ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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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.

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

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.

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.

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

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.

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.

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

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.

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.

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.

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