.6	To Get hands on experience in trouble shooting a system

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R16   A.Y:2018-2019

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **ME1101**	
ME1101.1	To develop human resources and serve the society through different ways
ME1101.2	To educate and adopt the road safety measures by means transport
ME1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
ME1101.4	Imparting the importance of alternative energy sources to the depleting sources
ME1101.5	Realization on how to preserve the extension of animal life
ME1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: ME**1102**	
ME**1102.1**	Solve the linier differential equations of first order
ME**1102.2**	Solve the linier differential equations of second and higher order
ME**1102.3**	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
ME**1102.4**	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
ME**1102.5**	Solve partial differential equations of first order
ME**1102.6**	Solve second and higher order differential equations

Course Name: **Engineering Chemistry**	
Course Code: ME**1103**	
ME**1103.1**	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
ME**1103.2**	Discuss the the advantages of fuels and how to prepare synthetic petrol
ME**1103.3**	Identify the reasons of corrosion and controlling methods of corrosion
ME**1103.4**	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
ME**1103.5**	To explain the importance of water and its purification methods
ME**1103.6**	Discuss the preparation of cement and types of refractories

Course Name: **Engineering Mechanics**	
Course Code: ME**1104**	
ME**1104.1**	Explain the concepts of force and friction, direction and its applications

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ME**1104.2**	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
ME**1104.3**	To explain concepts of centre of gravity
ME**1104.4**	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
ME**1104.5**	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
ME**1104.6**	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: **Computer programming**	
Course Code: ME**1105**	
ME**1105.1**	Understand the basic terminology used in computer programming
ME**1105.2**	Explain, compile and debug programs in C language. Use different data types in a computer program.•
ME**1105.3**	Design programs involving decision structures, loops and functions.
ME**1105.4**	Explain the difference between call by value and call by reference
ME**1105.5**	Understand the dynamics of memory by the use of pointers
ME**1105.6**	Understand the dynamics of memory by the use of pointers

Course Name: **Environmental studies**	
Course Code: ME**1106**	
ME**1106.1**	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
ME**1106.2**	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
ME**1106.3**	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
ME**1106.4**	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
ME**1106.5**	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
ME**1106.6**	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Course Name: **English communication skills lab**	
Course Code: ME**1107**	
ME**1107.1**	To impart the significance of spoken English
ME**1107.2**	To enhance the general conversation skills through different socio context
ME**1107.3**	To acquire the ability to use functional English
ME**1107.4**	To instil confidence by practising pronunciation and accent
ME**1107.5**	To identifying the barriers of communication

ME**1107.6**	To focus on common errors of English pronunciation as second language

Course Name: **Applied chemistry lab**	
Course Code: ME**1108**	
ME**1108.1**	To explain The experiments introduce volumetric analysis
ME**1108.2**	To explain redox titrations
ME**1108.3**	To explain complex metric titrations by using EDTA method
ME**1108.4**	To explain the instrumental methods
ME**1108.5**	To explain conduct metric titrations
ME**1108.6**	To acquire the knowledge on potentiometric titrations

Course Name: **Computer programming lab**	
Course Code:ME**1109**	
ME**1109.1**	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
ME**1109.2**	Acquire knowledge about the basic concept of writing a program
ME**1109.3**	Role of constants, variables, identifiers, operators,
ME**1109.4**	Explain type conversion and other building blocks of C Language. •
ME**1109.5**	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
ME**1109.6**	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **English-II**	
Course Code: ME**1201**	
ME**1201.1**	To describe the education system that aims to enhance wisdom
ME**1201.2**	To promote peaceful existence and universal harmony
ME**1201.3**	To analyse the symptoms of cultural shock and after math consequences
ME**1201.4**	To provide the awareness of taboos of cultural tradition
ME**1201.5**	To educate the affect of environmental changes that leads to several health disorders
ME**1201.6**	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-II**	
Course Code: ME**1202**	
ME**1202.1**	Calculate the root of algebraic and transiently equation
ME**1202.2**	Compute inter polating polynomial for the given data
ME**1202.3**	Solve ordinary differential equation numerically using Euler's and R-K method

ME**1202.4**	Find Fourier series for certain functions
ME**1202.5**	Find Fourier transform for certain functions
ME**1202.6**	Identify and classify and solve the different types of partial differential equations

Course Name: **Mathematics-III**	
Course Code: ME**1203**	
ME**1203.1**	Determine rank and solve simultaneous linier equations
ME**1203.2**	Solve simultaneous linier equations numerically using various matrix methods
ME**1203.3**	Determine Eigen values and Eigen vectors and nature of the quadratic forms
ME**1203.4**	Determine double integral over the region and triple integral over a volume
ME**1203.5**	Determine special functions and evolution of improper integrals
ME**1203.6**	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Engineering physics**	
Course Code: ME**1204**	
ME**1204.1**	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ME**1204.2**	Study the Structure-property relationship exhibited by solid crystal materials for their utility
ME**1204.3**	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
ME**1204.4**	To explore the Nuclear Power as a reliable source required to run industries
ME**1204.5**	To impart the knowledge of materials with characteristic utility in appliances.
ME**1204.6**	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

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Course Name: **BEEE**	
Course Code: ME**1205**	
ME**1205.1**	To learn the basic principles of electrical circuital law's and analysis of networks
ME**1205.2**	To understand the principle of operation and construction details of DC machines & Transformers
ME**1205.3**	To understand the principle of operation and construction details of alternator
ME**1205.4**	To explain the 3-Phase induction motor. •
ME**1205.5**	To study the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs
ME**1205.6**	To learn the operation of PNP and NPN transistors and various amplifiers

Course Name: ED	
Course Code: ME**1205**	
ME**1206.1**	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ME**1206.2**	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
ME**1206.3**	The objective is to make the students draw the projections of the lines inclined to both the planes.
ME**1206.4**	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
ME**1206.5**	The objective is to make the students draw the projections of the plane inclined to both the planes.
ME**1206.6**	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: ME**1205**	
ME**1207.1**	To build the initial ability of presenting their views in debating
ME**1207.2**	To convey the deas through Group Discussion
ME**1207.3**	To plan & prepare for oral presentation
ME**1207.4**	To develop the ability of how to face an interview
ME**1207.5**	To create the capability of writing skills ie., Emails &Cvs
ME**1207.6**	To utilise appropriate use of idiomatic Expressions

Course Name: **Engineering physics lab**	
Course Code: ME**1208**	
ME**1208.1**	To provide an experimental foundation for the theoretical concepts introduced in the lectures
ME**1208.2**	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ME**1208.3**	To help students understand the role of direct observation in physics
ME**1208.4**	To distinguish between interference based on theory and experiments
ME**1208.5**	To introduce the concepts and techniques which have wide applications in experimental science
ME**1208.6**	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Engineering work shop & IT work shop**	
Course Code: ME**1209**	
ME**1209.1**	To Understand the basic components and peripherals of a computer.
ME**1209.2**	To become familiar in configuring a system
ME**1209.3**	To Learn the usage of productivity tools
ME**1209.4**	To Acquire knowledge about the netiquette.
ME**1209.5**	To Acquire knowledge about cyber hygiene
ME**1209.6**	To Get hands on experience in trouble shooting a system

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes

Regulation R16   A.Y:2018-2019

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **ECE1101**	
ECE1101.1	To develop human resources and serve the society through different ways
ECE1101.2	To educate and adopt the road safety measures by means transport
ECE1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
ECE1101.4	Imparting the importance of alternative energy sources to the depleting sources
ECE1101.5	Realization on how to preserve the extension of animal life
ECE1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **ECE1102**	
ECE1102.1	Solve the linier differential equations of first order
ECE1102.2	Solve the linier differential equations of second and higher order
ECE1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
ECE1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
ECE1102.5	Solve partial differential equations of first order
ECE1102.6	Solve second and higher order differential equations

Course Name: **M-II**	
Course Code: **ECE1103**	
ECE1103.1	Calculate the root of algebraic and transiently equation
ECE1103.2	Compute inter polating polynomial for the given data
ECE1103.3	Solve ordinary differential equation numerically using Euler's and R-K method
ECE1103.4	Find Fourier series for certain functions
ECE1103.5	Find Fourier transform for certain functions
ECE1103.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: **ECE1104**	
ECE1104.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ECE1104.2	To Teach Concepts of coherent sources, its realization and utility optical

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	instrumentation.
ECE1104.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
ECE1104.4	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
ECE1104.5	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
ECE1104.6	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.

Course Name: **Computer programming**	
Course Code: **ECE1105**	
ECE1105.1	Understand the basic terminology used in computer programming
ECE1105.2	Explain, compile and debug programs in C language. Use different data types in a computer program
ECE1105.3	Design programs involving decision structures, loops and functions.
ECE1105.4	Explain the difference between call by value and call by reference
ECE1105.5	Understand the dynamics of memory by the use of pointers
ECE1105.6	Understand the dynamics of memory by the use of pointers

Course Name: **Engineering drawing**	
Course Code: **ECE1106**	
ECE1106.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
ECE1106.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
ECE1106.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
ECE1106.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
ECE1106.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
ECE1106.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **ECE1107**	
ECE1107.1	To impart the significance of spoken English
ECE1107.2	To enhance the general conversation skills through different socio context
ECE1107.3	To acquire the ability to use functional English
ECE1107.4	To instil confidence by practising pronunciation and accent

ECE1107.5	To identifying the barriers of communication
ECE1107.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied physics lab**	
Course Code: **ECE1108**	
ECE1108.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
ECE1108.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
ECE1108.3	To help students understand the role of direct observation in physics
ECE1108.4	To distinguish between interference based on theory and experiments
ECE1108.5	To introduce the concepts and techniques which have wide applications in experimental science
ECE1108.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Engineering workshop and IT workshop**	
Course Code:**ECE1109**	
ECE1109.1	To Understand the basic components and peripherals of a computer.
ECE1109.2	To become familiar in configuring a system
ECE1109.3	To Learn the usage of productivity tools
ECE1109.4	To Acquire knowledge about the netiquette.
ECE1109.5	To Acquire knowledge about cyber hygiene
ECE1109.6	To Get hands on experience in trouble shooting a system

Year/Sem: I B.Tech IISEM

Course Name: **English-II**	
Course Code: **ECE1201**	
ECE1201.1	To describe the education system that aims to enhance wisdom
ECE1201.2	To promote peaceful existence and universal harmony
ECE1201.3	To analyse the symptoms of cultural shock and after math consequences
ECE1201.4	To provide the awareness of taboos of cultural tradition
ECE1201.5	To educate the affect of environmental changes that leads to several health disorders
ECE1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-III**	
Course Code: **ECE1202**	
ECE1202.1	Determine rank and solve simultaneous linier equations

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ECE1202.2	Solve simultaneous linier equations numerically using various matrix methods
ECE1202.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
ECE1202.4	Determine double integral over the region and triple integral over a volume
ECE1202.5	Determine special functions and evolution of improper integrals
ECE1202.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Applied chemistry**	
Course Code:**ECES1203**	
ECE1203.1	Importance of usage of plastics in household appliances and composite(FRP in aerospace and automotive industries
ECE1203.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
ECE1203.3	Identify the reasons of corrosion and controlling methods of corrosion
ECE1203.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
ECE1203.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
ECE1203.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: **EMT**	
Course Code: **ECE1204**	
ECE1204.1	To learn the basic principles of electrical law's and analysis of working
ECE1204.2	To understand the principle of operation and construction details of DC machines
ECE1204.3	To understand the principle of operation and construction details of transformers
ECE1204.4	To understand the principle of operation and construction details of alternator
ECE1204.5	To understand the principle of operation and construction details of 3 phase induction motor
ECE1204.6	To understand the principle of operation and construction details of various measuring instruments

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Course Name: **Environmental studies**	
Course Code: **ECE1205**	
ECE1205.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
ECE1205.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
ECE1205.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
ECE1205.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
ECE1205.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
ECE1205.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Course Name: DS	
Course Code: **ECE1206**	
ECE1206.1	
ECE1206.2	
ECE1206.3	
ECE1206.4	
ECE1206.5	
ECE1206.6	

Course Name: **English communication skills lab**	
Course Code: **ECE1207**	
ECE1207.1	To build the initial ability of presenting their views in debating
ECE1207.2	To convey the Ideas through Group Discussion
ECE1207.3	To plan & prepare for oral presentation
ECE1207.4	To develop the ability of how to face an interview
ECE1207.5	To create the capability of writing skills ie., Emails &Cvs
ECE1207.6	To utilise appropriate use of idiomatic Expressions

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Course Name: **Applied chemistry lab**	
Course Code: **ECE1208**	
ECE1208.1	To explain The experiments introduce volumetric analysis
ECE1208.2	To explain redox titrations
ECE1208.3	To explain complex metric titrations by using EDTA method
ECE1208.4	To explain the instrumental methods
ECE1208.5	To explain conduct metric titrations
ECE1208.6	To acquire the knowledge on potentiometric titrations

Course Name: **CP LAB**	
Course Code: **ECE1209**	
ECE1209.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
ECE1209.2	Acquire knowledge about the basic concept of writing a program
ECE1209.3	Role of constants, variables, identifiers, operators,
ECE1209.4	Explain type conversion and other building blocks of C Language. •
ECE1209.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
ECE1209.6	To explain Role of Functions involving the idea of modularity.

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DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes

Regulation R16   A.Y:2018-2019

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **CS1101**	
CS1101.1	To develop human resources and serve the society through different ways
CS1101.2	To educate and adopt the road safety measures by means transport
CS1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
CS1101.4	Imparting the importance of alternative energy sources to the depleting sources
CS1101.5	Realization on how to preserve the extension of animal life
CS1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **CS1102**	
CS1102.1	Solve the linier differential equations of first order
CS1102.2	Solve the linier differential equations of second and higher order
CS1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
CS1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
CS1102.5	Solve partial differential equations of first order
CS1102.6	Solve second and higher order differential equations

Course Name: **M-II**	
Course Code: **CS1103**	
CS1103.1	Calculate the root of algebraic and transiently equation
CS1103.2	Compute inter polating polynomial for the given data
CS1103.3	Solve ordinary differential equation numerically using Euler's and R-K method
CS1103.4	Find Fourier series for certain functions
CS1103.5	Find Fourier transform for certain functions
CS1103.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Applied physics**	
Course Code: **CS1104**	
CS1104.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1104.2	To Teach Concepts of coherent sources, its realization and utility optical

	instrumentation.
CS1104.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
CS1104.4	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
CS1104.5	To Teach Concepts of coherent sources, its realization and utility optical instrumentation.
CS1104.6	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.

Course Name: **Computer programming**	
Course Code: **CS1105**	
CS1105.1	Understand the basic terminology used in computer programming
CS1105.2	Explain, compile and debug programs in C language. Use different data types in a computer program
CS1105.3	Design programs involving decision structures, loops and functions.
CS1105.4	Explain the difference between call by value and call by reference
CS1105.5	Understand the dynamics of memory by the use of pointers
CS1105.6	Understand the dynamics of memory by the use of pointers

Course Name: **Engineering drawing**	
Course Code: **CS1106**	
CS1106.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
CS1106.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
CS1106.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
CS1106.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
CS1106.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
CS1106.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **CS1107**	
CS1107.1	To impart the significance of spoken English
CS1107.2	To enhance the general conversation skills through different socio context
CS1107.3	To acquire the ability to use functional English
CS1107.4	To instil confidence by practising pronunciation and accent

CS1107.5	To identifying the barriers of communication
CS1107.6	To focus on common errors of English pronunciation as second language

Course Name: **Applied physics lab**	
Course Code: **CS1108**	
CS1108.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
CS1108.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
CS1108.3	To help students understand the role of direct observation in physics
CS1108.4	To distinguish between interference based on theory and experiments
CS1108.5	To introduce the concepts and techniques which have wide applications in experimental science
CS1108.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Computer programming lab**	
Course Code: **CS1109**	
CS1109.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
CS1109.2	Acquire knowledge about the basic concept of writing a program
CS1109.3	Role of constants, variables, identifiers, operators,
CS1109.4	Explain type conversion and other building blocks of C Language. •
CS1109.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
CS1109.6	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **English-II**	
Course Code: **CS1201**	
CS1201.1	To describe the education system that aims to enhance wisdom
CS1201.2	To promote peaceful existence and universal harmony
CS1201.3	To analyse the symptoms of cultural shock and after math consequences
CS1201.4	To provide the awareness of taboos of cultural tradition
CS1201.5	To educate the affect of environmental changes that leads to several health disorders
CS1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-III**

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Course Code: **CS1202**	
CS1202.1	Determine rank and solve simultaneous linier equations
CS1202.2	Solve simultaneous linier equations numerically using various matrix methods
CS1202.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
CS1202.4	Determine double integral over the region and triple integral over a volume
CS1202.5	Determine special functions and evolution of improper integrals
CS1202.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Applied chemistry**	
Course Code: **CS1203**	
CS1203.1	Importance of usage of plastics in household appliances and composite(FRP in aerospace and automotive industries
CS1203.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
CS1203.3	Identify the reasons of corrosion and controlling methods of corrosion
CS1203.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
CS1203.5	Discuss the crystal structures and understand conductivity of semiconductors and super conductors
CS1203.6	Explain increasing demand of power and also depleting sources of fissile fuels and demand of alternative sources

Course Name: **OOPS through C^{++}**	
Course Code: **CS1204**	
CS1204.1	
CS1204.2	
CS1204.3	
CS1204.4	
CS1204.5	
CS1204.6	

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Course Name: **Environmental studies**	
Course Code: **CS1205**	
CS1205.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CS1205.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
CS1205.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CS1205.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CS1205.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
CS1205.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Course Name: Engineering mechanics	
Course Code: **CS1206**	
CS1206.1	Explain the concepts of force and friction, direction and its applications
CS1206.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
CS1206.3	To explain concepts of centre of gravity
CS1206.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
CS1206.5	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
CS1206.6	To be exposed to concepts of work, energy and particle motion Work – Energy

Course Name: **English communication skills lab**	
Course Code: **CS1207**	
CS1207.1	To build the initial ability of presenting their views in debating
CS1207.2	To convey the Ideas through Group Discussion
CS1207.3	To plan & prepare for oral presentation
CS1207.4	To develop the ability of how to face an interview
CS1207.5	To create the capability of writing skills ie., Emails &Cvs
CS1207.6	To utilise appropriate use of idiomatic Expressions

Course Name: **Applied chemistry lab**	
Course Code: **CS1208**	
CS1208.1	To explain The experiments introduce volumetric analysis
CS1208.2	To explain redox titrations
CS1208.3	To explain complex metric titrations by using EDTA method
CS1208.4	To explain the instrumental methods
CS1208.5	To explain conduct metric titrations
CS1208.6	To acquire the knowledge on potentiometric titrations

Course Name: **Object oriented programming lab**	
Course Code: **CS1209**	
CS1209.1	To model a object oriented programming using abstract data types.
CS1209.2	To explain encapsulation,inheritance and polymorphism
CS1209.3	Practical exposure in fundamental features of object oriented language like java
CS1209.4	Object classes and interfaces, exceptions and libraries of object collections
CS1209.5	To solve business problems and able to code logic as a program
CS1209.6	To test document and prepare professional looking package for each business project

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DEPARTMENT OF SCIENCE & HUMANITIES
Course Outcomes
Regulation R16   A.Y:2018-2019

Year/Sem: I B.Tech I SEM

Course Name: **ENGLISH-1**	
Course Code: **AME1101**	
AME1101.1	To develop human resources and serve the society through different ways
AME1101.2	To educate and adopt the road safety measures by means transport
AME1101.3	Create an awareness on mass production that is ultimately detrimental to biological survival
AME1101.4	Imparting the importance of alternative energy sources to the depleting sources
AME1101.5	Realization on how to preserve the extension of animal life
AME1101.6	Identifying safety measures against different varieties of accidents at home and work place

Course Name: **Mathematics –I**	
Course Code: **AME1102**	
AME1102.1	Solve the linier differential equations of first order
AME1102.2	Solve the linier differential equations of second and higher order
AME1102.3	Determine Laplace transform and inverse Laplace transform and various functions and use Laplace transform to determine general solutions to linier ODE
AME1102.4	Calculate total derivative, Jacobian and maxima & minima of functions of two variables
AME1102.5	Solve partial differential equations of first order
AME1102.6	Solve second and higher order differential equations

Course Name: **Engineering Chemistry**	
Course Code: **AME1103**	
AME1103.1	Importance of usage of plastics in household appliances and composites (FRP) in aerospace and automotive industries
AME1103.2	Discuss the the advantages of fuels and how to prepare synthetic petrol
AME1103.3	Identify the reasons of corrosion and controlling methods of corrosion
AME1103.4	Nanomaterials, engineering applications of nanomaterial's, superconductors and liquid crystals.
AME1103.5	Discuss the disadvantages of impure water and how to purify water by internal and external methods
AME1103.6	Explain construction and working of fuel cells

Course Name: **Engineering Mechanics**	
Course Code: **AME1104**	

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AME1104.1	Explain the concepts of force and friction, direction and its applications
AME1104.2	To exhibit the application of free body diagrams. Solution to problems using graphical methods and law of triangle of forces
AME1104.3	To explain concepts of centre of gravity
AME1104.4	To exposed to concepts of moment of inertia and polar moment of inertia including transfer methods and their applications
AME1104.5	To explain to motion in straight line and in curvilinear paths, its velocity and acceleration computation and methods of representing plane motion.
AME1104.6	To be exposed to concepts of work, energy and particle motion Work – Energy Method:

Course Name: **Computer programming**	
Course Code: **AME1105**	
AME1105.1	Understand the basic terminology used in computer programming
AME1105.2	Explain, compile and debug programs in C language. Use different data types in a computer program.•
AME1105.3	Design programs involving decision structures, loops and functions.
AME1105.4	Explain the difference between call by value and call by reference
AME1105.5	Understand the dynamics of memory by the use of pointers
AME1105.6	Understand the dynamics of memory by the use of pointers

Course Name: **Environmental studies**	
Course Code: **AME1106**	
AME1106.1	Discuss natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
AME1106.2	Explain concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web
AME1106.3	Explain biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
AME1106.4	Discuss Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
AME1106.5	Discuss The environmental legislations of India and the first global initiatives towards sustainable development.
AME1106.6	Explain About environmental assessment and the stages involved in EIA and the environmental audit.

Course Name: **English communication skills lab**	
Course Code: **AME1107**	
AME1107.1	To impart the significance of spoken English
AME1107.2	To enhance the general conversation skills through different socio context
AME1107.3	To acquire the ability to use functional English
AME1107.4	To instil confidence by practising pronunciation and accent

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| AME1107.5 | To identifying the barriers of communication |
| AME1107.6 | To focus on common errors of English pronunciation as second language |

Course Name: **Engineering chemistry lab**	
Course Code: **AME1108**	
AME1108.1	To explain The experiments introduce volumetric analysis
AME1108.2	To explain redox titrations
AME1108.3	To explain complex metric titrations by using EDTA method
AME1108.4	To explain the instrumental methods
AME1108.5	To explain conduct metric titrations
AME1108.6	To acquire the knowledge on potentiometric titrations

Course Name: **Computer programming lab**	
Course Code: **AME1109**	
AME1109.1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
AME1109.2	Acquire knowledge about the basic concept of writing a program
AME1109.3	Role of constants, variables, identifiers, operators,
AME1109.4	Explain type conversion and other building blocks of C Language. •
AME1109.5	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
AME1109.6	To explain Role of Functions involving the idea of modularity.

Year/Sem: I B.Tech IISEM

Course Name: **English-II**	
Course Code: **AME1201**	
AME1201.1	To describe the education system that aims to enhance wisdom
AME1201.2	To promote peaceful existence and universal harmony
AME1201.3	To analyse the symptoms of cultural shock and after math consequences
AME1201.4	To provide the awareness of taboos of cultural tradition
AME1201.5	To educate the affect of environmental changes that leads to several health disorders
AME1201.6	To enhance Advancement of technology for the betterment of human life

Course Name: **Mathematics-II**	
Course Code: **AME1202**	
AME1202.1	Calculate the root of algebraic and transiently equation
AME1202.2	Compute inter polating polynomial for the given data

AME1202.3	Solve ordinary differential equation numerically using Euler's and R-K method
AME1202.4	Find Fourier series for certain functions
AME1202.5	Find Fourier transform for certain functions
AME1202.6	Identify and classify and solve the different types of partial differential equations

Course Name: **Mathematics-III**	
Course Code: **AME1203**	
AME1203.1	Determine rank and solve simultaneous linier equations
AME1203.2	Solve simultaneous linier equations numerically using various matrix methods
AME1203.3	Determine Eigen values and Eigen vectors and nature of the quadratic forms
AME1203.4	Determine double integral over the region and triple integral over a volume
AME1203.5	Determine special functions and evolution of improper integrals
AME1203.6	Calculate radiant of a scalar function , divergence of a curl, determine line ,surface and volume integral. Apply green stokes and gauss divergence theorems to calculate line, surface and volume integrals

Course Name: **Engineering physics**	
Course Code: **AME1204**	
AME1204.1	Impart concepts of Optical Interference, Diffraction and Polarization required to design instruments with higher resolution - Concepts of coherent sources, its realization and utility optical instrumentation.
AME1204.2	Study the Structure-property relationship exhibited by solid crystal materials for their utility
AME1204.3	Tap the Simple harmonic motion and its adaptability for improved acoustic quality of concert halls.
AME1204.4	To explore the Nuclear Power as a reliable source required to run industries
AME1204.5	To impart the knowledge of materials with characteristic utility in appliances.
AME1204.6	To explain Diffractometer and Polari meter are learnt. Study Acoustics, crystallography magnetic and dielectric materials enhances the utility aspects of materials.

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Course Name: **BEEE**	
Course Code: **AME1205**	
AME1205.1	To learn the basic principles of electrical circuital law's and analysis of networks
AME1205.2	To understand the principle of operation and construction details of DC machines & Transformers
AME1205.3	To understand the principle of operation and construction details of alternator
AME1205.4	To explain the 3-Phase induction motor. •
AME1205.5	To study the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs
AME1205.6	To learn the operation of PNP and NPN transistors and various amplifiers

Course Name: ED	
Course Code: **AME1205**	
AME1206.1	To introduce the students to use drawing instruments and to draw polygons, Engg. Curves
AME1206.2	To introduce the students to use scales and orthographic projections, projections of points & simple lines.
AME1206.3	The objective is to make the students draw the projections of the lines inclined to both the planes.
AME1206.4	The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
AME1206.5	The objective is to make the students draw the projections of the plane inclined to both the planes.
AME1206.6	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view

Course Name: **English communication skills lab**	
Course Code: **AME1205**	
AME1207.1	To build the initial ability of presenting their views in debating
AME1207.2	To convey the deas through Group Discussion
AME1207.3	To plan & prepare for oral presentation
AME1207.4	To develop the ability of how to face an interview
AME1207.5	To create the capability of writing skills ie., Emails &Cvs
AME1207.6	To utilise appropriate use of idiomatic Expressions

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Course Name: **Engineering physics lab**	
Course Code: **AME1208**	
AME1208.1	To provide an experimental foundation for the theoretical concepts introduced in the lectures
AME1208.2	To teach how to make careful experimental observations and how to think about and draw conclusions from such data
AME1208.3	To help students understand the role of direct observation in physics
AME1208.4	To distinguish between interference based on theory and experiments
AME1208.5	To introduce the concepts and techniques which have wide applications in experimental science
AME1208.6	To teach hoe to write technical report this communicates scientific information in a clear and concise manner

Course Name: **Engineering work shop & IT work shop**	
Course Code: **AME1209**	
AME1209.1	To Understand the basic components and peripherals of a computer.
AME1209.2	To become familiar in configuring a system
AME1209.3	To Learn the usage of productivity tools
AME1209.4	To Acquire knowledge about the netiquette.
AME1209.5	To Acquire knowledge about cyber hygiene
AME1209.6	To Get hands on experience in trouble shooting a system

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DEPARTMENT OF MBA
Course Outcomes

A.Y:2022-2023

Year/Sem: I MBA I SEM

Course Name:	MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR
Course Code:	**Course Outcomes**
MBA C-101.1	Understand the concept of management ,organizational behaviour
MBA C-101.2	Understand the organizational structure and formal ,informal organization .
MBA C-101.3	Acquire leadership skills & also know about different styles of leadership
MBA C-101.4	Learn how to improve the critical thinking and smart thinking
MBA C-101.5	Understand the theories of motivation
MBA C-101.6	To Understand how to make the team building and how to do problem solving

Course Name:	MANAGERIAL ECONOMICS
Course Code:	**Course Outcomes**
MBA C-102.1	Understand the concept of managerial economics and business economics
MBA C-102.2	Understand the demand analysis and law of demand.
MBA C-102.3	Acquire information about the production analysis and its importance
MBA C-102.4	Able to understand the concept of pricing strategies
MBA C-102.5	Understand the concept of all markets and BEP
MBA C-102.6	To Understand the macro economics and business economics

Course Name:	ACCOUNTING FOR MANAGERS
Course Code:	**Course Outcomes**
MBA C-103.1	Understand the concept of accounting and preparation of final accounts
MBA C-103.2	Understand the financial statements and fund flow statements.
MBA C-103.3	What is the cost accounting and understand the methods of LIFO ,FIFO etc
MBA C-103.4	Understand the management accounting and its importance
MBA C-103.5	Able to understand the budgetary control and its methods
MBA C-103.6	To Understand the standard costing and BEP point

Course Name:	QUANTITATIVE ANALYSISFOR BUSINESS DECISIONS
Course Code:	**Course Outcomes**
MBA C – 104.1	Explanation on linear, quadrtic, permutations and combinations
MBA C – 104.2	Solve the elementary operations of matrices
MBA C – 104.3	evaluate simple correlations and probability distributions
MBA C – 104.4	Explain making under certainty and decision trees
MBA C – 104.5	Explain one tails test and two tailed test
MBA C – 104.6	Explain sampling distributions and test of hypothesis

Course Name:	LEGAL & BUSINESS ENVIRONMENT
Course Code:	**Course Outcomes**
MBA C-105.1	Identify the environment factors which influence business
MBA C-105.2	Acquire knowledge on business policies to carry out a business
MBA C-105.3	Understand the concept of law of contract relating to business activities
MBA C-105.4	Protection of the Intellectual property, making of Negotiable Instruments
MBA C-105.5	Know the practices, rules and regulations that govern the operation as well as the formation of company
MBA C-105.6	Get the knowledge on Information Technology Act, 2000 , Consumer Protection Act Environmental Protection Act etc

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS
Course Code:	**Course Outcomes**
MBA C-106.1	Understand the concept & process of communication.
MBA C-106.2	Understand the types of verbal & Non-verbal communication.
MBA C-106.3	Acquire Interpersonal skills & also know about different styles of leadership
MBA C-106.4	Learn how to overcome the barriers of communication
MBA C-106.5	Compose effective letters and reports.
MBA C-106.6	To Understand of how to make the Presentation of the student skills in interview point of view

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Course Name:	CROSS CULTURAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-107.1	Understand the concept of cross cultural management
MBA C-107.2	Understand the concept of global business scenario and role of culture.
MBA C-107.3	Acquire information about the decision making and skills and knowledge
MBA C-107.4	Able to understand the concept of international business
MBA C-107.5	Understand the concept of global business management
MBA C-107.6	To Understand the macro economics and business economics culture

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS LAB
Course Code:	**Course Outcomes**
MBA C-108.1	Understand the need of communication skills.
MBA C-108.2	Recognize both familiar and unfamiliar sounds, improves pronunciation skills.
MBA C-108.3	Receive and interpret messages accurately in the communication process
MBA C-108.4	Recognising the Body Language for the Interview Point of view
MBA C-108.5	Communicate with others and express our thoughts and feelings.
MBA C-108.6	Designing Presentation and enhancing Presentation skills

Course Name:	INFORMATION TECHNOLOGY LAB
Course Code:	**Course Outcomes**
MBA C -109.1	Development of technical and managerial skills in information technology.
MBA C -109.2	Start Microsoft Office applications and work with the Microsoft Office interface.
MBA C -109.3	Create documents in Microsoft Word.
MBA C -109.4	Create workbooks in Microsoft Excel.
MBA C -109.5	Create presentations in Microsoft PowerPoint.
MBA C -109.6	Share data between Microsoft Office applications.

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Year/Sem: I MBA II SEM

Course Name:	FINANCIAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-201.1	Understand the concept of financial management and what are financial manager decisions
MBA C-201.2	Understand the concept of leverages and EBIT – EPS analysis .
MBA C-201.3	What is the time value of money and its importance
MBA C-201.4	Able to understand the capital and capital budgeting methods
MBA C-201.5	Able to understand the dividend and its methods
MBA C-201.6	To Understand the working capital and estimate the working capital

Course Name:	HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-202.1	Understanding the nature, scope, functions, roles, goals, strategies and policies of HR management
MBA C-202.2	Design and develop HR planning related aspects
MBA C-202.3	Understanding the administration of monetary and non-monetary benefits for the employees in the organization
MBA C-202.4	Knowing about the compensation methods and mechanisms
MBA C-202.5	Understand the design and implementation of training programs and evaluation of Training.
MBA C-202.6	Analyze recent trends in the human resource function and to balance the work life in the present dynamic work environment

Course Name:	MARKETING MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-203.1	Understand the concept of marketing management
MBA C-203.2	Understand the concept of market segmentation and market strategies
MBA C-20.3	Acquire information about the product and product pricing
MBA C-203.4	Able to understand the concept of marketing communication and its channels
MBA C-203.5	Understand the concept of sales promotion and public distribution
MBA C-203.6	To Understand the market organization and control

Course Name:	BUSINESS RESEARCH METHODS
Course Code:	**Course Outcomes**
MBA C-205.1	Understand the concept of business research methods
MBA C-205.2	Understand the concept of primary data and secondary data .
MBA C-205.3	Acquire information about survey research and its methods
MBA C-205.4	Able to understand the concept of statically survey methods
MBA C-205.5	Understand the concept of ANOVA analysis
MBA C-205.6	To Understand the quality control and multivariate analysis

Course Name:	OPERATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-204.1	Understand the concept of Production and Operations Management
MBA C-204.2	Understand the Product Design, process and Value Chain, Job Design
MBA C-204.3	Gaining the Knowledge about Operation Planning, AGP, MRP
MBA C-204.4	Understanding about the Production Planning, Purchase Management
MBA C-204.5	Observing about the work study and gaining the knowledge about Engineering and Behavioural approach
MBA C-204.6	Knowing about the quality Standards

Course Name:	PROJECT MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-206.1	The objective of this concept know knowledge of project proposals and project information
MBA C-206.2	Understand the market, its survey and feasibility of market
MBA C-206.3	What is the production technology , plant capacity ,materials ,inputs - outputs
MBA C-206.4	Able to understand the PERT – CPM methods
MBA C-206.5	Able to understand the non discounting and discounting cash flow methods
MBA C-206.6	To Understand the project planning and implementation

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Course Name:	INFORMATION TECHNOLOGY LAB 2
Course Code:	**Course Outcomes**
MBA C-207.1	Understanding the types, classes and functions of R Programming.
MBA C. 207.2	Accessing and Processing of Data.
MBA C. 207.3	Understanding the I/O interface programming.
MBA C. 207.4	Study and Analyse Data Visualisation.
MBA C. 207.5	Implement any application level simulation using R
MBA C. 207.6	Use R in their own research

Year/Sem: II MBA III SEM

Course Name:	STRATEGIC MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-301.1	Understand the concept of strategic management
MBA C-301.2	Select the strategically tool to analyze the markets
MBA C-301.3	Formulate the strategies at corporate business and functional levels
MBA C-301.4	Understanding about the Entry or Exit Barriers
MBA C-301.5	Know the different types of strategies to be implemented in the organizations
MBA C-301.6	Acquire Knowledge about different evaluation and control techniques

Course Name:	OPERATIONS RESEARCH
Course Code:	**Course Outcomes**
MBA C-302.1	Understand the concept of Operation Research
MBA C-302.2	Calculation of Transportation Models & salesman Problems
MBA C-302.3	Calculation of Liner Programming
MBA C-302.4	Finding out the branch & bound models
MBA C-302.5	Finding out Game with Saddles Points
MBA C-302.6	Calculation of PERT & CPM

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Course Name:	INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-301.1	Understand the concept of investment and the process of investment
MBA EF-301.2	Understand the concept of risk and return.
MBA EF-301.3	Learn how to take an investment decision by using fundamental and technical analysis
MBA EF-301.4	Learning about the market Hypothesis, and forms of market efficiency
MBA EF-301.5	Value securities by using different approaches
MBA EF-301.6	Understand the concept of Portfolio management and learn different Portfolio models

Course Name:	MANAGING BANKS & FINANCIAL INSTITUTIONS
Course Code:	**Course Outcomes**
MBA EF-302.1	Understanding about the evolution of banking sector
MBA EF-302.2	Understand the structure of financial system and the role of RBI, Banking Sector
MBA EF-302.3	Knowing about the Risk Models & risk management
MBA EF-302.4	Understanding about the Insurance & Regulation of Development Authority
MBA EF-302.5	Gain knowledge about banking and non-banking financial institutions
MBA EF-302.6	Knowing about the Financial Instruments, SEBI & RBI Guidelines

Course Name:	FINANCIAL MARKET & SERVICES
Course Code:	**Course Outcomes**
MBA EF-303.1	Understand the concept of Indian financial system
MBA EF-303.2	Understand the concept of financial services and regulatory frame work
MBA EF-303.3	Able to understand the phases of performance planning
MBA EF-303.4	What is the venture capital and its implementation
MBA EF-303.5	Able to understand the debit and credit rating system in India
MBA EF-303.6	Understand the concept of micro finance in India

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Course Name:	TAX MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-305.1	Understand the concept of tax management in India
MBA EF-305.2	Understand the concept of Direct tax and indirect tax
MBA EF-305.3	Able to understand the concept tax planning for firms
MBA EF-305.4	What is the venture capital and its implementation
MBA EF-305.5	Able to understand the corporate taxation in India
MBA EF-305.6	Understand the concept audit and qualities of audit

Course Name:	HUMAN CAPITAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-304.1	Understand the concept of human capital management
MBA EH-304.2	Understand the concept of monetary non monetary polices
MBA EH-304.3	Able to understand the value based models
MBA EH-304.4	What is the team building process and its impotence
MBA EH-304.5	What is meaning of quality of work life
MBA EH-304.6	Understand the concept of industrial measures and concept

Course Name:	LEADER SHIP AND CHANGE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-301.1	Understand the concept of leader ship management and its styles
MBA EH-301.2	Understand the concept of leader ship motivation and its culture
MBA EH-301.3	Able to understand the interpersonal skills
MBA EH-301.4	What is the team building process and its impotence
MBA EH-301.5	What is meaning of change management
MBA EH-301.6	Understand the concept of total project management and its development

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Course Name:	MAN POWER PLANNING AND RECRUITMENT AND SELECTION
Course Code:	**Course Outcomes**
MBA EH-305.1	Understand the concept of HRP and Demand forecasting methods
MBA EH-305.2	Understand the concept of HRP and Development
MBA EH-305.3	Able to understand the job analysis and job design
MBA EH-305.4	What is the recruitment and selection process and its importance
MBA EH-305.5	Training and development of the concept
MBA EH-305.6	Understand the concept of training and development concept

Course Name:	PERFORMANCE OF EVALUATION AND COMPENSATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-302.1	Understand the concept of performance of evaluation and compensation management
MBA EH-302.2	Understand the concept of strategic planning and performance planning
MBA EH-302.3	Able to understand the phases of performance planning
MBA EH-302.4	What is the team building process and its impotence
MBA EH-302.5	What is meaning of compensation management and its importance
MBA EH-302.6	Understand the concept of industrial measures and compensation

Course Name:	PROJECT
Course Code:	**Course Outcomes**
MBA C-304.1	Apply problem solving and analytical skills academic knowledge.
MBA C-304.2	Acquire research-based knowledge

Year/Sem: II MBA IV SEM

Course Name:	SUPPLY CHAIN MANAGEMENT & ANALYTICS
Course Code:	**Course Outcomes**
MBA C-401.1	Understand the fundamentals of supply chain management
MBA C-401.2	Construct the various supply chain networks
MBA C-401.3	Knowing about Travelling Salesman algorithms & problems in vehicle movements
MBA C-401.4	Gaining the Knowledge aboutFunctional approach & Linking Algorithm
MBA C-401.5	Identifying the Benchmarking, CRM& SCM, basic concepts and Demand chain
MBA C-401.6	Understanding the Concept Inventory Management, Network design Supply chain process and Company Manufactures

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Course Name:	INNOVATION AND ENTREPRENEURSHIP
Course Code:	Course Outcomes
MBA C -402.1	Understanding the concept of strategic innovation management
MBA C -402.2	Understanding the creative thinking , creative performance etc
MBA C-402.3	Analysing the concepts of employee grievances
MBA C-402.4	Identifying the incubation and take off problems
MBA C-402.5	Student able to understand the family entrepreneur non family entrepreneur
MBA C-402.6	Gaining the Knowledge by the innovation management

Course Name:	EMPLOYEE RELATIONS AND ENGAGEMENT
Course Code:	Course Outcomes
MBA EH-403.1	Understanding the concept of industrial relations and management
MBA EH-403.2	Understanding the concept of trade unions in India
MBA EH-403.3	Analysing the concepts of employee grievances
MBA EH-403.4	Identifying the industrial disputes and other factors
MBA EH-403.5	Student able to understand the employee engagement
MBA EH-403.6	Gaining the Knowledge by the Indian constitution industrial laws laws

Course Name:	INTERNATIONAL HUMAN RESOURCE MANAGEMENT
Course Code:	Course Outcomes
MBA EH-402.1	Understanding the Internationalisation of HRM and its future
MBA EH-402.2	Understanding Global HR Practices
MBA EH-402.3	Analysing the concepts and Issues of Cross Cultural theories
MBA EH-402.4	Identifying the Indian MNCs Challenges
MBA EH-402.5	Student able to understand the Knowledge of Compensation management
MBA EH-402.6	Gaining the Knowledge by the student in HRD and its Challenges

Course Name:	LABOUR WELFARE AND EMPLOYEEMENT LAWS
Course Code:	**Course Outcomes**
MBA EH-401.1	Understanding the labour welfare concept and Indian laws
MBA EH-401.2	Understanding the labour welfare centres , programs in India
MBA EH-401.3	Analysing the concepts labour legislation and laws
MBA EH-401.4	Identifying the Indian MNCs Challenges
MBA EH-401.5	Student able to understand the industrial relations and its importance
MBA EH-401.6	Gaining the Knowledge by the Indian constitution labour laws
Course Name:	**STRATEGIC HUMAN RESOURCE MANAGEMENT**
Course Code:	**Course Outcomes**
MBA EH-405.1	Understanding the concept of strategic human resource management
MBA EH-405.2	Understanding the concept of strategic human resource planning
MBA EH-405.3	Analysing the concepts of employee grievances
MBA EH-405.4	Able to understand the strategy planning and implementation
MBA EH-405.5	Student able to understand the human resource development
MBA EH-405.6	Gaining the Knowledge by the human resource evaluation
Course Name:	**FINANCIAL DERIVATIVES**
Course Code:	**Course Outcomes**
MBA EF -401.1	Students will be able to analyse the risk in Derivatives
MBA EF -401.2	Understand the operations of Derivatives, futures and trading on BSE & NSE
MBA EF -401.3	Gaining good knowledge about the different types of Options
MBA EF -401.4	Identify about various types of Trading Strategies in Options
MBA EF -401.5	Analyse the value of options using option pricing models
MBA EF -401.6	Examine the role of Swaps in the risk management

Course Name:	FINANCIAL RISK MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF -403.1	Knowledge about the regulatory framework of risk
MBA EF -403.2	Understand the operations of Derivatives and be able to compare exchange traded instruments
MBA EF -403.3	Gaining good knowledge about the different types of instruments.
MBA EF -403.4	Identify about various types of Instruments and Derivatives
MBA EF -403.5	Knowing the knowledge about the risk management
MBA EF -403.6	Gaining the knowledge about options and various pricing model in risk Mgt

Course Name:	GLOBAL FINANCIAL MANAGEMENT
Course Code:	Course Outcomes
MBA EF -402.1	Students will be able to analyse the global financial management
MBA EF -402.2	Understand the international financial system
MBA EF -402.3	Gaining good knowledge about the international markets and Euros
MBA EF -402.4	Identify about various types of foreign investments
MBA EF -402.5	Understand the foreign corporate strategies
MBA EF -402.6	Able to understand the international accounting and reporting

Course Name:	STRATEGIC FINANCIAL MANAGEEMNT
Course Code:	Course Outcomes
MBA EF -404.1	Students will be able to analyse the strategic financial management
MBA EF -404.2	Understand the capital structure and leverages
MBA EF -404.3	Gaining good knowledge about the risk adjusted NPV
MBA EF -404.4	Able to understand the risk adjusted IRR
MBA EF -404.5	Understand the mergers and strategies
MBA EF -404.6	Able to understand the takeover strategies and SEBI

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DEPARTMENT OF MBA
<u>Course Outcomes</u>

A.Y:2021-2022

Year/Sem: I MBA I SEM

Course Name:	MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR
Course Code:	**Course Outcomes**
MBA C-101.1	Understand the concept of management ,organizational behaviour
MBA C-101.2	Understand the organizational structure and formal ,informal organization .
MBA C-101.3	Acquire leadership skills & also know about different styles of leadership
MBA C-101.4	Learn how to improve the critical thinking and smart thinking
MBA C-101.5	Understand the theories of motivation
MBA C-101.6	To Understand how to make the team building and how to do problem solving

Course Name:	MANAGERIAL ECONOMICS
Course Code:	**Course Outcomes**
MBA C-102.1	Understand the concept of managerial economics and business economics
MBA C-102.2	Understand the demand analysis and law of demand.
MBA C-102.3	Acquire information about the production analysis and its importance
MBA C-102.4	Able to understand the concept of pricing strategies
MBA C-102.5	Understand the concept of all markets and BEP
MBA C-102.6	To Understand the macro economics and business economics

Course Name:	ACCOUNTING FOR MANAGERS
Course Code:	**Course Outcomes**
MBA C-103.1	Understand the concept of accounting and preparation of final accounts
MBA C-103.2	Understand the financial statements and fund flow statements.
MBA C-103.3	What is the cost accounting and understand the methods of LIFO ,FIFO etc
MBA C-103.4	Understand the management accounting and its importance
MBA C-103.5	Able to understand the budgetary control and its methods
MBA C-103.6	To Understand the standard costing and BEP point

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Course Name:	QUANTITATIVE ANALYSISFOR BUSINESS DECISIONS
Course Code:	**Course Outcomes**
MBA C – 104.1	Explanation on linear, quadrtic, permutations and combinations
MBA C – 104.2	Solve the elementary operations of matrices
MBA C – 104.3	evaluate simple correlations and probability distributions
MBA C – 104.4	Explain making under certainty and decision trees
MBA C – 104.5	Explain one tails test and two tailed test
MBA C – 104.6	Explain sampling distributions and test of hypothesis

Course Name:	LEGAL & BUSINESS ENVIRONMENT
Course Code:	**Course Outcomes**
MBA C-105.1	Identify the environment factors which influence business
MBA C-105.2	Acquire knowledge on business policies to carry out a business
MBA C-105.3	Understand the concept of law of contract relating to business activities
MBA C-105.4	Protection of the Intellectual property, making of Negotiable Instruments
MBA C-105.5	Know the practices, rules and regulations that govern the operation as well as the formation of company
MBA C-105.6	Get the knowledge on Information Technology Act, 2000 , Consumer Protection Act Environmental Protection Act etc

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS
Course Code:	**Course Outcomes**
MBA C-106.1	Understand the concept & process of communication.
MBA C-106.2	Understand the types of verbal & Non-verbal communication.
MBA C-106.3	Acquire Interpersonal skills & also know about different styles of leadership
MBA C-106.4	Learn how to overcome the barriers of communication
MBA C-106.5	Compose effective letters and reports.
MBA C-106.6	To Understand of how to make the Presentation of the student skills in interview point of view

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Course Name:	CROSS CULTURAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-107.1	Understand the concept of cross cultural management
MBA C-107.2	Understand the concept of global business scenario and role of culture.
MBA C-107.3	Acquire information about the decision making and skills and knowledge
MBA C-107.4	Able to understand the concept of international business
MBA C-107.5	Understand the concept of global business management
MBA C-107.6	To Understand the macro economics and business economics culture

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS LAB
Course Code:	**Course Outcomes**
MBA C-108.1	Understand the need of communication skills.
MBA C-108.2	Recognize both familiar and unfamiliar sounds, improves pronunciation skills.
MBA C-108.3	Receive and interpret messages accurately in the communication process
MBA C-108.4	Recognising the Body Language for the Interview Point of view
MBA C-108.5	Communicate with others and express our thoughts and feelings.
MBA C-108.6	Designing Presentation and enhancing Presentation skills

Course Name:	INFORMATION TECHNOLOGY LAB
Course Code:	**Course Outcomes**
MBA C -109.1	Development of technical and managerial skills in information technology.
MBA C -109.2	Start Microsoft Office applications and work with the Microsoft Office interface.
MBA C -109.3	Create documents in Microsoft Word.
MBA C -109.4	Create workbooks in Microsoft Excel.
MBA C -109.5	Create presentations in Microsoft PowerPoint.
MBA C -109.6	Share data between Microsoft Office applications.

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Year/Sem: I MBA II SEM

Course Name:	FINANCIAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-201.1	Understand the concept of financial management and what are financial manager decisions
MBA C-201.2	Understand the concept of leverages and EBIT – EPS analysis .
MBA C-201.3	What is the time value of money and its importance
MBA C-201.4	Able to understand the capital and capital budgeting methods
MBA C-201.5	Able to understand the dividend and its methods
MBA C-201.6	To Understand the working capital and estimate the working capital

Course Name:	HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-202.1	Understanding the nature, scope, functions, roles, goals, strategies and policies of HR management
MBA C-202.2	Design and develop HR planning related aspects
MBA C-202.3	Understanding the administration of monetary and non-monetary benefits for the employees in the organization
MBA C-202.4	Knowing about the compensation methods and mechanisms
MBA C-202.5	Understand the design and implementation of training programs and evaluation of Training.
MBA C-202.6	Analyze recent trends in the human resource function and to balance the work life in the present dynamic work environment

Course Name:	MARKETING MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-203.1	Understand the concept of marketing management
MBA C-203.2	Understand the concept of market segmentation and market strategies
MBA C-20.3	Acquire information about the product and product pricing
MBA C-203.4	Able to understand the concept of marketing communication and its channels
MBA C-203.5	Understand the concept of sales promotion and public distribution
MBA C-203.6	To Understand the market organization and control

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Course Name:	BUSINESS RESEARCH METHODS
Course Code:	**Course Outcomes**
MBA C-205.1	Understand the concept of business research methods
MBA C-205.2	Understand the concept of primary data and secondary data .
MBA C-205.3	Acquire information about survey research and its methods
MBA C-205.4	Able to understand the concept of statically survey methods
MBA C-205.5	Understand the concept of ANOVA analysis
MBA C-205.6	To Understand the quality control and multivariate analysis

Course Name:	OPERATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-204.1	Understand the concept of Production and Operations Management
MBA C-204.2	Understand the Product Design, process and Value Chain, Job Design
MBA C-204.3	Gaining the Knowledge about Operation Planning, AGP, MRP
MBA C-204.4	Understanding about the Production Planning, Purchase Management
MBA C-204.5	Observing about the work study and gaining the knowledge about Engineering and Behavioural approach
MBA C-204.6	Knowing about the quality Standards

Course Name:	PROJECT MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-206.1	The objective of this concept know knowledge of project proposals and project information
MBA C-206.2	Understand the market, its survey and feasibility of market
MBA C-206.3	What is the production technology , plant capacity ,materials ,inputs - outputs
MBA C-206.4	Able to understand the PERT – CPM methods
MBA C-206.5	Able to understand the non discounting and discounting cash flow methods
MBA C-206.6	To Understand the project planning and implementation

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Course Name:	INFORMATION TECHNOLOGY LAB 2
Course Code:	**Course Outcomes**
MBA C-207.1	Understanding the types, classes and functions of R Programming.
MBA C. 207.2	Accessing and Processing of Data.
MBA C. 207.3	Understanding the I/O interface programming.
MBA C. 207.4	Study and Analyse Data Visualisation.
MBA C. 207.5	Implement any application level simulation using R
MBA C. 207.6	Use R in their own research

Year/Sem: II MBA III SEM

Course Name:	STRATEGIC MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-301.1	Understand the concept of strategic management
MBA C-301.2	Select the strategically tool to analyze the markets
MBA C-301.3	Formulate the strategies at corporate business and functional levels
MBA C-301.4	Understanding about the Entry or Exit Barriers
MBA C-301.5	Know the different types of strategies to be implemented in the organizations
MBA C-301.6	Acquire Knowledge about different evaluation and control techniques

Course Name:	OPERATIONS RESEARCH
Course Code:	**Course Outcomes**
MBA C-302.1	Understand the concept of Operation Research
MBA C-302.2	Calculation of Transportation Models & salesman Problems
MBA C-302.3	Calculation of Liner Programming
MBA C-302.4	Finding out the branch & bound models
MBA C-302.5	Finding out Game with Saddles Points
MBA C-302.6	Calculation of PERT & CPM

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Course Name:	INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-301.1	Understand the concept of investment and the process of investment
MBA EF-301.2	Understand the concept of risk and return.
MBA EF-301.3	Learn how to take an investment decision by using fundamental and technical analysis
MBA EF-301.4	Learning about the market Hypothesis, and forms of market efficiency
MBA EF-301.5	Value securities by using different approaches
MBA EF-301.6	Understand the concept of Portfolio management and learn different Portfolio models

Course Name:	MANAGING BANKS & FINANCIAL INSTITUTIONS
Course Code:	**Course Outcomes**
MBA EF-302.1	Understanding about the evolution of banking sector
MBA EF-302.2	Understand the structure of financial system and the role of RBI, Banking Sector
MBA EF-302.3	Knowing about the Risk Models & risk management
MBA EF-302.4	Understanding about the Insurance & Regulation of Development Authority
MBA EF-302.5	Gain knowledge about banking and non-banking financial institutions
MBA EF-302.6	Knowing about the Financial Instruments, SEBI & RBI Guidelines

Course Name:	FINANCIAL MARKET & SERVICES
Course Code:	**Course Outcomes**
MBA EF-303.1	Understand the concept of Indian financial system
MBA EF-303.2	Understand the concept of financial services and regulatory frame work
MBA EF-303.3	Able to understand the phases of performance planning
MBA EF-303.4	What is the venture capital and its implementation
MBA EF-303.5	Able to understand the debit and credit rating system in India
MBA EF-303.6	Understand the concept of micro finance in India

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Course Name:	TAX MANAGEMENT
Course Code:	Course Outcomes
MBA EF-305.1	Understand the concept of tax management in India
MBA EF-305.2	Understand the concept of Direct tax and indirect tax
MBA EF-305.3	Able to understand the concept tax planning for firms
MBA EF-305.4	What is the venture capital and its implementation
MBA EF-305.5	Able to understand the corporate taxation in India
MBA EF-305.6	Understand the concept audit and qualities of audit

Course Name:	HUMAN CAPITAL MANAGEMENT
Course Code:	Course Outcomes
MBA EH-304.1	Understand the concept of human capital management
MBA EH-304.2	Understand the concept of monetary non monetary polices
MBA EH-304.3	Able to understand the value based models
MBA EH-304.4	What is the team building process and its impotence
MBA EH-304.5	What is meaning of quality of work life
MBA EH-304.6	Understand the concept of industrial measures and concept

Course Name:	LEADER SHIP AND CHANGE MANAGEMENT
Course Code:	Course Outcomes
MBA EH-301.1	Understand the concept of leader ship management and its styles
MBA EH-301.2	Understand the concept of leader ship motivation and its culture
MBA EH-301.3	Able to understand the interpersonal skills
MBA EH-301.4	What is the team building process and its impotence
MBA EH-301.5	What is meaning of change management
MBA EH-301.6	Understand the concept of total project management and its development

Course Name:	MAN POWER PLANNING AND RECRUITMENT AND SELECTION
Course Code:	**Course Outcomes**
MBA EH-305.1	Understand the concept of HRP and Demand forecasting methods
MBA EH-305.2	Understand the concept of HRP and Development
MBA EH-305.3	Able to understand the job analysis and job design
MBA EH-305.4	What is the recruitment and selection process and its importance
MBA EH-305.5	Training and development of the concept
MBA EH-305.6	Understand the concept of training and development concept

Course Name:	PERFORMANCE OF EVALUATION AND COMPENSATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-302.1	Understand the concept of performance of evaluation and compensation management
MBA EH-302.2	Understand the concept of strategic planning and performance planning
MBA EH-302.3	Able to understand the phases of performance planning
MBA EH-302.4	What is the team building process and its impotence
MBA EH-302.5	What is meaning of compensation management and its importance
MBA EH-302.6	Understand the concept of industrial measures and compensation

Course Name:	PROJECT
Course Code:	**Course Outcomes**
MBA C-304.1	Apply problem solving and analytical skills academic knowledge.
MBA C-304.2	Acquire research-based knowledge

Year/Sem: II MBA IV SEM

Course Name:	SUPPLY CHAIN MANAGEMENT & ANALYTICS
Course Code:	**Course Outcomes**
MBA C-401.1	Understand the fundamentals of supply chain management
MBA C-401.2	Construct the various supply chain networks
MBA C-401.3	Knowing about Travelling Salesman algorithms & problems in vehicle movements
MBA C-401.4	Gaining the Knowledge aboutFunctional approach & Linking Algorithm
MBA C-401.5	Identifying the Benchmarking, CRM& SCM, basic concepts and Demand chain
MBA C-401.6	Understanding the Concept Inventory Management, Network design Supply chain process and Company Manufactures

Course Name:	INNOVATION AND ENTREPRENEURSHIP
Course Code:	**Course Outcomes**
MBA C -402.1	Understanding the concept of strategic innovation management
MBA C -402.2	Understanding the creative thinking , creative performance etc
MBA C-402.3	Analysing the concepts of employee grievances
MBA C-402.4	Identifying the incubation and take off problems
MBA C-402.5	Student able to understand the family entrepreneur non family entrepreneur
MBA C-402.6	Gaining the Knowledge by the innovation management

Course Name:	EMPLOYEE RELATIONS AND ENGAGEMENT
Course Code:	**Course Outcomes**
MBA EH-403.1	Understanding the concept of industrial relations and management
MBA EH-403.2	Understanding the concept of trade unions in India
MBA EH-403.3	Analysing the concepts of employee grievances
MBA EH-403.4	Identifying the industrial disputes and other factors
MBA EH-403.5	Student able to understand the employee engagement
MBA EH-403.6	Gaining the Knowledge by the Indian constitution industrial laws laws

Course Name:	INTERNATIONAL HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-402.1	Understanding the Internationalisation of HRM and its future
MBA EH-402.2	Understanding Global HR Practices
MBA EH-402.3	Analysing the concepts and Issues of Cross Cultural theories
MBA EH-402.4	Identifying the Indian MNCs Challenges
MBA EH-402.5	Student able to understand the Knowledge of Compensation management
MBA EH-402.6	Gaining the Knowledge by the student in HRD and its Challenges

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Course Name:	LABOUR WELFARE AND EMPLOYEEMENT LAWS
Course Code:	**Course Outcomes**
MBA EH-401.1	Understanding the labour welfare concept and Indian laws
MBA EH-401.2	Understanding the labour welfare centres , programs in India
MBA EH-401.3	Analysing the concepts labour legislation and laws
MBA EH-401.4	Identifying the Indian MNCs Challenges
MBA EH-401.5	Student able to understand the industrial relations and its importance
MBA EH-401.6	Gaining the Knowledge by the Indian constitution labour laws
Course Name:	**STRATEGIC HUMAN RESOURCE MANAGEMENT**
Course Code:	**Course Outcomes**
MBA EH-405.1	Understanding the concept of strategic human resource management
MBA EH-405.2	Understanding the concept of strategic human resource planning
MBA EH-405.3	Analysing the concepts of employee grievances
MBA EH-405.4	Able to understand the strategy planning and implementation
MBA EH-405.5	Student able to understand the human resource development
MBA EH-405.6	Gaining the Knowledge by the human resource evaluation
Course Name:	**FINANCIAL DERIVATIVES**
Course Code:	**Course Outcomes**
MBA EF -401.1	Students will be able to analyse the risk in Derivatives
MBA EF -401.2	Understand the operations of Derivatives, futures and trading on BSE & NSE
MBA EF -401.3	Gaining good knowledge about the different types of Options
MBA EF -401.4	Identify about various types of Trading Strategies in Options
MBA EF -401.5	Analyse the value of options using option pricing models
MBA EF -401.6	Examine the role of Swaps in the risk management

Course Name:	FINANCIAL RISK MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF -403.1	Knowledge about the regulatory framework of risk
MBA EF -403.2	Understand the operations of Derivatives and be able to compare exchange traded instruments
MBA EF -403.3	Gaining good knowledge about the different types of instruments.
MBA EF -403.4	Identify about various types of Instruments and Derivatives
MBA EF -403.5	Knowing the knowledge about the risk management
MBA EF -403.6	Gaining the knowledge about options and various pricing model in risk Mgt

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Course Name:	GLOBAL FINANCIAL MANAGEMENT
Course Code:	Course Outcomes
MBA EF -402.1	Students will be able to analyse the global financial management
MBA EF -402.2	Understand the international financial system
MBA EF -402.3	Gaining good knowledge about the international markets and Euros
MBA EF -402.4	Identify about various types of foreign investments
MBA EF -402.5	Understand the foreign corporate strategies
MBA EF -402.6	Able to understand the international accounting and reporting

Course Name:	STRATEGIC FINANCIAL MANAGEEMNT
Course Code:	Course Outcomes
MBA EF -404.1	Students will be able to analyse the strategic financial management
MBA EF -404.2	Understand the capital structure and leverages
MBA EF -404.3	Gaining good knowledge about the risk adjusted NPV
MBA EF -404.4	Able to understand the risk adjusted IRR
MBA EF -404.5	Understand the mergers and strategies
MBA EF -404.6	Able to understand the takeover strategies and SEBI

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DEPARTMENT OF MBA
Course Outcomes

A.Y:2020-2021

Year/Sem: I MBA I SEM

Course Name:	MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR
Course Code:	**Course Outcomes**
MBA C-101.1	Understand the concept of management ,organizational behaviour
MBA C-101.2	Understand the organizational structure and formal ,informal organization .
MBA C-101.3	Acquire leadership skills & also know about different styles of leadership
MBA C-101.4	Learn how to improve the critical thinking and smart thinking
MBA C-101.5	Understand the theories of motivation
MBA C-101.6	To Understand how to make the team building and how to do problem solving

Course Name:	MANAGERIAL ECONOMICS
Course Code:	**Course Outcomes**
MBA C-102.1	Understand the concept of managerial economics and business economics
MBA C-102.2	Understand the demand analysis and law of demand.
MBA C-102.3	Acquire information about the production analysis and its importance
MBA C-102.4	Able to understand the concept of pricing strategies
MBA C-102.5	Understand the concept of all markets and BEP
MBA C-102.6	To Understand the macro economics and business economics

Course Name:	ACCOUNTING FOR MANAGERS
Course Code:	**Course Outcomes**
MBA C-103.1	Understand the concept of accounting and preparation of final accounts
MBA C-103.2	Understand the financial statements and fund flow statements.
MBA C-103.3	What is the cost accounting and understand the methods of LIFO ,FIFO etc
MBA C-103.4	Understand the management accounting and its importance
MBA C-103.5	Able to understand the budgetary control and its methods
MBA C-103.6	To Understand the standard costing and BEP point

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Course Name:	QUANTITATIVE ANALYSISFOR BUSINESS DECISIONS
Course Code:	**Course Outcomes**
MBA C – 104.1	Explanation on linear, quadrtic, permutations and combinations
MBA C – 104.2	Solve the elementary operations of matrices
MBA C – 104.3	evaluate simple correlations and probability distributions
MBA C – 104.4	Explain making under certainty and decision trees
MBA C – 104.5	Explain one tails test and two tailed test
MBA C – 104.6	Explain sampling distributions and test of hypothesis

Course Name:	LEGAL & BUSINESS ENVIRONMENT
Course Code:	**Course Outcomes**
MBA C-105.1	Identify the environment factors which influence business
MBA C-105.2	Acquire knowledge on business policies to carry out a business
MBA C-105.3	Understand the concept of law of contract relating to business activities
MBA C-105.4	Protection of the Intellectual property, making of Negotiable Instruments
MBA C-105.5	Know the practices, rules and regulations that govern the operation as well as the formation of company
MBA C-105.6	Get the knowledge on Information Technology Act, 2000 , Consumer Protection Act Environmental Protection Act etc

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS
Course Code:	**Course Outcomes**
MBA C-106.1	Understand the concept & process of communication.
MBA C-106.2	Understand the types of verbal & Non-verbal communication.
MBA C-106.3	Acquire Interpersonal skills & also know about different styles of leadership
MBA C-106.4	Learn how to overcome the barriers of communication
MBA C-106.5	Compose effective letters and reports.
MBA C-106.6	To Understand of how to make the Presentation of the student skills in interview point of view

Course Name:	CROSS CULTURAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-107.1	Understand the concept of cross cultural management
MBA C-107.2	Understand the concept of global business scenario and role of culture.
MBA C-107.3	Acquire information about the decision making and skills and knowledge
MBA C-107.4	Able to understand the concept of international business
MBA C-107.5	Understand the concept of global business management
MBA C-107.6	To Understand the macro economics and business economics culture

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS LAB
Course Code:	**Course Outcomes**
MBA C-108.1	Understand the need of communication skills.
MBA C-108.2	Recognize both familiar and unfamiliar sounds, improves pronunciation skills.
MBA C-108.3	Receive and interpret messages accurately in the communication process
MBA C-108.4	Recognising the Body Language for the Interview Point of view
MBA C-108.5	Communicate with others and express our thoughts and feelings.
MBA C-108.6	Designing Presentation and enhancing Presentation skills

Course Name:	INFORMATION TECHNOLOGY LAB
Course Code:	**Course Outcomes**
MBA C -109.1	Development of technical and managerial skills in information technology.
MBA C -109.2	Start Microsoft Office applications and work with the Microsoft Office interface.
MBA C -109.3	Create documents in Microsoft Word.
MBA C -109.4	Create workbooks in Microsoft Excel.
MBA C -109.5	Create presentations in Microsoft PowerPoint.
MBA C -109.6	Share data between Microsoft Office applications.

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Year/Sem: I MBA II SEM

Course Name:	FINANCIAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-201.1	Understand the concept of financial management and what are financial manager decisions
MBA C-201.2	Understand the concept of leverages and EBIT – EPS analysis .
MBA C-201.3	What is the time value of money and its importance
MBA C-201.4	Able to understand the capital and capital budgeting methods
MBA C-201.5	Able to understand the dividend and its methods
MBA C-201.6	To Understand the working capital and estimate the working capital

Course Name:	HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-202.1	Understanding the nature, scope, functions, roles, goals, strategies and policies of HR management
MBA C-202.2	Design and develop HR planning related aspects
MBA C-202.3	Understanding the administration of monetary and non-monetary benefits for the employees in the organization
MBA C-202.4	Knowing about the compensation methods and mechanisms
MBA C-202.5	Understand the design and implementation of training programs and evaluation of Training.
MBA C-202.6	Analyze recent trends in the human resource function and to balance the work life in the present dynamic work environment

Course Name:	MARKETING MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-203.1	Understand the concept of marketing management
MBA C-203.2	Understand the concept of market segmentation and market strategies
MBA C-20.3	Acquire information about the product and product pricing
MBA C-203.4	Able to understand the concept of marketing communication and its channels
MBA C-203.5	Understand the concept of sales promotion and public distribution
MBA C-203.6	To Understand the market organization and control

Course Name:	BUSINESS RESEARCH METHODS
Course Code:	**Course Outcomes**
MBA C-205.1	Understand the concept of business research methods
MBA C-205.2	Understand the concept of primary data and secondary data .
MBA C-205.3	Acquire information about survey research and its methods
MBA C-205.4	Able to understand the concept of statically survey methods
MBA C-205.5	Understand the concept of ANOVA analysis
MBA C-205.6	To Understand the quality control and multivariate analysis

Course Name:	OPERATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-204.1	Understand the concept of Production and Operations Management
MBA C-204.2	Understand the Product Design, process and Value Chain, Job Design
MBA C-204.3	Gaining the Knowledge about Operation Planning, AGP, MRP
MBA C-204.4	Understanding about the Production Planning, Purchase Management
MBA C-204.5	Observing about the work study and gaining the knowledge about Engineering and Behavioural approach
MBA C-204.6	Knowing about the quality Standards

Course Name:	PROJECT MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-206.1	The objective of this concept know knowledge of project proposals and project information
MBA C-206.2	Understand the market, its survey and feasibility of market
MBA C-206.3	What is the production technology , plant capacity ,materials ,inputs - outputs
MBA C-206.4	Able to understand the PERT – CPM methods
MBA C-206.5	Able to understand the non discounting and discounting cash flow methods
MBA C-206.6	To Understand the project planning and implementation

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Course Name:	INFORMATION TECHNOLOGY LAB 2
Course Code:	**Course Outcomes**
MBA C-207.1	Understanding the types, classes and functions of R Programming.
MBA C. 207.2	Accessing and Processing of Data.
MBA C. 207.3	Understanding the I/O interface programming.
MBA C. 207.4	Study and Analyse Data Visualisation.
MBA C. 207.5	Implement any application level simulation using R
MBA C. 207.6	Use R in their own research

Year/Sem: II MBA III SEM

Course Name:	STRATEGIC MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-301.1	Understand the concept of strategic management
MBA C-301.2	Select the strategically tool to analyze the markets
MBA C-301.3	Formulate the strategies at corporate business and functional levels
MBA C-301.4	Understanding about the Entry or Exit Barriers
MBA C-301.5	Know the different types of strategies to be implemented in the organizations
MBA C-301.6	Acquire Knowledge about different evaluation and control techniques

Course Name:	OPERATIONS RESEARCH
Course Code:	**Course Outcomes**
MBA C-302.1	Understand the concept of Operation Research
MBA C-302.2	Calculation of Transportation Models & salesman Problems
MBA C-302.3	Calculation of Liner Programming
MBA C-302.4	Finding out the branch & bound models
MBA C-302.5	Finding out Game with Saddles Points
MBA C-302.6	Calculation of PERT & CPM

Course Name:	INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-301.1	Understand the concept of investment and the process of investment
MBA EF-301.2	Understand the concept of risk and return.
MBA EF-301.3	Learn how to take an investment decision by using fundamental and technical analysis
MBA EF-301.4	Learning about the market Hypothesis, and forms of market efficiency
MBA EF-301.5	Value securities by using different approaches
MBA EF-301.6	Understand the concept of Portfolio management and learn different Portfolio models

Course Name:	MANAGING BANKS & FINANCIAL INSTITUTIONS
Course Code:	**Course Outcomes**
MBA EF-302.1	Understanding about the evolution of banking sector
MBA EF-302.2	Understand the structure of financial system and the role of RBI, Banking Sector
MBA EF-302.3	Knowing about the Risk Models & risk management
MBA EF-302.4	Understanding about the Insurance & Regulation of Development Authority
MBA EF-302.5	Gain knowledge about banking and non-banking financial institutions
MBA EF-302.6	Knowing about the Financial Instruments, SEBI & RBI Guidelines

Course Name:	FINANCIAL MARKET & SERVICES
Course Code:	**Course Outcomes**
MBA EF-303.1	Understand the concept of Indian financial system
MBA EF-303.2	Understand the concept of financial services and regulatory frame work
MBA EF-303.3	Able to understand the phases of performance planning
MBA EF-303.4	What is the venture capital and its implementation
MBA EF-303.5	Able to understand the debit and credit rating system in India
MBA EF-303.6	Understand the concept of micro finance in India

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Course Name:	TAX MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-305.1	Understand the concept of tax management in India
MBA EF-305.2	Understand the concept of Direct tax and indirect tax
MBA EF-305.3	Able to understand the concept tax planning for firms
MBA EF-305.4	What is the venture capital and its implementation
MBA EF-305.5	Able to understand the corporate taxation in India
MBA EF-305.6	Understand the concept audit and qualities of audit

Course Name:	HUMAN CAPITAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-304.1	Understand the concept of human capital management
MBA EH-304.2	Understand the concept of monetary non monetary polices
MBA EH-304.3	Able to understand the value based models
MBA EH-304.4	What is the team building process and its impotence
MBA EH-304.5	What is meaning of quality of work life
MBA EH-304.6	Understand the concept of industrial measures and concept

Course Name:	LEADER SHIP AND CHANGE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-301.1	Understand the concept of leader ship management and its styles
MBA EH-301.2	Understand the concept of leader ship motivation and its culture
MBA EH-301.3	Able to understand the interpersonal skills
MBA EH-301.4	What is the team building process and its impotence
MBA EH-301.5	What is meaning of change management
MBA EH-301.6	Understand the concept of total project management and its development

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Course Name:	MAN POWER PLANNING AND RECRUITMENT AND SELECTION
Course Code:	**Course Outcomes**
MBA EH-305.1	Understand the concept of HRP and Demand forecasting methods
MBA EH-305.2	Understand the concept of HRP and Development
MBA EH-305.3	Able to understand the job analysis and job design
MBA EH-305.4	What is the recruitment and selection process and its importance
MBA EH-305.5	Training and development of the concept
MBA EH-305.6	Understand the concept of training and development concept

Course Name:	PERFORMANCE OF EVALUATION AND COMPENSATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-302.1	Understand the concept of performance of evaluation and compensation management
MBA EH-302.2	Understand the concept of strategic planning and performance planning
MBA EH-302.3	Able to understand the phases of performance planning
MBA EH-302.4	What is the team building process and its impotence
MBA EH-302.5	What is meaning of compensation management and its importance
MBA EH-302.6	Understand the concept of industrial measures and compensation

Course Name:	PROJECT
Course Code:	**Course Outcomes**
MBA C-304.1	Apply problem solving and analytical skills academic knowledge.
MBA C-304.2	Acquire research-based knowledge

Year/Sem: II MBA IV SEM

Course Name:	SUPPLY CHAIN MANAGEMENT & ANALYTICS
Course Code:	**Course Outcomes**
MBA C-401.1	Understand the fundamentals of supply chain management
MBA C-401.2	Construct the various supply chain networks
MBA C-401.3	Knowing about Travelling Salesman algorithms & problems in vehicle movements
MBA C-401.4	Gaining the Knowledge aboutFunctional approach & Linking Algorithm
MBA C-401.5	Identifying the Benchmarking, CRM& SCM, basic concepts and Demand chain
MBA C-401.6	Understanding the Concept Inventory Management, Network design Supply chain process and Company Manufactures

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Course Name:	INNOVATION AND ENTREPRENEURSHIP
Course Code:	**Course Outcomes**
MBA C -402.1	Understanding the concept of strategic innovation management
MBA C -402.2	Understanding the creative thinking , creative performance etc
MBA C-402.3	Analysing the concepts of employee grievances
MBA C-402.4	Identifying the incubation and take off problems
MBA C-402.5	Student able to understand the family entrepreneur non family entrepreneur
MBA C-402.6	Gaining the Knowledge by the innovation management

Course Name:	EMPLOYEE RELATIONS AND ENGAGEMENT
Course Code:	**Course Outcomes**
MBA EH-403.1	Understanding the concept of industrial relations and management
MBA EH-403.2	Understanding the concept of trade unions in India
MBA EH-403.3	Analysing the concepts of employee grievances
MBA EH-403.4	Identifying the industrial disputes and other factors
MBA EH-403.5	Student able to understand the employee engagement
MBA EH-403.6	Gaining the Knowledge by the Indian constitution industrial laws laws

Course Name:	INTERNATIONAL HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-402.1	Understanding the Internationalisation of HRM and its future
MBA EH-402.2	Understanding Global HR Practices
MBA EH-402.3	Analysing the concepts and Issues of Cross Cultural theories
MBA EH-402.4	Identifying the Indian MNCs Challenges
MBA EH-402.5	Student able to understand the Knowledge of Compensation management
MBA EH-402.6	Gaining the Knowledge by the student in HRD and its Challenges

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Course Name:	LABOUR WELFARE AND EMPLOYEEMENT LAWS
Course Code:	**Course Outcomes**
MBA EH-401.1	Understanding the labour welfare concept and Indian laws
MBA EH-401.2	Understanding the labour welfare centres , programs in India
MBA EH-401.3	Analysing the concepts labour legislation and laws
MBA EH-401.4	Identifying the Indian MNCs Challenges
MBA EH-401.5	Student able to understand the industrial relations and its importance
MBA EH-401.6	Gaining the Knowledge by the Indian constitution labour laws
Course Name:	**STRATEGIC HUMAN RESOURCE MANAGEMENT**
Course Code:	**Course Outcomes**
MBA EH-405.1	Understanding the concept of strategic human resource management
MBA EH-405.2	Understanding the concept of strategic human resource planning
MBA EH-405.3	Analysing the concepts of employee grievances
MBA EH-405.4	Able to understand the strategy planning and implementation
MBA EH-405.5	Student able to understand the human resource development
MBA EH-405.6	Gaining the Knowledge by the human resource evaluation
Course Name:	**FINANCIAL DERIVATIVES**
Course Code:	**Course Outcomes**
MBA EF -401.1	Students will be able to analyse the risk in Derivatives
MBA EF -401.2	Understand the operations of Derivatives, futures and trading on BSE & NSE
MBA EF -401.3	Gaining good knowledge about the different types of Options
MBA EF -401.4	Identify about various types of Trading Strategies in Options
MBA EF -401.5	Analyse the value of options using option pricing models
MBA EF -401.6	Examine the role of Swaps in the risk management

Course Name:	FINANCIAL RISK MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF -403.1	Knowledge about the regulatory framework of risk
MBA EF -403.2	Understand the operations of Derivatives and be able to compare exchange traded instruments
MBA EF -403.3	Gaining good knowledge about the different types of instruments.
MBA EF -403.4	Identify about various types of Instruments and Derivatives
MBA EF -403.5	Knowing the knowledge about the risk management
MBA EF -403.6	Gaining the knowledge about options and various pricing model in risk Mgt

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Course Name:	GLOBAL FINANCIAL MANAGEMENT
Course Code:	Course Outcomes
MBA EF -402.1	Students will be able to analyse the global financial management
MBA EF -402.2	Understand the international financial system
MBA EF -402.3	Gaining good knowledge about the international markets and Euros
MBA EF -402.4	Identify about various types of foreign investments
MBA EF -402.5	Understand the foreign corporate strategies
MBA EF -402.6	Able to understand the international accounting and reporting

Course Name:	STRATEGIC FINANCIAL MANAGEEMNT
Course Code:	Course Outcomes
MBA EF -404.1	Students will be able to analyse the strategic financial management
MBA EF -404.2	Understand the capital structure and leverages
MBA EF -404.3	Gaining good knowledge about the risk adjusted NPV
MBA EF -404.4	Able to understand the risk adjusted IRR
MBA EF -404.5	Understand the mergers and strategies
MBA EF -404.6	Able to understand the takeover strategies and SEBI

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DEPARTMENT OF MBA
Course Outcomes
A.Y:2019-2020

Year/Sem: I MBA I SEM

Course Name:	MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR
Course Code:	**Course Outcomes**
MBA C-101.1	Understand the concept of management ,organizational behaviour
MBA C-101.2	Understand the organizational structure and formal ,informal organization .
MBA C-101.3	Acquire leadership skills & also know about different styles of leadership
MBA C-101.4	Learn how to improve the critical thinking and smart thinking
MBA C-101.5	Understand the theories of motivation
MBA C-101.6	To Understand how to make the team building and how to do problem solving

Course Name:	MANAGERIAL ECONOMICS
Course Code:	**Course Outcomes**
MBA C-102.1	Understand the concept of managerial economics and business economics
MBA C-102.2	Understand the demand analysis and law of demand.
MBA C-102.3	Acquire information about the production analysis and its importance
MBA C-102.4	Able to understand the concept of pricing strategies
MBA C-102.5	Understand the concept of all markets and BEP
MBA C-102.6	To Understand the macro economics and business economics

Course Name:	ACCOUNTING FOR MANAGERS
Course Code:	**Course Outcomes**
MBA C-103.1	Understand the concept of accounting and preparation of final accounts
MBA C-103.2	Understand the financial statements and fund flow statements.
MBA C-103.3	What is the cost accounting and understand the methods of LIFO ,FIFO etc
MBA C-103.4	Understand the management accounting and its importance
MBA C-103.5	Able to understand the budgetary control and its methods
MBA C-103.6	To Understand the standard costing and BEP point

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Course Name:	QUANTITATIVE ANALYSISFOR BUSINESS DECISIONS
Course Code:	**Course Outcomes**
MBA C – 104.1	Explanation on linear, quadrtic, permutations and combinations
MBA C – 104.2	Solve the elementary operations of matrices
MBA C – 104.3	evaluate simple correlations and probability distributions
MBA C – 104.4	Explain making under certainty and decision trees
MBA C – 104.5	Explain one tails test and two tailed test
MBA C – 104.6	Explain sampling distributions and test of hypothesis

Course Name:	LEGAL & BUSINESS ENVIRONMENT
Course Code:	**Course Outcomes**
MBA C-105.1	Identify the environment factors which influence business
MBA C-105.2	Acquire knowledge on business policies to carry out a business
MBA C-105.3	Understand the concept of law of contract relating to business activities
MBA C-105.4	Protection of the Intellectual property, making of Negotiable Instruments
MBA C-105.5	Know the practices, rules and regulations that govern the operation as well as the formation of company
MBA C-105.6	Get the knowledge on Information Technology Act, 2000 , Consumer Protection Act Environmental Protection Act etc

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS
Course Code:	**Course Outcomes**
MBA C-106.1	Understand the concept & process of communication.
MBA C-106.2	Understand the types of verbal & Non-verbal communication.
MBA C-106.3	Acquire Interpersonal skills & also know about different styles of leadership
MBA C-106.4	Learn how to overcome the barriers of communication
MBA C-106.5	Compose effective letters and reports.
MBA C-106.6	To Understand of how to make the Presentation of the student skills in interview point of view

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Course Name:	CROSS CULTURAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-107.1	Understand the concept of cross cultural management
MBA C-107.2	Understand the concept of global business scenario and role of culture.
MBA C-107.3	Acquire information about the decision making and skills and knowledge
MBA C-107.4	Able to understand the concept of international business
MBA C-107.5	Understand the concept of global business management
MBA C-107.6	To Understand the macro economics and business economics culture

Course Name:	BUSINESS COMMUNICATION & SOFT SKILLS LAB
Course Code:	**Course Outcomes**
MBA C-108.1	Understand the need of communication skills.
MBA C-108.2	Recognize both familiar and unfamiliar sounds, improves pronunciation skills.
MBA C-108.3	Receive and interpret messages accurately in the communication process
MBA C-108.4	Recognising the Body Language for the Interview Point of view
MBA C-108.5	Communicate with others and express our thoughts and feelings.
MBA C-108.6	Designing Presentation and enhancing Presentation skills

Course Name:	INFORMATION TECHNOLOGY LAB
Course Code:	**Course Outcomes**
MBA C -109.1	Development of technical and managerial skills in information technology.
MBA C -109.2	Start Microsoft Office applications and work with the Microsoft Office interface.
MBA C -109.3	Create documents in Microsoft Word.
MBA C -109.4	Create workbooks in Microsoft Excel.
MBA C -109.5	Create presentations in Microsoft PowerPoint.
MBA C -109.6	Share data between Microsoft Office applications.

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Year/Sem: I MBA II SEM

Course Name:	FINANCIAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-201.1	Understand the concept of financial management and what are financial manager decisions
MBA C-201.2	Understand the concept of leverages and EBIT – EPS analysis .
MBA C-201.3	What is the time value of money and its importance
MBA C-201.4	Able to understand the capital and capital budgeting methods
MBA C-201.5	Able to understand the dividend and its methods
MBA C-201.6	To Understand the working capital and estimate the working capital

Course Name:	HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-202.1	Understanding the nature, scope, functions, roles, goals, strategies and policies of HR management
MBA C-202.2	Design and develop HR planning related aspects
MBA C-202.3	Understanding the administration of monetary and non-monetary benefits for the employees in the organization
MBA C-202.4	Knowing about the compensation methods and mechanisms
MBA C-202.5	Understand the design and implementation of training programs and evaluation of Training.
MBA C-202.6	Analyze recent trends in the human resource function and to balance the work life in the present dynamic work environment

Course Name:	MARKETING MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-203.1	Understand the concept of marketing management
MBA C-203.2	Understand the concept of market segmentation and market strategies
MBA C-20.3	Acquire information about the product and product pricing
MBA C-203.4	Able to understand the concept of marketing communication and its channels
MBA C-203.5	Understand the concept of sales promotion and public distribution
MBA C-203.6	To Understand the market organization and control

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Course Name:	BUSINESS RESEARCH METHODS
Course Code:	**Course Outcomes**
MBA C-205.1	Understand the concept of business research methods
MBA C-205.2	Understand the concept of primary data and secondary data .
MBA C-205.3	Acquire information about survey research and its methods
MBA C-205.4	Able to understand the concept of statically survey methods
MBA C-205.5	Understand the concept of ANOVA analysis
MBA C-205.6	To Understand the quality control and multivariate analysis

Course Name:	OPERATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-204.1	Understand the concept of Production and Operations Management
MBA C-204.2	Understand the Product Design, process and Value Chain, Job Design
MBA C-204.3	Gaining the Knowledge about Operation Planning, AGP, MRP
MBA C-204.4	Understanding about the Production Planning, Purchase Management
MBA C-204.5	Observing about the work study and gaining the knowledge about Engineering and Behavioural approach
MBA C-204.6	Knowing about the quality Standards

Course Name:	PROJECT MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-206.1	The objective of this concept know knowledge of project proposals and project information
MBA C-206.2	Understand the market, its survey and feasibility of market
MBA C-206.3	What is the production technology , plant capacity ,materials ,inputs - outputs
MBA C-206.4	Able to understand the PERT – CPM methods
MBA C-206.5	Able to understand the non discounting and discounting cash flow methods
MBA C-206.6	To Understand the project planning and implementation

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Course Name:	INFORMATION TECHNOLOGY LAB 2
Course Code:	**Course Outcomes**
MBA C-207.1	Understanding the types, classes and functions of R Programming.
MBA C. 207.2	Accessing and Processing of Data.
MBA C. 207.3	Understanding the I/O interface programming.
MBA C. 207.4	Study and Analyse Data Visualisation.
MBA C. 207.5	Implement any application level simulation using R
MBA C. 207.6	Use R in their own research

Year/Sem: II MBA III SEM

Course Name:	STRATEGIC MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-301.1	Understand the concept of strategic management
MBA C-301.2	Select the strategically tool to analyze the markets
MBA C-301.3	Formulate the strategies at corporate business and functional levels
MBA C-301.4	Understanding about the Entry or Exit Barriers
MBA C-301.5	Know the different types of strategies to be implemented in the organizations
MBA C-301.6	Acquire Knowledge about different evaluation and control techniques

Course Name:	OPERATIONS RESEARCH
Course Code:	**Course Outcomes**
MBA C-302.1	Understand the concept of Operation Research
MBA C-302.2	Calculation of Transportation Models & salesman Problems
MBA C-302.3	Calculation of Liner Programming
MBA C-302.4	Finding out the branch & bound models
MBA C-302.5	Finding out Game with Saddles Points
MBA C-302.6	Calculation of PERT & CPM

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Course Name:	INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-301.1	Understand the concept of investment and the process of investment
MBA EF-301.2	Understand the concept of risk and return.
MBA EF-301.3	Learn how to take an investment decision by using fundamental and technical analysis
MBA EF-301.4	Learning about the market Hypothesis, and forms of market efficiency
MBA EF-301.5	Value securities by using different approaches
MBA EF-301.6	Understand the concept of Portfolio management and learn different Portfolio models

Course Name:	MANAGING BANKS & FINANCIAL INSTITUTIONS
Course Code:	**Course Outcomes**
MBA EF-302.1	Understanding about the evolution of banking sector
MBA EF-302.2	Understand the structure of financial system and the role of RBI, Banking Sector
MBA EF-302.3	Knowing about the Risk Models & risk management
MBA EF-302.4	Understanding about the Insurance & Regulation of Development Authority
MBA EF-302.5	Gain knowledge about banking and non-banking financial institutions
MBA EF-302.6	Knowing about the Financial Instruments, SEBI & RBI Guidelines

Course Name:	FINANCIAL MARKET & SERVICES
Course Code:	**Course Outcomes**
MBA EF-303.1	Understand the concept of Indian financial system
MBA EF-303.2	Understand the concept of financial services and regulatory frame work
MBA EF-303.3	Able to understand the phases of performance planning
MBA EF-303.4	What is the venture capital and its implementation
MBA EF-303.5	Able to understand the debit and credit rating system in India
MBA EF-303.6	Understand the concept of micro finance in India

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Course Name:	TAX MANAGEMENT
Course Code:	Course Outcomes
MBA EF-305.1	Understand the concept of tax management in India
MBA EF-305.2	Understand the concept of Direct tax and indirect tax
MBA EF-305.3	Able to understand the concept tax planning for firms
MBA EF-305.4	What is the venture capital and its implementation
MBA EF-305.5	Able to understand the corporate taxation in India
MBA EF-305.6	Understand the concept audit and qualities of audit

Course Name:	HUMAN CAPITAL MANAGEMENT
Course Code:	Course Outcomes
MBA EH-304.1	Understand the concept of human capital management
MBA EH-304.2	Understand the concept of monetary non monetary polices
MBA EH-304.3	Able to understand the value based models
MBA EH-304.4	What is the team building process and its impotence
MBA EH-304.5	What is meaning of quality of work life
MBA EH-304.6	Understand the concept of industrial measures and concept

Course Name:	LEADER SHIP AND CHANGE MANAGEMENT
Course Code:	Course Outcomes
MBA EH-301.1	Understand the concept of leader ship management and its styles
MBA EH-301.2	Understand the concept of leader ship motivation and its culture
MBA EH-301.3	Able to understand the interpersonal skills
MBA EH-301.4	What is the team building process and its impotence
MBA EH-301.5	What is meaning of change management
MBA EH-301.6	Understand the concept of total project management and its development

Course Name:	MAN POWER PLANNING AND RECRUITMENT AND SELECTION
Course Code:	**Course Outcomes**
MBA EH-305.1	Understand the concept of HRP and Demand forecasting methods
MBA EH-305.2	Understand the concept of HRP and Development
MBA EH-305.3	Able to understand the job analysis and job design
MBA EH-305.4	What is the recruitment and selection process and its importance
MBA EH-305.5	Training and development of the concept
MBA EH-305.6	Understand the concept of training and development concept

Course Name:	PERFORMANCE OF EVALUATION AND COMPENSATION MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-302.1	Understand the concept of performance of evaluation and compensation management
MBA EH-302.2	Understand the concept of strategic planning and performance planning
MBA EH-302.3	Able to understand the phases of performance planning
MBA EH-302.4	What is the team building process and its impotence
MBA EH-302.5	What is meaning of compensation management and its importance
MBA EH-302.6	Understand the concept of industrial measures and compensation

Course Name:	PROJECT
Course Code:	**Course Outcomes**
MBA C-304.1	Apply problem solving and analytical skills academic knowledge.
MBA C-304.2	Acquire research-based knowledge

Year/Sem: II MBA IV SEM

Course Name:	SUPPLY CHAIN MANAGEMENT & ANALYTICS
Course Code:	**Course Outcomes**
MBA C-401.1	Understand the fundamentals of supply chain management
MBA C-401.2	Construct the various supply chain networks
MBA C-401.3	Knowing about Travelling Salesman algorithms & problems in vehicle movements
MBA C-401.4	Gaining the Knowledge aboutFunctional approach & Linking Algorithm
MBA C-401.5	Identifying the Benchmarking, CRM& SCM, basic concepts and Demand chain
MBA C-401.6	Understanding the Concept Inventory Management, Network design Supply chain process and Company Manufactures

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Course Name:	INNOVATION AND ENTREPRENEURSHIP
Course Code:	Course Outcomes
MBA C -402.1	Understanding the concept of strategic innovation management
MBA C -402.2	Understanding the creative thinking , creative performance etc
MBA C-402.3	Analysing the concepts of employee grievances
MBA C-402.4	Identifying the incubation and take off problems
MBA C-402.5	Student able to understand the family entrepreneur non family entrepreneur
MBA C-402.6	Gaining the Knowledge by the innovation management

Course Name:	EMPLOYEE RELATIONS AND ENGAGEMENT
Course Code:	Course Outcomes
MBA EH-403.1	Understanding the concept of industrial relations and management
MBA EH-403.2	Understanding the concept of trade unions in India
MBA EH-403.3	Analysing the concepts of employee grievances
MBA EH-403.4	Identifying the industrial disputes and other factors
MBA EH-403.5	Student able to understand the employee engagement
MBA EH-403.6	Gaining the Knowledge by the Indian constitution industrial laws laws

Course Name:	INTERNATIONAL HUMAN RESOURCE MANAGEMENT
Course Code:	Course Outcomes
MBA EH-402.1	Understanding the Internationalisation of HRM and its future
MBA EH-402.2	Understanding Global HR Practices
MBA EH-402.3	Analysing the concepts and Issues of Cross Cultural theories
MBA EH-402.4	Identifying the Indian MNCs Challenges
MBA EH-402.5	Student able to understand the Knowledge of Compensation management
MBA EH-402.6	Gaining the Knowledge by the student in HRD and its Challenges

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Course Name:	LABOUR WELFARE AND EMPLOYEEMENT LAWS
Course Code:	**Course Outcomes**
MBA EH-401.1	Understanding the labour welfare concept and Indian laws
MBA EH-401.2	Understanding the labour welfare centres , programs in India
MBA EH-401.3	Analysing the concepts labour legislation and laws
MBA EH-401.4	Identifying the Indian MNCs Challenges
MBA EH-401.5	Student able to understand the industrial relations and its importance
MBA EH-401.6	Gaining the Knowledge by the Indian constitution labour laws
Course Name:	**STRATEGIC HUMAN RESOURCE MANAGEMENT**
Course Code:	**Course Outcomes**
MBA EH-405.1	Understanding the concept of strategic human resource management
MBA EH-405.2	Understanding the concept of strategic human resource planning
MBA EH-405.3	Analysing the concepts of employee grievances
MBA EH-405.4	Able to understand the strategy planning and implementation
MBA EH-405.5	Student able to understand the human resource development
MBA EH-405.6	Gaining the Knowledge by the human resource evaluation
Course Name:	**FINANCIAL DERIVATIVES**
Course Code:	**Course Outcomes**
MBA EF -401.1	Students will be able to analyse the risk in Derivatives
MBA EF -401.2	Understand the operations of Derivatives, futures and trading on BSE & NSE
MBA EF -401.3	Gaining good knowledge about the different types of Options
MBA EF -401.4	Identify about various types of Trading Strategies in Options
MBA EF -401.5	Analyse the value of options using option pricing models
MBA EF -401.6	Examine the role of Swaps in the risk management

Course Name:	FINANCIAL RISK MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF -403.1	Knowledge about the regulatory framework of risk
MBA EF -403.2	Understand the operations of Derivatives and be able to compare exchange traded instruments
MBA EF -403.3	Gaining good knowledge about the different types of instruments.
MBA EF -403.4	Identify about various types of Instruments and Derivatives
MBA EF -403.5	Knowing the knowledge about the risk management
MBA EF -403.6	Gaining the knowledge about options and various pricing model in risk Mgt

Course Name:	GLOBAL FINANCIAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF -402.1	Students will be able to analyse the global financial management
MBA EF -402.2	Understand the international financial system
MBA EF -402.3	Gaining good knowledge about the international markets and Euros
MBA EF -402.4	Identify about various types of foreign investments
MBA EF -402.5	Understand the foreign corporate strategies
MBA EF -402.6	Able to understand the international accounting and reporting

Course Name:	STRATEGIC FINANCIAL MANAGEEMNT
Course Code:	**Course Outcomes**
MBA EF -404.1	Students will be able to analyse the strategic financial management
MBA EF -404.2	Understand the capital structure and leverages
MBA EF -404.3	Gaining good knowledge about the risk adjusted NPV
MBA EF -404.4	Able to understand the risk adjusted IRR
MBA EF -404.5	Understand the mergers and strategies
MBA EF -404.6	Able to understand the takeover strategies and SEBI

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DEPARTMENT OF MBA
Course Outcomes

A.Y:2018-2019

Year/Sem: I MBA I SEM

Course Name:	PRINCIPLES OF MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-101.1	Understand the concept of management ,organizational behaviour
MBA C-101.2	Understand the organizational structure and formal ,informal organization .
MBA C-101.3	Acquire leadership skills & also know about different styles of leadership
MBA C-101.4	Learn how to improve the critical thinking and smart thinking
MBA C-101.5	Understand the theories of motivation
MBA C-101.6	To Understand how to make the team building and how to do problem solving

Course Name:	**MANAGERIAL ECONOMICS**
Course Code:	**Course Outcomes**
MBA C-102.1	Understand the concept of managerial economics and business economics
MBA C-102.2	Understand the demand analysis and law of demand.
MBA C-102.3	Acquire information about the production analysis and its importance
MBA C-102.4	Able to understand the concept of pricing strategies
MBA C-102.5	Understand the concept of all markets and BEP
MBA C-102.6	To Understand the macro economics and business economics

Course Name:	**ACCOUNTING FOR MANAGERS**
Course Code:	**Course Outcomes**
MBA C-103.1	Understand the concept of accounting and preparation of final accounts
MBA C-103.2	Understand the financial statements and fund flow statements.
MBA C-103.3	What is the cost accounting and understand the methods of LIFO ,FIFO etc
MBA C-103.4	Understand the management accounting and its importance
MBA C-103.5	Able to understand the budgetary control and its methods
MBA C-103.6	To Understand the standard costing and BEP point

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Course Name:	QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS
Course Code:	**Course Outcomes**
MBA C – 106.1	Explanation on linear, quadrtic, permutations and combinations
MBA C – 106.2	Solve the elementary operations of matrices
MBA C – 106.3	evaluate simple correlations and probability distributions
MBA C – 106.4	Explain making under certainty and decision trees
MBA C – 106.5	Explain one tails test and two tailed test
MBA C – 106.6	Explain sampling distributions and test of hypothesis

Course Name:	BUSINESS ENVIRONMENT
Course Code:	**Course Outcomes**
MBA C-105.1	Identify the environment factors which influence business
MBA C-105.2	Acquire knowledge on business policies to carry out a business
MBA C-105.3	Understand the concept of Monetary & Fiscal Policy
MBA C-105.4	Knowing about the information about Industrial Policy
MBA C-105.5	Understanding about Industrial Trade Policy
MBA C-105.6	Understanding about the Legal Frame work

Course Name:	MANAGERIAL COMMUNICATION & SOFT SKILLS
Course Code:	**Course Outcomes**
MBA C-104.1	Understand the concept & process of communication.
MBA C-104.2	Understand the types of verbal & Non-verbal communication.
MBA C-104.3	Acquire Interpersonal skills & also know about different styles of leadership
MBA C-104.4	Learn how to overcome the barriers of communication
MBA C-104.5	Compose effective letters and reports.
MBA C-104.6	To Understand of how to make the Presentation of the student skills in interview point of view

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Course Name:	INFORMATION TECHNOLOGY LAB
Course Code:	**Course Outcomes**
MBA C -107.1	Development of technical and managerial skills in information technology.
MBA C -107.2	Start Microsoft Office applications and work with the Microsoft Office interface.
MBA C -107.3	Create documents in Microsoft Word.
MBA C -107.4	Create workbooks in Microsoft Excel.
MBA C -107.5	Create presentations in Microsoft PowerPoint.
MBA C -107.6	Share data between Microsoft Office applications.

Year/Sem: I MBA II SEM

Course Name:	FINANCIAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-201.1	Understand the concept of financial management and what are financial manager decisions
MBA C-201.2	Understand the concept of leverages and EBIT – EPS analysis .
MBA C-201.3	What is the time value of money and its importance
MBA C-201.4	Able to understand the capital and capital budgeting methods
MBA C-201.5	Able to understand the dividend and its methods
MBA C-201.6	To Understand the working capital and estimate the working capital

Course Name:	HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-202.1	Understanding the nature, scope, functions, roles, goals, strategies and policies of HR management
MBA C-202.2	Design and develop HR planning related aspects
MBA C-202.3	Understanding the administration of monetary and non-monetary benefits for the employees in the organization
MBA C-202.4	Knowing about the compensation methods and mechanisms
MBA C-202.5	Understand the design and implementation of training programs and evaluation of Training.
MBA C-202.6	Analyze recent trends in the human resource function and to balance the work life in the present dynamic work environment

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Course Name:	MARKETING MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-203.1	Understand the concept of marketing management
MBA C-203.2	Understand the concept of market segmentation and market strategies
MBA C-20.3	Acquire information about the product and product pricing
MBA C-203.4	Able to understand the concept of marketing communication and its channels
MBA C-203.5	Understand the concept of sales promotion and public distribution
MBA C-203.6	To Understand the market organization and control

Course Name:	BUSINESS RESEARCH METHODS
Course Code:	**Course Outcomes**
MBA C-205.1	Understand the concept of business research methods
MBA C-205.2	Understand the concept of primary data and secondary data .
MBA C-205.3	Acquire information about survey research and its methods
MBA C-205.4	Able to understand the concept of statically survey methods
MBA C-205.5	Understand the concept of ANOVA analysis
MBA C-205.6	To Understand the quality control and multivariate analysis

Course Name:	PRODUCTION AND OPERATIONS MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-204.1	Understand the concept of Production and Operations Management
MBA C-204.2	Understand the Product Design, process and Value Chain, Job Design
MBA C-204.3	Gaining the Knowledge about Operation Planning, AGP, MRP
MBA C-204.4	Understanding about the Production Planning, Purchase Management
MBA C-204.5	Observing about the work study and gaining the knowledge about Engineering and Behavioural approach
MBA C-204.6	Knowing about the quality Standards

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KESANUPALLI (V), NARASARAOPETA-522549, AP
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Course Name:	ORGANIZATIONAL BEHAVIOR
Course Code:	**Course Outcomes**
MBA C-206.1	Understanding the Knowledge about the Behaviour in organisation
MBA C-206.2	Knowing about the Perceptual Management in organisation
MBA C-206.3	Understanding the personality Development
MBA C-206.4	Knowing about the Leaderships, Dynamic nature
MBA C-206.5	Understanding about the Interpersonal Communication
MBA C-206.6	Understanding about the Organisation Culture.

Year/Sem: II MBA III SEM

Course Name:	**STRATEGIC MANAGEMENT**
Course Code:	**Course Outcomes**
MBA C-301.1	Understand the concept of strategic management
MBA C-301.2	Select the strategically tool to analyze the markets
MBA C-301.3	Formulate the strategies at corporate business and functional levels
MBA C-301.4	Understanding about the Entry or Exit Barriers
MBA C-301.5	Know the different types of strategies to be implemented in the organizations
MBA C-301.6	Acquire Knowledge about different evaluation and control techniques

Course Name:	LEGAL ASPECTS OF BUSINESS
Course Code:	**Course Outcomes**
MBA C-302.1	Understanding the Importance of Commercial Law
MBA C-302.2	Knowing about Sales of Goods Act
MBA C-302.3	Understanding about the Contract of Agency
MBA C-302.4	Knowing about Negotiable Instruments
MBA C-302.5	Understanding about Partnership Act
MBA C-302.6	Knowing about Companies Acts

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Course Name:	BUSINESS ETHICS & CORPORATE GOVERNANCE
Course Code:	**Course Outcomes**
MBA C-302.1	Business Ethics and Law
MBA C-302.2	Globalization on Indian Business Ethics
MBA C-302.3	Ethics in Marketing
MBA C-302.4	Ethics in HRM and Finance
MBA C-302.5	Understanding about Corporate Governance
MBA C-302.6	Knowing about the Rules, Duties & Responsibilities of Auditors

Course Name:	SECURITY ANALYSIS & PORTFOLIO MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-301.1	Understand the concept of investment and the process of investment
MBA EF-301.2	Understand the concept of risk and return.
MBA EF-301.3	Learn how to take an investment decision by using fundamental and technical analysis
MBA EF-301.4	Learning about the market Hypothesis, and forms of market efficiency
MBA EF-301.5	Value securities by using different approaches
MBA EF-301.6	Understand the concept of Portfolio management and learn different Portfolio models

Course Name:	BANKING & INSURANCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF-302.1	Understanding about the evolution of banking sector
MBA EF-302.2	Understand the structure of financial system and the role of RBI, Banking Sector
MBA EF-302.3	Regulating innovation in banking system
MBA EF-302.4	Understanding about digital payments & ATM operating Procedure
MBA EF-302.5	Gain knowledge about banking and non-banking financial institutions
MBA EF-302.6	Understanding about the Insurance & Regulation of Development Authority

Course Name:	**ADVANCED MANAGEMENT ACCOUNTING**
Course Code:	**Course Outcomes**
MBA EF-303.1	Knowing about management accounting
MBA EF-303.2	Understanding the concept of financial analysis
MBA EF-303.3	Understanding about the Budget
MBA EF-303.4	Knowing about the budgeting procedures
MBA EF-303.5	Understanding about the marginal costing
MBA EF-303.6	Knowing about Standard Costing

Course Name:	**STRATEGIC FINANCIAL MANAGEMENT**
Course Code:	**Course Outcomes**
MBA EF-304.1	Students will be able to analyse the strategic financial management
MBA EF-304.2	Understand the capital structure and leverages
MBA EF-304.3	Gaining good knowledge about the risk adjusted NPV
MBA EF-304.4	Able to understand the risk adjusted IRR
MBA EF-304.5	Understand the mergers and strategies
MBA EF-304.6	Able to understand the takeover strategies and SEBI

Course Name:	STRATEGIC HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-304.1	Understanding the human resource Strategy
MBA EH-304.2	Knowing about Strategic Human Resource Planning
MBA EH-304.3	Understanding the Implementation of Strategy
MBA EH-304.4	Understanding about about Reward & Performance Strategy
MBA EH-304.5	Knowing about SHRD
MBA EH-304.6	Understanding Human resource Evaluation

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Course Name:	LEADER SHIP MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-301.1	Understand the concept of leader ship management and its styles
MBA EH-301.2	Understand the concept of leader ship motivation and its culture
MBA EH-301.3	Able to understand the interpersonal skills
MBA EH-301.4	What is the team building process and its impotence
MBA EH-301.5	What is meaning of change management
MBA EH-301.6	Understand the concept of total project management and its development

Course Name:	PERFORMANCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-303.1	Knowing the history in performance Management
MBA EH-303.2	Knowing about Performance Management Planning
MBA EH-303.3	Understanding about Performance Management System
MBA EH-303.4	Knowing about Reward based Performance
MBA EH-303.5	Knowing about Performance Monitoring & Counselling
MBA EH-303.6	Understanding the Performance management Skills

Course Name:	COMPENSATION & REWARD MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-302.1	Understand the concept of performance of evaluation and compensation management
MBA EH-302.2	Understand the concept of strategic planning and performance planning
MBA EH-302.3	Able to understand the phases of performance planning
MBA EH-302.4	What is the team building process and its impotence
MBA EH-302.5	What is meaning of compensation management and its importance
MBA EH-302.6	Understand the concept of industrial measures and compensation

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Year/Sem: II MBA IV SEM

Course Name:	LOGISTIC AND SUPPLY CHAIN MANAGEMENT
Course Code:	**Course Outcomes**
MBA C-401.1	Understand the fundamentals of supply chain management
MBA C-401.2	Construct the various supply chain networks
MBA C-401.3	Knowing about Travelling Salesman algorithms & problems in vehicle movements
MBA C-401.4	Gaining the Knowledge about Functional approach & Linking Algorithm
MBA C-401.5	Identifying the Benchmarking, CRM& SCM, basic concepts and Demand chain
MBA C-401.6	Understanding the Concept Inventory Management, Network design Supply chain process and Company Manufactures

Course Name:	ENTREPRENEURSHIP DEVELOPMENT
Course Code:	**Course Outcomes**
MBA C -402.1	Understanding the concept of strategic innovation management
MBA C -402.2	Understanding the creative thinking , creative performance etc
MBA C-402.3	Analysing the concepts of employee grievances
MBA C-402.4	Identifying the incubation and take off problems
MBA C-402.5	Student able to understand the family entrepreneur non family entrepreneur
MBA C-402.6	Gaining the Knowledge by the innovation management

Course Name:	**ORGANIZATIONAL DEVELOPMENT & CHANGE MANAGEMENT**
Course Code:	**Course Outcomes**
MBA EH-401.1	Knowledge on Basics of Change Management
MBA EH-401.2	Understanding about Mapping change
MBA EH-401.3	Understanding about Organization Development
MBA EH-401.4	Knowing about Organization Development challenges
MBA EH-401.5	Gaining the Knowledge about Negotiated Change
MBA EH-401.6	Knowing about the framing and implanting of team buliding

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Course Name:	GLOBAL HUMAN RESOURCE MANAGEMENT
Course Code:	**Course Outcomes**
MBA EH-402.1	Understanding the Internationalisation of HRM and its future
MBA EH-402.2	Understanding Global HR Practices
MBA EH-402.3	Analysing the concepts and Issues of Cross Cultural theories
MBA EH-402.4	Identifying the Indian MNCs Challenges
MBA EH-402.5	Student able to understand the Knowledge of Compensation management
MBA EH-402.6	Gaining the Knowledge by the student in HRD and its Challenges

Course Name:	LABOUR WELFARE AND EMPLOYEEMENT LAWS
Course Code:	**Course Outcomes**
MBA EH-403.1	Understanding the labour welfare concept and Indian laws
MBA EH-403.2	Understanding the labour welfare centres , programs in India
MBA EH-403.3	Analysing the concepts labour legislation and laws
MBA EH-403.4	Identifying the Indian MNCs Challenges
MBA EH-403.5	Student able to understand the industrial relations and its importance
MBA EH-403.6	Gaining the Knowledge by the Indian constitution labour laws

Course Name:	MANAGEMENT OF INDUSTRIAL RELATIONS
Course Code:	**Course Outcomes**
MBA EH-404.1	Understanding the concept of Industrial Relations Management
MBA EH-404.2	Knowledge about trade union
MBA EH-404.3	Knowing about the quality of work life
MBA EH-404.4	Knowing about payment of wages & salary administration
MBA EH-404.5	Understanding the Social Security in India, Workers' education objectives
MBA EH-404.6	Knowing about Employee Grievances

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Course Name:	FINANCIAL MARKET & SERVICES
Course Code:	**Course Outcomes**
MBA EF -401.1	Understand the concept of Indian financial system
MBA EF -401.2	Understand the concept of financial services and regulatory frame work
MBA EF -401.3	Able to understand the phases of performance planning
MBA EF -401.4	What is the venture capital and its implementation
MBA EF -401.5	Able to understand the debit and credit rating system in India
MBA EF -401.6	Understand the concept of micro finance in India

Course Name:	RISK MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF -403.1	Knowledge about the regulatory framework of risk
MBA EF -403.2	Understand the operations of Derivatives and be able to compare exchange traded instruments
MBA EF -403.3	Gaining good knowledge about the different types of instruments.
MBA EF -403.4	Identify about various types of Instruments and Derivatives
MBA EF -403.5	Knowing the knowledge about the risk management
MBA EF -403.6	Gaining the knowledge about options and various pricing model in risk management

Course Name:	GLOBAL FINANCIAL MANAGEMENT
Course Code:	**Course Outcomes**
MBA EF -402.1	Students will be able to analyse the global financial management
MBA EF -402.2	Understand the international financial system
MBA EF -402.3	Gaining good knowledge about the international markets and Euros
MBA EF -402.4	Identify about various types of foreign investments
MBA EF -402.5	Understand the foreign corporate strategies
MBA EF -402.6	Able to understand the international accounting and reporting

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Course Name:	TAX MANAGEEMNT
Course Code:	**Course Outcomes**
MBA EF -404.1	Understand the concept of tax management in India
MBA EF -404.2	Understand the concept of Direct tax and indirect tax
MBA EF -404.3	Able to understand the concept tax planning for firms
MBA EF -404.4	What is the venture capital and its implementation
MBA EF -404.5	Able to understand the corporate taxation in India
MBA EF -404.6	Understand the concept audit and qualities of audit

Course Name:	PROJECT
Course Code:	**Course Outcomes**
MBA C-407.1	Apply problem solving and analytical skills academic knowledge.
MBA C-407.2	Acquire research-based knowledge