## **Course Outcome**

#### **DEPARTMENT OF ELECTRICAL ENGINEERING**

#### Class: FE SE TE & BE ELECTRICAL

#### <u>SEM 1</u>

#### FE ELECTRICAL

#### **EED105 Basics of Electrical Engineering**

- EED105.1 Introduction about basic circuit elements.
- EED105.2 Analyze and solve numerical problems on electrical DC networks using different theorems
- EED105.3 Study various terms related with magnetic circuits and analyze different magnetic circuits
- EED105.4 Study various terms related with A.C. circuits, analyze and solve different A.C circuits
- EED105.5 Study various terms related with transformers, analyze and solve numerical on transformers.
- EED105.6 Study various electrical utilities, meters and accessories.

#### SE ELECTRICAL

#### **BSH/201 ENGG MATHEMATICS III**

- BSH201.1 Demonstrate basic knowledge of linear differential equation & show the impact of engineering mathematics.
- BSH201.2 Demonstrate base concept of forrier transform which will used in engineering.
- BSH201.3 Demonstrate the idea about statistics to use numeral value used in engineering .
- BSH201.4 Demonstrate basic knowledge of vector & its differentiation.
- BSH201.4 Show the understanding at impact of engineering mathematics using vector integral.

#### EED/202 TRANSFORMER AND DC MACHINE

- EED 202.1 Explain fundamentals concepts of electromechanical energy conversion
- EED 202.2 Inspect fundamental principles, performance & applications of transformer and DC Machines
- EED 202.3 Analyse different tests, on transformer and DC Machines
- EED 202.4 Identify, Formulate and solve engineering problems of transformer and DC Machines.

## **Course Outcome**

## EED /203 ELECTRICAL MEASURING TECHNIQUES

- EED 203.1 Operations of different electrical instruments and their use for the measurement of electrical and non-electrical quantities.
- EED 203.2 Explain different terminology related to measurements and methods of measurements
- EED 203.3 Explain different recent terminology related to instruments and measurements.
- EED 203.4 How the selection of proper digital equipment for measurement purpose

#### **EED 204 ELECTRICAL POWER GENERATIONAND ITS ECONOMICS**

- EED 204.1 Discuss the energy resources and energy conversion methods available for the production of electric power in India.
- EED204.2 Discuss the principles and potential of direct-electric power conversion systems, such as fuel-cell and solar photovoltaic units.
- EED204.3 Discuss the environmental impact of electric power production on air quality, climate change, water, and land
- EED204.4 Perform the preliminary design of the major components or systems of a conventional or alternate power plant.

#### EED/205 ELECTRICAL ENGINEERING MATERIALS

- EED205.1 Explain the electrical properties and characteristics of various materials, used in the electrical appliances, devices, instruments and in the applications associated with generation, transmission and distribution of electric power.
- EED205.2 Explain the physics behind the electrical engineering materials.
- EED205.3 Make use of electrical engineering material science essential for them to work in different industries.

#### <u>SEM-II</u>

#### FE ELECTRICAL

#### ECT154 BASIC ELETRONIC ENGINEERING

- ECT 154.1 Define and explain various concepts of Active and Passive components and its applications.
- ECT 154.2 Define the Rectifier its type and need of Rectifier.
- ECT 154.3 Concept of Voltage Regulator, its necessity in electronics devices.
- ECT 154.4 Define different number system and Logical Gates and its use in Digital Electronics.

## **Course Outcome**

#### **SE ELECTRICAL**

#### **BSH/251 ENGINEERING MATHEMATICS IV**

- BSH251.1 Demonstrate basic knowledge of Laplace transform & show the impact of engineering mathematics.
- BSH251.2 Demonstrate base concept of z transform which will used in engineering.
- BSH251.3 Demonstrate the idea about complex variable to use numeral value used in engineering.
- BSH251.4 Demonstrate basic knowledge complex integral.

#### EED 253 AC MACHINES

- EED253.1 The ability to formulate and then analyze the working of any electrical machine using mathematical model under loaded and unloaded conditions.
- EED253.2 The ability to troubleshoot the operation of an electrical machine.
- EED253.3 The ability to conduct testing and experimental procedures on different types of electrical machines
- EED253.4 The ability to select a suitable measuring instrument for measuring electrical and nonelectrical quantities for a given application.

#### EED /254 NETWORK ANALYSIS

- EEP254.1 Apply the knowledge of basic circuital law and simplify the network using reduction techniques
- EEP254.2 Analyze the circuit using Kirchhoff's law and Network simplification theorems
- EEP254.3 Infer and evaluate transient response, Steady state response, network functions
- EEP254.4 Obtain the maximum power transfer to the load , and Analyze the series resonant and parallel resonant circuit

#### EED /255 ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION

- EED 255.1 Design of the various distribution systems.
- EED 255.2 Determine ratings of the major equipment's & their use in substation.
- EED 255.3 Determine the voltage drop & so voltage regulation for different types of conductors
- EED 255.4 Modelling of short transmission line & medium transmission line.

## **Course Outcome**

## EEP/256 ANALOG INTEGRATED CIRCUITS & APPLICATIONS

- EEP256.1 Understand the characteristics and applications of various semiconductor Devices.
- EEP256.2 Analyze and design amplifier and oscillator circuits.
- EEP256.3 Familiarize with the concept of IC based voltage regulator and signal conversion circuits
- EEP256.4 Apply the knowledge of semiconductor devices to design analog circuits for Various applications.

#### TE ELECTRICAL

#### <u>SEM I</u>

#### EEP/301 POWER SYSTEM ANALYSIS

- EEP301.1 Determine line constants for various line configurations.
- EEP301.2 Evaluate efficiency and regulation of transmission lines.
- EEP301.3 Design the sequence network for a given system.
- EEP301.4 Determine power flow for given systems.

#### **EEP/302 SPECIAL PURPOSE ELECTRICAL MACHINE**

- EEP302.1 Explain in detail the construction ,working , application of induction generator, BLDC motor , SRM, LIM
- EEP302.2 Explain in detail the construction ,working ,types, application of Synchronous reluctance motor, stepper motor
- EEP302.3 Adapt the knowledge about static special purpose electrical machines and lectric heating and welding
- EEP302.4 Illustrate the laws of electrolysis and electrolytic process

#### **EEP/303 ELECTROMAGNETIC FIELDS**

- EEP303.1 Explain basic theory of electric and magnetic fields.
- EEP303.2 Illustrate Maxwell's equations.
- EEP303.3 Discuss the students to the fundamentals of electromagnetic fields and their applications in Electrical Engineering

#### **EEP/304 CONTROL SYSTEM ENGINEERING**



## **Course Outcome**

- EEP304.1 Derive the transfer function for single input single output system.
- EEP304.2 Derive system input output relations using signal flow graph and block diagram reduction
- EEP304.3 Specify design in the S-plane in terms of settling time, rise time and overshoot to step response
- EEP304.4 Develop bode and polar plots for various transfer function

#### **EEP/305 MICROPROCESSOR & INTERFACING**

- EEP305.1 Understand the architecture of 8085 8-bit Microprocessor.
- EEP305.2 Describe the importance and function of each pin 8085 Microprocessor.
- EEP305.3 Write, Debug and Simulate assembly language program.
- EEP305.4 Interface Memory, Input/output with 8085 Microprocessor.

#### **TE ELECTRICAL**

#### SEM 2

#### **EEP/351 ELECTRICAL MACHINE DESIGN**

- EEP351.1 Explain Basic knowledge of Designing of Electrical machine
- EEP351.2 Design the single phase transformer
- EEP3513 Design the Induction motor
- EEP351.4 Explain Thermal and Magnetic considerations in design of Motors and Transformer and Calculate the magnetic circuit

#### EEP/352 ENERGY CONSERVATION & AUDIT

- EEP/352.1 Larger Implementation of Renewable Sources in Routine Life.
- EEP/352.2 Understand Role of Energy Auditor.
- EEP/352.3 Efforts to Improve the Energy Efficiency in Electrical System.

## **Course Outcome**

EEP/352.4 Financial Evaluation of Energy Conservation.

#### **EEP/353 POWER ELECTRONICS**

- EEP353.1 Present structure, characteristics, and applications etc. of power semiconductor devices
- EEP353.2 Analyze single and three phase converters with different types of load and their control Techniques.
- EEP353.3 Enumerate single and three phase inverter and its control techniques like PWM
- EEP353.4 To understand concept to change in frequency.

#### **EEP/354 TESTING & MAINTENANCE OF ELECTRICAL EQUIPMENT**

- EEP354.1 Explain the estimation for wiring industrial, commercial, residential and various feeder.
- EEP354.2 Explain estimation of the illumination scheme.
- EEP354.3 Plan maintenance schedule of equipment.
- EEP354.4 Test electrical equipment as per IS.

#### **EEP/354 MICROCONTROLLER & APPLICATION**

- EEP354.1 Understand the architecture of 8085 8-bit Microprocessor.
- EEP354.2 Understand the write, Debug and Simulate assembly language program.
- EEP354.3 Interface Memory, Input / Output with 8085 Microprocessor
- EEP354.4 List the difference between 8-bit, 16-bit and advance Microprocessor.

#### **BE ELECTRICAL**

#### SEM 1

#### **EEP/401 ELECTRICAL DRIVES**

- EEP401.1 Explain fundamentals and dynamics of electrical drives.
- EEP401.2 Solve the numerical on dynamics of electrical drive, dc motor drive etc.
- EEP401.3 Explain in detail the operation and control of three phase induction motor drive.
- EEP401.4 Decide the particular applications for BLDC motor drive.

## **Course Outcome**

#### **EEP/402 POWER SYETEM PROTECTION**

- EEP402.1 Explain different types of circuit breakers & different types of relays in power system.
- EEP402.2 Test transmission line and feeder from various faults.
- EEP402.3 Test transformer, alternator, motor and busbar.
- EEP402.4 Plan power system against over voltages.

#### **EEP 403 DIGITAL SIGNAL PROCESSING**

- EEP 403.1 Plot and describe signal, evaluate their energy and power, checks for periodicity and evaluate the period of signal.
- EEP 403.2 Identify properties of discrete time system such as time –invariance , stability, causality and linearity.
  - EEP 403.3 Draw blocks diagram of discrete time system.
  - EEP 403.4 Compute the linear and circular convolution of discrete time sequences.
  - EEP 403.5 Evaluate the discrete time Fourier transform (DTFT) of sequence.
  - EEP 403.6 Understand the properties of various transform used in the DSP.

#### **EEP/404 INDUSTRIAL AUTOMATION**

- EEP/404.1 Use various sensors for measurement of physical parameters.
- EEP/404.2 Analyze various control configuration used in process control.
- EEP/404.3 Use controller such as PI, PID
- EEP/404.4 Design system using PLC, SCADA, and DDC configuration as control values for application.

#### EEP/443 FLEXIBLE AC TRANSMISSION SYSTEM

- EEP 443.1 Compare various types of FACTS controller.
- EEP 443.2 Apply shunt compensation
- EEP 443.3 Apply series compensation
- EEP 443.4 Apply static voltage & phase angle regulator

#### **BE ELECTRICAL**

#### Sem 2

Everest Educational Society's Group of Institutions Course Outcome

#### **EEP/451 HIGH VOLTAGE ENGINEERING**

- EEP 451.1: Decide the suitability of various insulating materials for power system applications.
- EEP 451 .2: Explain the breakdown phenomenon in case of various insulating materials.
- EEP 451 .3: Explain the concepts of generation of high voltages & currents.
- EEP 451.4: Explain the causes and protection from over-voltages and the concept of insulation coordination.

#### **EEP/452 - POWER SYSTEM OPERATION & CONTROL**

- EEP 452.1 Allow students discuss about thermal and hydro power plants operation in meeting the load demand optimally. (State and central wide installation). Also expressing importance of reactive power control through seminars
- EEP452.2 Model and design turbine and Automatic controller.
- EEP452.3 Judge variation of frequency in the power system with varying load.

#### **EEP/453 RENEWABLE ENERGY**

- EEP453.1 Explain concept of distributed power generation and distinguish between stand alone a grid connected PV systems.
- EEP453.2 Analyze and Plot I-V Characteristics of solar cell.
- EEP453.3 Explain standard test conditions and impacts of shading on I-V curves of solar cell.
- EEP453.4 Explain wind turbine, biomass and Calculate maximum output power from wind turbine.

#### EEP/493 ELECTRICAL SYSTEM PLANNING & DESIGN.

- EEP/493.1 Design transmission line(electrical and mechanical aspects).
- EEP/493.2 Design primary and secondary distribution system
- EEP/493.3 Select the size and location of generating stations, substations.
- EEP/493.4 Explain the basic concepts of power system earthing and measurement of earthing resistance