



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 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. □ |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|--|--|
| Course Name: ELECTROMAGNETIC FIELDS | |
| Course Code: EE2104 | |
| EE2104.1 | Determine electric fields and potentials using Guass's law or solving Laplace's or Poisson'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 and the 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 Poisson'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 and the 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 |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|--|--|
| 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 and the 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 | 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 and the 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|--|--|
| 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 starting 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 | Acquires the skill to analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method. |
| EE2204.4 | Capable 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|-------------------------------------|--|
| 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 identify the different components of air and gas insulated substations. |
| EE2205.5 | Students are able to identify single core and multi core cables with different insulating materials. |
| EE2205.6 | Students are able to analyze the 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 | After completion of the Course the student will acquire the knowledge global leadership and organizational behavior. |
| EE2206.3 | After 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|---|--|
| 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 and the 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 |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

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 orthogonality |
| 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|---|---|
| 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 X_d/X_q ratio 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|---|--|
| 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 Y_{bus} and Z_{bus} 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 find the 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|--|--|
| 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|---|--|
| 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 identify 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 structure |
| 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|---------------------------------------|--|
| 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 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. |



ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

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

| | |
|---|---|
| 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 for p.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 |