ESWAR COLLEGE OF ENGINEERING

(Approved by AICTE, & Affiliated to JNTUK, A.P.)

KESANUPALLI (V), NARASARAOPETA-522549, AP

www.eswarcollegeofengg.org, email:eswarcollegeofengg@gmail.com

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 .

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.

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

	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

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.
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	
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

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

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

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.