# Galgotias College of Engineering and Technology

## Department of Electrical Engineering

## Course Outcomes

### 1. Course Name: Engineering Mathematics-III (RAS301), Year of Study 2018-19

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| RAS301.1 | Understand the concept of numerical techniques in finding solution of linear system of equations. |
| RAS301.2 | Analyze the problems which are used in engineering and how to solve these problems using different transforms. |
| RAS301.3 | Comprehend the meaning of analytic function, singularities and Laurent series in evaluating real integral. |
| RAS301.4 | Construct, analyze and evaluate the solution of differential equation by using numerical methods. |
| RAS301.5 | Evaluate the root of the algebraic and transcendental equation by using numerical method. |
| RAS301.6 | Analyze the behavior of statistical data by using testing of hypothesis and different probability distributions. |

### 2. Course Name: Environment & Ecology (RAS302), Year of Study 2018-19

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| RAS302.1 | Recall and understanding of the basic concepts of ecology and environment. |
| RAS302.2 | Relate the human need and activities to their impact on environment and way to achieve environment conservation |
| RAS302.3 | Identify the need for finding subsitutes and the conservation of scarce natural sources |
| RAS302.4 | Evaluate the applicability and relative importance of different types of energy sources |
| RAS302.5 | Analyze existing environment problems for designing suitable measures to control it |
| RAS302.6 | Extend the educational component of environment to individual, social, national and legal variable for problem solving |

### 3. Course Name: Electrical & Electronics Engineering Materials (REE301), Year of Study 2018-19

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE301.1 | Categorize materials based on structure of dipoles and breakdown strength in various types of dielectrics. |
| REE301.2 | Understand the relationship between microstructure, characterization, electrical and magnetic properties of materials. |
| REE301.3 | Analyze the behavior of different materials under the influence of external magnetic field and factors effecting magnetic properties of materials. |
| REE301.4 | Understand basic properties of semiconductors and integration techniques. |
| REE301.5 | Understand and characterize the materials used for various electrical applications like resistors, rheostats, heaters, etc. and evaluate testing of transformer oil. |

4. **Course Name: Electrical Measurements & Instrumentation (REE302), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE302.1 | Measure various electrical parameters with accuracy, precision and able to get relative error if any. |
| REE302.2 | Design AC and DC bridges for relevant parameter measurement |
| REE302.3 | Study Instrument transformers with their design considerations and testing |
| REE302.4 | Design Signal Generator, frequency counter, CRO and digital IC counter for appropriate measurement. |
| REE302.5 | Application of appropriate passive or active transducers and data acquisition systems for measurement of physical phenomenon |

**5. Course Name: Basic Signals & Systems (REE303), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE303.1 | Represent the various types of signals & systems and perform mathematical operations on them. |
| REE303.2 | Analyze the response of LTI system using Fourier Series and Fourier transform. |
| REE303.3 | Analyze the properties of continuous time signals and system using Laplace transform |
| REE303.4 | Apply the concepts of state- space models to SISO & MIMO systems. |
| REE303.5 | Implement the concepts of Z transform to solve complex engineering problems using difference equations. |

**6. Course Name: Analog & Digital Electronics (REC309A), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REC409A.1 | To know about different special diodes and illustrate different power devices used in circuit. |
| REC309A.2 | Able to understand the working of amplifier and their characteristics. |
| REC309A.3 | To know about different types of feedback, and different oscillators and its signal generation. |
| REC309A.4 | To know how to minimize the Boolean expression using graphical and algebraic method and also different logic circuits. |
| REC309A.5 | To know about different memory storage elements and various analog-digital components used in the system |

**7. Course Name: Electrical Workshop (REE351), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE351.1 | Understand various types of wiring systems, wiring tools, lighting & wiring accessories, wiring estimation & costing, etc. |
| REE351.2 | Understand the fundamental concepts of Electrical and electronics Engineering. |

**8. Course Name: Electrical Measurements Lab (REE352), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE352.1 | Study the importance of calibration of measuring instruments. |
| REE352.2 | Describe the construction and working of different measuring instruments. |
| REE352.3 | Compute the various physical parameters using different sensors. |

**9. Course Name: Simulation Lab – I (REE353), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE353.1 | Understand the basic operations and functions using matlab |
| REE353.2 | Solve different mathematical problems using matlab |
| REE353.3 | Analyze the response of different electrical circuits using simulink |

**10. Course Name: Electronics Lab (REC359), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REC359.1 | Understand and analyze working of different semiconductor devices such diode, transistor, FET and identify its characteristics |
| REC359.2 | Analyze and Design the oscillator circuit (passive elements) |
| REC359.3 | Understand basics of Op-amp ICs, design it for various applications |

**11. Course Name: Discrete Mathematics (ROE048), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| ROE048.1 | Understand the basic concepts of sets, relation and function. |
| ROE048.2 | Analyze the problems which are used in engineering and solve these problems. |
| ROE048.3 | Comprehend the meaning of proposition, logical proposition, tautology, contradiction and Quantifiers. |
| ROE048.4 | Construct, analyze and evaluate the solution of difference equation or recurrence relation by generating functions. |
| ROE048.5 | Evaluate different algebraic structure under different binary operation as group, abelian group, ring and field. |
| ROE048.6 | Analyze the different graphs, trees, binary tree and traversal of tree. |

**12. Course Name: Universal Human Values & Professional Ethics (RVE401), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| RVE401.1 | Understand the need, concept and content of value-education in individual's life and modifies their aspirations for happiness & prosperity. |
| RVE401.2 | Comprehend the term self-exploration and its application for self-evaluation and development. |
| RVE401.3 | Reconstruct the concepts about different values & discriminate between them. |
| RVE401.4 | Analyze the concept of co-existence & evaluate the program to ensure self-regulation. |
| RVE401.5 | Identify the holistic perception of harmony at level of self, family, society, nature and explain it by various examples. |
| RVE401.6 | Apply professional ethics in their future profession & contribute for making a value based society. |

**13. Course Name: Electromagnetic Field Theory (REC402), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REC402.1 | Understand the different coordinate systems and their applications in different EM Fields |
| REC402.2 | Explain the concept of static electric field and different boundary conditions. |
| REC402.3 | Describe the concept of static magnetic field. |
| REC402.4 | Discuss the forces due to magnetic field and magnetic boundary conditions. |
| REC402.5 | Application of Maxwell's equation, wave propagation and Transmission line. |

**14. Course Name: Power Plant Engineering (REE401), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE401.1 | Understand Hydro Electric Power Plant. |
| REE401.2 | Explain Thermal Power Plant. |
| REE401.3 | Describe Nuclear power plant. |
| REE401.4 | Classify different types of Renewable power plants. |
| REE401.5 | Apply the concept of Combined operation of power plants and its economics. |

**15. Course Name: Electrical Machines –I (REE402), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE402.1 | Understand the energy conversion principles and the concept of magnetic system. |
| REE402.2 | Explain the constructional details, characteristics and application of various types of DC generators. |
| REE402.3 | Interpret the performance characteristics of DC motors and their testing. |
| REE402.4 | Explain the working, performance characteristics and testing of 1-phase transformer operating individually or in parallel. |
| REE402.5 | Demonstrate various winding connections of 3-phase transformer and their conversion to multiphase system. |

**16. Course Name: Network Analysis And Synthesis (REE405), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE405.1 | Understand the Importance of Graph Theory in Network Analysis |
| REE405.2 | Analyze AC electrical networks using various network theorems. |
| REE405.3 | Analyze transient and steady state response of first and second order circuit for arbitrary inputs. |
| REE405.4 | Determine the network functions and different parameters pertaining to one port and two port networks. |
| REE405.5 | Design an electrical network using driving point function and describe filters and attenuators. |

**17. COURSE NAME: SIMULATION-II LAB (REE451), YEAR OF STUDY 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE451.1 | Design of converter in electrical machines |
| REE451.2 | Demonstration of fuzzy logic toolbox in speed control of dc machine |
| REE451.3 | Application of neural network toolbox on load forecast |
| REE451.4 | Computation of genetic algorithm in least square curve fitting |

**18. Course Name: Electrical Machines -I Lab (REE452), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE452.1 | Analyse and evaluate performance characteristics of DC machine. |
| REE452.2 | Analyse and evaluate performance of transformer. |

**19. Course Name: Networks Lab (REE453), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE453.1 | Apply various network theorems to determine the circuit response. |
| REE453.2 | Analyse R,L, C circuits behavior in time and frequency domain. |
| REE453.3 | Compute two port network parameters. |

**20. Course Name: Electrical Instrumentation Lab (REE454), Year of Study 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| REE454.1 | Understand various transducers and sensors for measuring different types of physical quantities and the working of controllers to find the response of electrical circuits |
| REE454.2 | Simulate the various frequency domain measurements of electrical signal using Spectrum analyzer |
| REE454.3 | Design a circuit for noise reduction in measurement. |

**21. Course Name: Manergial Economics (RAS501), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| RAS501.1 | Understand the basic concepts of Engineering Economics & theory of demand. |
| RAS501.2 | Understand concept of supply and make use of various methods of demand forecasting for estimating demand of any product. |
| RAS501.3 | Explain basic concepts related to production and cost. |
| RSA501.4 | Outline of various market structures. |
| RAS501.5 | Understand nature and structure of Indian economy and basic concepts related to NI, Inflation and business cycle. |

**22. Course Name: Cyber Security (RUC501), Year of study: 2018-19**

| Course Outcome | On completion of this course, the student will be able to - |
|---|---|
| RUC501.1 | Explain the core of Information System (IS), principles and its security |
| RUC501.2 | Analyze system and applications for Cyber Security threats, vulnerabilities and also different classes of attack and their counter measures. |
| RUC501.3 | Identify the key components of Physical Security and Network Architecture for Secure Information System. |
| RUC501.4 | Understand the development of Policies, Procedures, and Guidelines for implementing Security. |
| RUC501.5 | Illustrate Current Trends in information Security in areas of Cloud Computing, Supply Chain Management and Outsourcing |
| RUC501.6 | Learn about Cyber Security Policies, Information Security Standards -ISO, IT Act, Copy rights, Cyber Laws to make our system secure. |

**23. Course Name: Electrical Machine-II (REE501), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| REE501.1 | Understand the basic concept of synchronous generator |
| REE501.2 | Analyse the basic principle and working of synchronous motor |
| REE501.3 | Evaluate the basic concept of three phase induction motor |
| REE501.4 | Study the working of high torque three phase induction motor |
| REE501.5 | Explain the basic concept of single phase induction motor |

**24. Course Name: Power Transmission & Distribution (REE502), Year of study: 2018-19**

| Course Outcome | On completion of this course, the student will be able to - |
|---|---|
| REE502.1 | Understand the model and representation of power system components |
| REE502.2 | Analyze various types of transmission and distribution systems. |
| REE502.3 | Understand the various transmission concepts |
| REE502.4 | Evaluate voltage regulation and efficiency of transmission system |
| REE502.5 | Calculate the voltage drop of distribution systems. |
| REE502.6 | Explain several conflicting factors of different nature in power system design. |

**25. Course Name: Control System (REE503), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| REE503.1 | Mathematical modelling of physical system to find transfer function |
| REE503.2 | Analysis of control system using standard test signal |
| REE503.3 | Design of controller & compensators |
| REE503.4 | Study of different component of control system |
| REE503.5 | Analysis of stability of control system in time & frequency domain |

**26. Course Name: Fundamentals of Digital Signal Processing (REE053), Year of study: 2018-19**

| Course outcomes | On completion of this course, the student will be able to |
|---|---|
| REE053.1 | Identify discrete-time signal and systems, and their different structure for FIR and IIR systems. |
| REE053.2 | Understand the concept of sampling and processing of discrete signal and continuous signal by continuous and discrete time system respectively. |
| REE053.3 | Analyse the LTI systems and understand and apply the concept of DFT |
| REE053.4 | Design the IIR Filter |
| REE053.5 | Design the FIR Filter |
| REE053.6 | Understand the different algorithm to compute the DFT. |

**27. Course Name: Electrical Machine-II Lab (REE551), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| REE551.1 | Conduct various tests on alternators and obtain their performance indices using standard analytical , graphical and software methods. |
| REE551.2 | Analyse the performance of induction machines using standard analytical ,graphical and software methods. |

**28. Course Name: Control System Lab (REE553), Year of study: 2018-19**

| Course Outcome | On completion of this course, the student will be able to - |
|---|---|
| REE553.1 | Analyze stability of various control system using time domain stability analysis methods |
| REE553.2 | Design and simulate various control systems in time /frequency domain using MATLAB |

**29. Course Name: Software Based Power System Lab (REE554), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| REE554.1 | Analyze the performance of transmission lines using MATLAB. |
| REE554.2 | Understand the concept of corona loss, Ferranti effect and skin effect in transmission lines using MATLAB. |
| REE554.3 | Calculate the various mechanical parameters of transmission line using MATLAB. |

**30. Course Name: Seminar-I (REE555), Year of study: 2018-19**

| Course outcomes | On completion of this course, the student will be able to |
|---|---|
| REE555.1 | Practical implementation of the identified software/hardware module. |
| REE555.2 | Analyze presentation and writing skills |
| REE555.3 | Subject knowledge and understanding of the theme. |

**31. Course Name: Industrial Management (RAS601), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| RAS601.1 | Understand the concept of industrial management. |
| RAS601.2 | Understand the functions & principles of management and basic concept of HRM. |
| RAS601.3 | understand the process of work study and inventory control techniques |
| RAS601.4 | Apply various quality control techniques for process control & product control. |
| RAS601.5 | Understand basic concepts related to project management and control techniques. |

**32. Course Name: Sociology (RAS602), Year of study: 2018-19**

| Course outcomes | On completion of this course, the student will be able to |
|---|---|
| RAS602.1 | Comprehend social relations in industry/organization and correlate the dynamics of diverse context of Indian society. |
| RAS602.2 | Understand the global rise and development of industry and empower themselves to analyze and evaluate different aspects of industrialization. |
| RAS602.3 | Demonstrate the implications of policies and its consequences in the context of industrialization and its growth in India. |
| RAS602.4 | Evaluate the social consequences of modernization, automation and industrial activities on the ecosystem thereby, sensitizing the engineers on public health and safety issues which shall serve as cornerstone for cultural, societal and environmental considerations. |
| RAS602.5 | Envisage prospective models of industrialization across the globe to understand the consumer society and the sociological concerns of industrial development in the present world. |
| RAS602.6 | Gain and recognize the need for bridging the implications of sociological theories with engineering sciences and encourage themselves for lifelong learning. |

**33. Course Name: Power Electronics (REE601) Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| REE601.1 | Understand the goal of power electronics. |
| REE601.2 | Interpret the basic application of power electronics devices and switching characteristics of different semiconductor devices. |
| REE601.3 | Understand various DC- DC converters. |
| REE601.4 | Analyze the phase controlled converters. |
| REE601.5 | Understand the concept of single and three phase AC voltage controller and cycloconverter. |
| REE601.6 | Analyze the working of single and three phase inverter. |

**34. Course Name: Microprocessor (REE602), Year of study: 2018-19**

| Course outcomes | On completion of this course, the student will be able to |
|---|---|
| REE602.1 | To study the fundamentals of Microprocessor systems and interfacing |
| REE602.2 | To learn the fundamentals of 8-bit Microprocessor 8085, instruction set of 8-bit Microprocessor 8085 and assembly language programming for solving problems |
| REE602.3 | Develop assembly language program using different types of interrupts, subroutines and basic commands of 8-bit Microprocessor 8085. |
| REE602.4 | To understand the fundamentals and instruction set of 16-bit Microprocessor 8086 and assembly language programming for solving problems in 16-bit Microprocessor 8086 |
| REE602.5 | Develop assembly language program using different types of interrupts, subroutines and basic commands of 16-bit Microprocessor 8086. |

**35. Course Name: Power System Analysis (REE603), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| REE603.1 | Interpret power system single line diagrams based on their symbolic representation and the concepts of per unit system |
| REE603.2 | Analyze Power system parameters arising due to occurances of symmetrical and unsymmetrical faults |
| REE603.3 | Solve the power flow problems by using Gauss Siedel Method, Newton Raphson's Method, Decoupled and Fast Decoupled Load flow methods |
| REE603.4 | Analyze the power system stability conditions using equal area criteria and swing equation for transient stability and the criteria for steady state stability |
| REE603.5 | understand the characteristics of voltage and current as travelling waves under differnt line terminations |

**36. Course Name: Special Electrical Machines (REE064), Year of study: 2018-19**

| Course Outcome | On completion of this course, the student will be able to - |
|---|---|
| REE064.1 | To understand deeper the characteristics and application of Deep bar and double cage type induction motor. it will also enhance students knowledge about the various power recovery schemes |
| REE064.2 | To understand the SEIG & DFIG types of induction generator and their characteristics and application |
| REE064.3 | To understand about working principle, construction, characteristics & application of stepper motor |
| REE064.4 | To understand about various single phase and Permanent Magnet Motors |
| REE064.5 | To know about repulsion motor, universal motor and linear type induction motor |

**37. Course Name: Power Electronics Lab (REE661) Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| REE661.1 | Understand various Power Electronics devices & its characteristics SCR,TRIAC, DIAC, IGBT, GTO etc. |
| REE661.2 | Understand application of Power Electronics devices in Choppers, Inverters and Converters etc. for different load |
| REE661.3 | Design and simulate 1-3 phase half and full wave rectifers, chopper inverter etc, using various power electronics devices MATLAB. |

**38. Course Name: Microprocessor Lab (REE662), Year of study: 2018-19**

| Course outcomes | On completion of this course, the student will be able to |
|---|---|
| REE662.1 | To understand and perform assembly language programming on arithmetic and logical operations using 8-bit Microprocessor 8085 experimental Kit |
| REE662.2 | To understand and perform assembly language programming for solving problems using 16-bit Microprocessor 8086 experimental Kit |
| REE662.3 | To understand and perform assembly language programming for interfacing the devices with microprocessors. |

**39. Course Name: Electrical Design & Fabrication Lab (REE664), Year of study: 2018-19**

| Course outcome | On completion of this course, the student will be able to - |
|---|---|
| EEE664.1 | Design and fabrication of Transformer, Filter, Controller, Inductor. |
| EEE664.2 | design and fabrication of High Power factor controlled rectifier. Microcontroller based digital energy meters / sensors, Power amplifier, AC phase converter, IGBT based single phase inverter, chopper. |
| EEE664.3 | Measurement of electrical parameters of AC & DC machine. |

**40. Course Name: Seminar – II (REE665), Year of study: 2018-19**

| Course Outcome | On completion of this course, the student will be able to - |
|---|---|
| REE665.1 | Practical implementation of the identified software/hardware module. |
| REE665.2 | Analyze presentation and writing skills |
| REE665.3 | Subject knowledge and understanding of the theme. |

**41. Course Name: Entrepreneurship Development (NOE 071), Year of study 2018-19**

| **Course Outcome** | **Statement (On completion of this course, the student will be able to )** |
|---|---|
| NOE071.1 | Understand the role and functions of entrepreneur. |
| NOE071.2 | Able to formulate and evaluate the project. |
| NOE071.3 | Understand the concept of NPV & IRR, accountancy, PPC and decision making. |
| NOE071.4 | Determine process quality, understand marketing, IR, advertising, wages & incentive and inventory control. |
| NOE071.5 | Understand various aspects of financial management of a project , |
| NOE071.6 | Understand legal provisions and assistance provided by various agencies to SSIs |

**42. Course Name: Power System Operation and Control (NEE031), Year of study: 2018-19**

| **Course Outcome** | **Statement (On completion of this course, the student will be able to )** |
|---|---|
| NEE031.1 | Understand the functioning of power system control centers and the role of computers in real time control power system |
| NEE031.2 | Apply the underlying concepts of unit commitment and on-line economic dispatch in the scheduling of generators |
| NEE031.3 | Evaluate the load frequency control of an isolated power system |
| NEE031.4 | Evaluate the load frequency control of an interconnected power system and the importance of tie-line power flow control |
| NEE031.5 | Apply the various methodologies of voltage and reactive power control |
| NEE031.6 | Understand the objectives of state estimation and the underlying concepts and functioning of FACTS devices |

**43. Course Name: Electric Drives (NEE701), Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE701.1 | Understand fundamentals of electric drives and its part. |
| NEE701.2 | Explain dynamics of motor load combination of electric drive. |
| NEE701.3 | Understand electric braking of various machines. |
| NEE701.4 | Apply power electronics for control of DC drives. |
| NEE701.5 | Apply power electronics for control of AC drives. |

**44. Course Name: Power Station Practice (NEE702),Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE702.1 | Analyze the Energy Scenario of India and Operation Of Thermal and Hydro Power Plant |
| NEE702.2 | Compare Working of Nuclear, Gas Turbine, and Diesel Power Plant |
| NEE702.3 | Understand Substation Layout and Analyze Tariff |
| NEE702.4 | Analyze Economic Operation of Power Plant |
| NEE702.5 | Compare Various Non-Conventional Energy Resources Like MHD, Solar,Wind, Geo-Thermal, Tidal and Ocean Thermal Energy. |

**45. Course Name: Analog & Digital Communication (NEC702A), Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEC702A.1 | Explain the basic concepts of communication systems and modulation. |
| NEC702A.2 | Evaluate the modulation parameters of frequency modulation with designing concepts of FM transmitter and receiver. |
| NEC702A.3 | Analyse various techniques of phase modulation. |
| NEC702A.4 | Apply different digital modulation techniques. |
| NEC702A.5 | Understand multiplexing and data compression techniques. |

**46. Course Name: Electric Drives Lab (NEE751), Year of study: 2017-18**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE751.1 | Demonstrate various speed control tests on dc motors using power electronic converters |
| NEE751.2 | Demonstrate various speed control tests on Induction motors using power electronic converters |
| NEE751.3 | Analyze using MATLAB the speed control of dc motor/induction motor using power electronic converters |

**47. Course Name: ADC Lab (NEN752B), Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEC752B.1 | Study and understand various modulation technique and its characteristics |
| NEC752B.2 | Analyze the concept of delta modulation, pulse delta coding for various decoding technique. |
| NEC752B.3 | Analyze the concept of ASK, FSK and PSK with modulation and demodulation process. |

**48. Course Name: Industrial Training (NEE753), Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE753.1 | To expose students to the 'real' working environment and get acquainted with the organization structure, business operations and administrative functions. |
| NEE753.2 | To have hands-on experience in the students' related field so that they can relate and reinforce what has been taught at the university. |
| NEE753.3 | To promote cooperation and to develop synergetic collaboration between industry and the university in promoting a knowledgeable society. |

**49. Course Name: Electrical & Electronics Engineering Materials (NEE801), Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE801.1 | Understand the concept of atomic structure, chemical bonding and crystal geometry of engineering materials. |
| NEE801.2 | Understand the concept of conductivity properties and its applications. |
| NEE801.3 | Understand and analyze various properties of semiconductor and its utilization in various semiconductor devices |
| NEE801.4 | Characterize various types of magnetic material based on its characteristics |

**50. Course Name: Utilization of Electrical Energy & Traction (NEE802), Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE802.1 | Understand the processes of electrical heating and their application |
| NEE802.2 | Explain the working of various Electric Welding and Electrolyte processes along with their applications |
| NEE802.3 | Understand the designing of indoor and outdoor lighting system along with the working of the refrigeration and air-conditioning systems |
| NEE802.4 | Describe the mechanics of train movement and the different types of electric traction |
| NEE802.5 | Comprehend the use of power electronics control in ac and dc traction drives. |

**51. Course Name: Non-Conventional Energy Resources (NOE 081), Year of study: 2018-19**

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NOE081.1 | Distinguish various conventional & non-conventional energy resources and its applications in various fields to minimize energy use in devices and buildings. About Solar cells & solar cell power plant |
| NOE081.2 | Comprehend the overall solar energy and power plants based on it, Their application, performance & limitations. |
| NOE081.3 | Develop an ability to understand resources of Geothermal energy, About MHD and Fuel cells, Power plants based on them, Their performance and limitations. |
| NOE081.4 | Analyze principle of working of Thermo-electrical & thermionic conversion, Comprehensive knowledge of Wind power and its sources, Gain an assessment skill of the relative costs of energy conservation and energy production in various applications. |
| NOE081.5 | Describe the availability & working of bio-mass, OTEC, wave & Tidal wave, |

| | |
|---|---|
| | Waste Recycling plants. This is also giving an opportunity to students to work as enterpreneurs with small investments or help NGOs for use of non-conventional energy in different forms. |

## 52. Course Name: EHV AC & DC Transmission (NEE041), Year of study: 2018-19

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE041.1 | Investigate the need of EHV Transmission and also the recent trends in power transmission system |
| NEE041.2 | Understand the basics of EHV AC transmission |
| NEE041.3 | Assemble the characteristics of EHV testing and design factors of EHV lines. |
| NEE041.4 | Differentiate between types of EHV DC links and investigate the basic principles of DC link. |
| NEE041.5 | Analyze various faults in EHV DC transmission and the concept of MTDC. |

## 53. Course Name: Project (NEE754/ NEE851), Year of study: 2018-19

| Course Outcome | Statement (On completion of this course, the student will be able to ) |
|---|---|
| NEE754.1 | Identify the particular problem in the field and demonstrate independent learning. |
| NEE754.2 | Plan, design and analyze the particular problem as project |
| NEE754.3 | Demonstrate the usefulness of project in society and understanding of professional ethics and participate in a class or project team. |