

**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: S.E/III

Course Name: Applied Mathematics-III

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC301.1	Obtain basic knowledge of Laplace Transform with their properties.
EEC301.2	Apply the knowledge of inverse Laplace Transform to solve ordinary differential equation.
EEC301.3	Calculate both real and complex forms of the Fourier series for standard periodic waveforms and also to find Fourier Transform of functions.
EEC301.4	Apply the knowledge of vector differentiation and integration to solve Engineering problems.
EEC301.5	Use fundamental knowledge of complex variables to identify an analytic, harmonic functions and orthogonal trajectories.
EEC301.6	Understand the Bessel functions, generating functions and orthogonality properties.

Class/Sem: S.E/III

Course Name: Electronics Devices and Circuits

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC302.1	Understand construction & working of the semiconductor devices.
EEC302.2	Find out characteristics & breakdown mechanism of the semiconductor diodes.
EEC302.3	Perform DC design & analysis of transistor circuits
EEC302.4	Analyse small signal analysis of BJT & FET Amplifiers.
EEC302.5	Use the semiconductor devices for specific applications.
EEC302.6	Synthesise the problem formulation, system design and solving

Class/Sem: S.E/III

Course Name: Conventional and Non-Conventional  
Power Generation

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC303.1	Get the basic knowledge of conventional and non conventional sources of energy.
EEC303.2	Understand the operation of thermal power plant, description and classification of hydro power plant and significance of hydrograph.
EEC303.3	Analyse the economics of power generation.
EEC303.4	Synthesise different types of power plants and power generation for industry oriented learning.
EEC303.5	Illustrate the industrial application of Nuclear, Diesel, Hydro Turbine and Gas Turbine Power Plants.
EEC303.6	Evaluate the various Non-Conventional Energy sources.

Class/Sem: S.E/III

Course Name: Electrical & Electronics Measurement

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC304.1	Gain knowledge about the working principles of various analog instruments.
EEC304.2	Understand working principles of various digital instruments & devices used for measurement of the Electrical parameters
EEC304.3	Analyse working of inductance and capacitance bridges.
EEC304.4	Learn working principle of potentiometers.
EEC304.5	Synthesise basic functions and working of sensors and transducers used in Electronic Measurement
EEC304.6	Evaluate working of various resistance bridges.

Class/Sem: S.E/III

Course Name: Electrical Machines-I

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC305.1	Get basic knowledge of series parallel magnetic circuits to determine circuit parameters and losses.
EEC305.2	Understand the performance parameters of dc machines.
EEC305.3	Analyse the effect of performance parameters and application of dc motors.
EEC305.4	Illustrate principle of energy conversion in single and double excited machines.
EEC305.5	Synthesise the performance of dc machines by conducting various tests.
EEC305.6	Evaluate the operation and applications of stepper motors.

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEL302.1	Gain knowledge of the concept of packages, classes and objects.
EEL302.2	Understand the concept of strings, arrays and vectors.
EEL302.3	Apply fundamental programming constructs
EEL302.4	Synthesize the concept of inheritance and interfaces.
EEL302.5	Implement the notion of exception handling and multithreading.
EEL302.6	Develop GUI based application.

**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: S.E/IV

Course Name: Applied Mathematics-IV

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC401.1	Understand Euler's-Lagrange's Equation, Isoperimetric problems and Rayleigh-Ritz method.
EEC401.2	Apply the knowledge vector spaces to find the inner product spaces.
EEC401.3	Find Eigen values, Eigen vectors of a square matrix and use of these in diagonalisation of matrix
EEC401.4	Apply concept of Random variables, Probability distributions for solving problems.
EEC401.5	Find Karl-Pearson's coefficient of correlation and lines of Regression.
EEC401.6	Find complex integration using Cauchy's integral formulae and also obtain Taylor's and Laurent's series and understand concept of Residue and Application of Residue theorem.

Class/Sem: S.E/IV

Course Name: Power System-I

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC402.1	Gain knowledge of the basic structure of power system: Generation, Transmission and Distribution
EEC402.2	Understand Mechanical design of Overhead lines
EEC402.3	Analyse representation of power system components
EEC402.4	Learn Underground Cable and Power system Earthing
EEC402.5	Evaluate performance of transmission lines.
EEC402.6	Synthesise transmission line parameters



The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC403.1	Understand working principles of single phase and various three phase transformers.
EEC403.2	Gain knowledge of various and single phase transformer three phase transformer.
EEC403.3	Analysis of working and types three phase transformer
EEC403.4	Apply the design of single phase transformer three phase transformer
EEC403.5	Synthesis and design of three phase transformer and single phase transformer
EEC403.6	Evaluate the design of single phase transformer, three phase transformer

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC404.1	Apply knowledge of mathematics and physics in electrical engineering field
EEC404.2	Understand electrostatic and static magnetic field.
EEC404.3	Synthesise the effect of material medium on electric and magnetic fields
EEC404.4	Formulate time varying electric and magnetic fields
EEC404.5	Analyse wave generation and its propagation in different media
EEC404.6	Evaluate static magnetic field and electrostatic field distribution using software tool.

Class/Sem: S.E/IV

Course Name: Analog and Digital Integrated Circuits

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC405.1	Gain knowledge of various conversion of number systems and illustrate logic families
EEC405.2	Understand various linear and non-linear application of operational amplifiers.
EEC405.3	Analyse linear voltage regulators and multivibrators.
EEC405.4	Illustrate various performance parameters and characteristics of operational amplifier.
EEC405.5	Synthesise combinational circuits using various logic gates.
EEC405.6	Evaluate sequential circuits using Flip-flop, counter etc.

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC406.1	Gain the knowledge of various characteristics of DC Circuits.
EEC406.2	Understand the different network simplification techniques by using network theorems
EEC406.3	Evaluate the first order and second order differential equations
EEC406.4	Apply various networks in time domain and frequency domain to obtain the parameters in terms of current and voltage.
EEC406.5	Analyse of Two Port Network to obtain various parameters.
EEC406.6	Synthesis analysis of LC,RC,RL network

Class/Sem: S.E/IV

Course Name: Simulation Lab-I

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEL401.1	Gain knowledge of various electrical circuits for their performance analysis.
EEL401.2	Understand basic block sets of different simulation platform used in electrical system design.
EEL401.3	Design and analyse algorithms for electrical circuits for their performance analysis
EEL401.4	Apply the techniques, skills and modern engineering tools necessary for engineering practice.
EEL401.5	Build, design and synthesize electrical engineering problems with simulation
EEL401.6	Implement coding in different programming software's used in electrical system design

Class/Sem: S.E/IV

Course Name: Electrical Workshop

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEL404.1	Gain knowledge of various electrical and power electronics component.
EEL404.2	Understand various electrical and electronics measuring equipments.
EEL404.3	Repair and do maintenance of household appliances.
EEL404.4	Identify and apply various wiring accessories and tools.
EEL404.5	Analyze and use various low voltage protective switchgear.
EEL404.6	Develop ability to handled different electrical equipment to complete the given task.

**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: TE/V

Course Name: Power System - II

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC501.1	Recall the operation of Synchronous machines and will possess knowledge of three phase faults.
EEC501.2	Expound the need of symmetrical components in solving asymmetrical faults.
EEC501.3	Solve and decipher the magnitude of fault current in asymmetrical system.
EEC501.4	Analyze the transients and steady state in transmission lines.
EEC501.5	Evaluate the system for the required protection level.
EEC501.6	Design and develop a corona free system.

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC502.1	Gain basic Knowledge of principles of various three phase induction motor and single phase phase motor
EEC502.2	Understand the performance parameters of three phase induction motor motor and single phase induction motor
EEC502.3	Analyse the effect of performance parameters in three phase induction motor
EEC502.4	Apply different types of speed control techniques of three phase induction motor in various applications.
EEC502.5	Synthesise equivalent circuits of three phase induction motor and single phase induction motor
EEC502.6	Evaluate and test of three phase induction motor motor and single phase motor



Class/Sem: T.E/ V

Course Name: Control System - I

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC504.1	Gain knowledge for analysing the performance of linear time invariant system
EEC504.2	Understand the basic concepts of control system
EEC504.3	Analyze system parameters to meet transient and steady state error performance specifications
EEC504.4	Apply the root locus and frequency response techniques to comment on stability
EEC504.5	Synthesise system using transfer function and state space
EEC504.6	Evaluate system parameters to yield stability

Class/Sem: T.E/V

Course Name: Power Electronics

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC504.1	Gain knowledge of selection and design of various Power Electronics and semiconductor devices and interrelate their characteristics and ratings for different applications.
EEC504.2	Illustrate and evaluate various auxiliary circuits and requirements in power electronics applications such as Gate driver circuit, snubber circuits and heat sinks.
EEC504.3	Analyze and design various single phase and three phase power converter circuits and understand their industrial applications.
EEC504.4	Relate and apply the concepts of power electronics for circuit designing in various fields of industrial applications such as AC and DC drives, power generation and transmission, energy conversion, etc.
EEC504.5	Deploy and design various power electronic converter topologies for a broad range of energy conversion applications.
EEC504.6	Analyze and simulate the performance of various power electronic conversion circuits.

Class/Sem:T.E/V

Course Name: Utilization of Electrical Energy

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEDLO5013.1	Learn in the broadest knowledge of Technical Advancement in Traction
EEDLO5013.2	Understand the need for technical change Traction
EEDLO5013.3	Analysis the different rules of the traction
EEDLO5013.4	Deploy Illumination Engineering for various tasks/activities/ locations.
EEDLO5013.5	Synthesise the parameters of electric braking methods.
EEDLO5013.6	Evaluate the parameters of Electrical Energy for any application

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEL501.1	Understand the business communication process, ethics and its effective application.
EEL501.2	Synthesise and apply report writing, proposal writing and the project management skills.
EEL501.3	Apply appropriate analytical skills in project report presentations, group discussions and to communicate effectively in various formal settings.
EEL501.4	Understand and learn various roles in group and organization understanding the interpersonal skills like emotional intelligence, leadership, negotiation, time management and team work.
EEL501.5	Participate and achieve success in competitive exams and campus placements
EEL501.6	Enhance social skills, business perspectives and inculcate employment skills

Mahatma Education Society's

**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: TE/VI

Course Name: Protection and Switchgear Engineering

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC601.1	Comprehend the substation equipment and switching devices.
EEC601.2	Identify the importance of Circuit breakers and fuses in power system.
EEC601.3	Employ various types of relays for the sensing of faults in power system.
EEC601.4	Compare and examine the different modes of protection schemes for Generators, Transformers and Induction Motors in power system.
EEC601.5	Select protection schemes for protection of feeders, LV, MV, HV, EHV & UHV transmission lines.
EEC601.6	Design and develop static relays and numerical relays.

Class/Sem: T.E/VI

Course Name: Electrical Machines – IV

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC602.1	Gain basic Knowledge of principles of various three phase alternator and three phase synchronous motor
EEC602.2	Understand the performance parameters of various three phase synchronous motor and three phase alternator
EEC602.3	Analyse the effect of performance parameters in three phase alternator
EEC602.4	Apply different types of speed control techniques of three phase synchronous motor in various applications.
EEC602.5	Synthesise equivalent circuits of three phase synchronous motor and three phase alternator
EEC602.6	Evaluate and test of three phase synchronous motor and three phase alternator

Class/Sem:T.E/ VI

Course Name: Signal processing

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC603.1	Gain knowledge on continuous and discrete time signals.
EEC603.2	Analyze continuous and discrete time signals and systems.
EEC603.3	Synthesize the transformation of discrete time signal to Z domain.
EEC603.4	Understand the frequency response of systems using Z domain.
EEC603.5	Evaluate discrete and fast Fourier transform.
EEC603.6	Designing of IIR & FIR System

Class/Sem: T.E/VI

Course Name: Microcontroller and its Applications

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC605.1	Gain knowledge of microcontrollers.
EEC605.2	Study and understand working of PIC 16 microcontroller family.
EEC605.3	Understand different types of instructions.
EEC605.4	Analyse different programs written in Assembly Language.
EEC605.5	Synthesise of interfacing and its applications.
EEC605.6	Evaluate types of microcontrollers based designs.



Class/Sem: T.E/VI

Course Name: Control System - II

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC605.1	Gain knowledge on controllers, compensators, digital control system
EEC605.2	Understand the basic design of various compensators and digital compensators
EEC605.3	Analyse the performance of any system using various techniques like state space, frequency response techniques and root locus techniques
EEC605.4	Apply the controllers and compensators in appropriate circumstances
EEC605.5	Synthesise the design of lag, lead, lag-lead and digital compensators
EEC605.6	Evaluate the effect of controllers and compensators on the control system

Class/Sem: TE/VI

Course Name: Micro-grid

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEDLO6022.1	Gain knowledge and describe the evolution Microgrid, its features and barriers.
EEDLO6022.2	Understand, select, size and design the various microgrid resources
EEDLO6022.3	Analyze, model and design the power electronics (PE) interfaces for various microgrid sources
EEDLO6022.4	Identify and describe the role communication in Microgrid realization.
EEDLO6022.5	Apply various operational strategies and protection schemes suitable for Microgrid.
EEDLO6022.6	Apprise the different standards applicable for microgrid deployment

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEL604.1	Gain knowledge of various electrical circuits for their performance analysis.
EEL604.2	Understand basic block sets of different simulation platform used in electrical system design.
EEL604.3	Design and analyse algorithms for electrical circuits for their performance analysis
EEL604.4	Apply the techniques, skills and modern engineering tools necessary for engineering practice.
EEL604.5	Build, design and synthesize electrical engineering problems with simulation
EEL604.6	Implement coding in different programming software's used in electrical system design

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**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: S.E/III

Course Name: Applied Mathematics-III

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC301.1	Obtain basic knowledge of Laplace Transform & inverse Laplace transform to solve ordinary differential equations.
EEC301.2	Calculate both real and complex forms of the Fourier series for standard periodic waveforms and convert from real form Fourier series to complex form and vice-versa
EEC301.3	Understand the Bessel functions, generating functions and orthogonality properties.
EEC301.4	Apply the knowledge of vector differentiation and integration to solve Engineering problems.
EEC301.5	Use fundamental knowledge of complex variables to identify analytic harmonic functions and orthogonal trajectories.
EEC301.6	Understand conformal mapping and Bilinear Transformations

Class/Sem: S.E/III

Course Name: Electronics Devices and Circuits

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC302.1	Understand construction & working of the semiconductor devices.
EEC302.2	Find out characteristics & breakdown mechanism of the semiconductor diodes.
EEC302.3	Analyse small signal analysis of BJT & FET Amplifiers.
EEC302.4	Use the semiconductor devices for specific applications.
EEC302.5	Synthesise the problem formulation, system design and solving
EEC302.6	Evaluate Perform of DC design & analysis of transistor circuits

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC303.1	Gain knowledge of the conventional and non-conventional sources of energy.
EEC303.2	Understand thermal power plant layout, operation and the thermodynamics in thermal power generation
EEC303.3	Analyse nuclear power plant layout, fission and fusion operation and various reactors
EEC303.4	Compare the operation of diesel and gas turbine power plant in electric power generation
EEC303.5	Synthesise power generation using non-conventional energy sources
EEC303.6	Evaluate the operation and the terms in power generation

Class/Sem: S.E/III

Course Name: Electrical Networks

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC304.1	Study and analyse various characteristics of DC Circuits.
EEC304.2	Understand the different network simplification techniques by using network theorems
EEC304.3	Analyse of first order and second order differential equations
EEC304.4	Analyse of various networks in time domain and frequency domain to obtain the parameters in terms of current and voltage.
EEC304.5	Synthesise analysis of LC,RC,RL network
EEC304.6	Evaluate Two Port Network to obtain various parameters

Class/Sem: S.E/III

Course Name: Electrical and Electronic Measurements

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC305.1	Gain knowledge about the working principles of various analog instruments.
EEC305.2	Understand working principles of various digital instruments & devices used for measurement of the Electrical parameters
EEC305.3	Analyse working of inductance and capacitance bridges.
EEC305.4	Learn working principle of potentiometers.
EEC305.5	Synthesise basic functions and working of sensors and transducers used in Electronic Measurement
EEC305.6	Evaluate working of various resistance bridges.



The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC306.1	Gain knowledge of the concept of packages, classes and objects.
EEC306.2	Understand the concept of strings, arrays and vectors.
EEC306.3	Apply fundamental programming constructs
EEC306.4	Synthesize the concept of inheritance and interfaces.
EEC306.5	Implement the notion of exception handling and multithreading.
EEC306.6	Develop GUI based application.

**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: S.E/IV

Course Name: Applied Mathematics-IV

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC401.1	Understand Euler's-Lagranges Equation, Isoperimetric problems and Rayleigh-Ritz method.
EEC401.2	Apply the knowledge vector spaces to find the inner product spaces.
EEC401.3	Find Eigen values, Eigen vectors of a square matrix and use of these in Diagonalisation of matrix
EEC401.4	Study functions of square matrix, quadratic forms of a matrix and singular value decomposition.
EEC401.5	Find complex integration using Cauchy's integral formulae and also obtain Taylor's and Laurent's series.
EEC401.6	Understand concept of Residue and Application of Residue theorem.

Class/Sem: S.E/IV

Course Name: Elements of Power System

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC402.1	Get basic knowledge of Elements of Power system network
EEC402.2	Understand the impact of power solutions on the society and will be aware of contemporary issues
EEC402.3	Analyse Performance of transmission line and power system components
EEC402.4	Illustrate significance towards enhancement of efficiency of power system
EEC402.5	Synthesise the Overhead Transmission Line.
EEC402.6	Evaluate Grounding and safety techniques of Electrical Systems

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC403.1	Get basic knowledge of series parallel magnetic circuits to determine circuit parameters and losses.
EEC403.2	Understand the performance parameters of dc machines.
EEC403.3	Analyse the effect of performance parameters and application of dc motors.
EEC403.4	Illustrate principle of energy conversion in single and double excited machines.
EEC403.5	Synthesise the performance of dc machines by conducting various tests.
EEC403.6	Evaluate the operation and applications of DC motors.

Class/Sem: S.E/IV

Course Name: Signal Processing

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC404.1	Gain knowledge of complex number, Fourier series
EEC404.2	Understand the different types of CT and DT signals
EEC404.3	Analyse the system time and frequency domain through its respective tools.
EEC404.4	Apply Fourier transform for solution of differential equation
EEC404.5	Synthesise of frequency domain analysis of DT systems.
EEC404.6	Evaluate techniques used for Z-transform, properties of Z-transform, ROC

Class/Sem: S.E/IV

Course Name: Analog and Digital Integrated Circuits

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC405.1	Gain knowledge of various conversion of number systems and illustrate logic families
EEC405.2	Understand various linear and non-linear application of operational amplifiers.
EEC405.3	Analyse linear voltage regulators and multivibrators.
EEC405.4	Illustrate various performance parameters and characteristics of operational amplifier.
EEC405.5	Synthesise combinational circuits using various logic gates.
EEC405.6	Evaluate sequential circuits using Flip-flop, counter etc.

Class/Sem: S.E/IV

Course Name: Numerical Methods and  
Optimisation Techniques

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC406.1	Gain knowledge of differential calculus, partial differentiation and its solution
EEC406.2	Understand the different numerical methods and optimization techniques used in applications
EEC406.3	Analyse various techniques and choose the best technique for any particular application
EEC406.4	Apply the appropriate techniques for any numerical problems
EEC406.5	Synthesise the ability for problem formulation, system design and solving skills
EEC406.6	Evaluate the solution in a numerical form

Mahatma Education Society's

**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: TE/V

Course Name: Protection and Switchgear Engineering

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC501.1	Understand the construction and operation of instrument transformers
EEC501.2	Gain knowledge of the substation equipments like Switching device and fuses.
EEC501.3	Analyse the protective relays and different principles of operation
EEC501.4	Learn about protection schemes provided for major apparatus
EEC501.5	Evaluate the protection of transmission lines.
EEC501.6	Synthesise operation of static and numeric relays



The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC502.1	Get basic knowledge of three phase transformers and three phase induction motor
EEC502.2	Understand the performance parameters of AC machines.
EEC502.3	Analyse the effect of performance parameters and application of AC motors.
EEC502.4	Apply different types of speed control techniques of three phase induction motor in various application.
EEC502.5	Synthesise equivalent circuits of three phase induction motor
EEC502.6	Evaluate and testing of three phase transformer and three phase induction motor

Class/Sem: T.E/ V

Course Name: Electromagnetic Fields and Waves

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC503.1	Understand laws used for steady Electric and Magnetic fields.
EEC503.2	Analyse the concepts for electromagnetic and its significance and problems.
EEC503.3	Evaluate boundary conditions and application of poissions and Laplace equations.
EEC503.4	Synthesise time varying field and application of Maxwell equations.
EEC503.5	Gain knowledge about uniform plane wave equations.
EEC503.6	Apply wave equations in phasor form for different mediums.

Class/Sem: T.E/V

Course Name: Power Electronics

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC504.1	Get the basic knowledge of Power Electronics and Semiconductor Devices used for it.
EEC504.2	Understand the fundamental operations of Thyristors and its applications
EEC504.3	Analyse types of Controlled rectifiers, DC to DC Converters and AC voltage Controllers and their exposure to state of art technologies.
EEC504.4	Synthesise different types Rectifiers, Choppers, Inverters and AC to AC converters.
EEC504.5	Illustrate the industrial application of Thyristor Family Devices and components and its control aspects for industrial use.
EEC504.6	Evaluate various Rectifiers, choppers, Inverters and Drives

Class/Sem:T.E/V

Course Name: Communication Engineering

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC505.1	Gain knowledge various technicalities related to analog and digital communication
EEC505.2	Understand various techniques related to Digital communication
EEC505.3	Differentiate between Analog and Digital communication techniques.
EEC505.4	Apply the significance of communication system in PLCC
EEC505.5	Synthesise different detection and error correction techniques in system
EEC505.6	Evaluate techniques involved in the field of Radio Communication

Class/Sem: T.E/ V

Course Name: Business Communication and Ethics

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC506.1	Understand the business communication process, ethics and its effective application.
EEC506.2	Synthesise and apply report writing, proposal writing and the project management skills.
EEC506.3	Apply appropriate analytical skills in project report presentations, group discussions and to communicate effectively in various formal settings.
EEC506.4	Understand and learn various roles in group and organization understanding the interpersonal skills like emotional intelligence, leadership, negotiation, time management and team work.
EEC506.5	Participate and achieve success in competitive exams and campus placements
EEC506.6	Enhance social skills, business perspectives and inculcate employment skills

Mahatma Education Society's

**Pillai HOC College of Engineering and Technology, Rasayani**

Department of Electrical Engineering

Class/Sem: TE/VI

Course Name: Power System Analysis

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC601.1	Gain knowledge of insulation coordination, over voltage protection and surge protection of rotating machines and transformers
EEC601.2	Understand the construction, operation and equivalent circuit of synchronous machines and symmetrical fault analysis.
EEC601.3	Analyse the power system transients, travelling waves and lightning phenomenon
EEC601.4	Learn symmetrical components, phase shift in star delta transformation and sequence impedance for unsymmetrical fault analysis
EEC601.5	Synthesise electrical parameters, Fundamental transmission line equation, surge impedance, uncompensated line on open circuit etc.
EEC601.6	Evaluate corona phenomenon, disruptive critical voltage, visual critical voltage, factors affecting corona etc.

Class/Sem: T.E/VI

Course Name: Electrical Machines – III

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC602.1	Gain basis Knowledge of principles of various three phase alternator and three phase synchronous motor
EEC602.2	Understand the performance parameters of various three phase synchronous motor and three phase alternator
EEC602.3	Analyse the effect of performance parameters in three phase alternator
EEC602.4	Apply different types of speed control techniques of three phase synchronous motor in various application.
EEC602.5	Synthesise equivalent circuits of three phase synchronous motor and three phase alternator
EEC602.6	Evaluate and testing of three phase synchronous motor and three phase alternator

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC603.1	Learn in the broadest knowledge of Technical Advancement in Traction
EEC603.2	Understand the need for technical change Traction
EEC603.3	Analysis the different rules of the traction
EEC603.4	Deploy Illumination Engineering for various tasks/activities/ locations.
EEC603.5	Synthesise the parameters of electric braking methods.
EEC603.6	Evaluate the parameters of Electrical Energy for any application



The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC604.1	Gain knowledge for analysing the performance of linear time invariant system
EEC604.2	Understand the basic concepts of control system
EEC604.3	Analyze system parameters to meet transient and steady state error performance specifications
EEC604.4	Apply the root locus and frequency response techniques to comment on stability
EEC604.5	Synthesise system using transfer function and state space
EEC604.6	Evaluate system parameters to yield stability

Class/Sem: T.E/VI

Course Name: Microcontroller and its Applications

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC605.1	Gain knowledge of microcontrollers.
EEC605.2	Study and understand working of PIC 16 family.
EEC605.3	Understand the different types of instructions.
EEC605.4	Analyse the different types of coding.
EEC605.5	Synthesise of interfacing and its applications.
EEC605.6	Evaluate the different types microcontrollers based design.

Class/Sem: TE/VI

Course Name: Project Management

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC606.1	Gain knowledge of concept of project and Project Management
EEC606.2	Understand project selection and project appraisal.
EEC606.3	Synthesise the project planning and risk management.
EEC606.4	Apply different project execution, monitoring and controlling
EEC606.5	Analyse project closure and termination
EEC606.6	Evaluate various contracts and contract management.

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Class/Sem: B.E/VII

Course Name: Power System Operation  
and Control

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC701.1	Understand necessity of load flow study and different methods of solution of load flow studies
EEC701.2	Gain the knowledge about the utility interchange transaction and power pool
EEC701.3	Apply optimization methods for task like economic load dispatch
EEC701.4	Identify and analyze the dynamics of power systems and methods to improve stability of system
EEC701.5	Synthesise the different stability of power system.
EEC701.6	Evaluate voltage stability and methods to improve stability

Class/Sem: B.E/VII

Course Name: High Voltage DC Transmission

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC702.1	Gain the knowledge of HVDC system and its impact on existing power system.
EEC702.2	Illustrate the networking of the bridge rectifier.
EEC702.3	Analysis the control characteristics of the converter circuit.
EEC702.4	Apply the filters in HVDC transmission.
EEC702.5	Synthesise the trouble caused by harmonics in HVDC system.
EEC702.6	Evaluate faults in system and protection against it.

Class/Sem: B.E/VII

Course Name: Electrical Machine Design

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC703.1	Knowledge of various aspects of Electrical Machine Design and make them aware of recent trends in design.
EEC703.2	Understand design of various three phase transformer and three phase induction motor.
EEC703.3	Analyse the physical dimensions of different parts of the machine to the rating
EEC703.4	Apply optimization in design.
EEC703.5	Synthesise leakage reactance for parallel sided slot three induction motor
EEC703.6	Evaluate, design and testing of three phase transformer and three phase induction motor

Class/Sem: B.E/VII

Course Name: Control System - II

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC704.1	Gain knowledge on controllers, compensators, digital control system and PLC
EEC704.2	Understand the automation of basic systems using PLC
EEC704.3	Analyse the performance of any system using various techniques like state space, Bode Plot and Digital Control
EEC704.4	Apply the controllers and compensators in appropriate circumstances
EEC704.5	Synthesise the design of lag, lead, lag-lead compensators
EEC704.6	Evaluate the effect of controllers and compensators on the control system

Class/Sem: B.E/VII

Course Name: High Voltage Engineering

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEE701.1	Gain knowledge of Electrostatic Fields, their control and estimation and simulation methods.
EEE701.2	Understand Conduction and breakdown in air and other gaseous dielectrics in electric fields and Practical considerations.
EEE701.3	Analyse different method for application of liquid and solid insulating materials in electrical power apparatus.
EEE701.4	Application of various methodology for Generation & Measurement of High voltage and Currents
EEE701.5	Synthesise the testing and evaluation of dielectric materials and power apparatus
EEE701.6	Evaluate High Voltage laboratory–design, planning and layout



Class/Sem: B.E/VII

Course Name: Project-I

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC706.1	Work as a team in co-ordination within the prescribed span of time, fiscal estimate, design plan etc
EEC706.2	Understand the project plan, design and assess the hardware and software requirement.
EEC706.3	Apply relevant knowledge and skills.
EEC706.4	Analyse the process of making and testing.
EEC706.5	Synthesis project cost and proposed budget.
EEC706.6	Implement society oriented real time applications.

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Class/Sem: B.E./VIII

Course Name: Design, Management and  
Auditing of Electrical Systems

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC801.1	Get basic knowledge of designing electrical distribution network
EEC801.2	Understand electrical energy audit in the distribution system
EEC801.3	Analysis the sizing, selecting transformer, switchgear and cable as required for distribution system
EEC801.4	Illustrate the application of energy audit.
EEC801.5	Synthesise the Electricity billing.
EEC801.6	Evaluate Energy management of Electrical Systems

Class/Sem: B.E/VIII

Course Name: Drives and Control

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC802.1	Gain knowledge of fundamental element of drive system
EEC802.2	Understand the quadrant operation of various types drives and their control requirement
EEC802.3	Analyze various converters used for AC and DC drive.
EEC802.4	Understand various application of DC and AC Drive
EEC802.5	Synthesise rating of motors
EEC802.6	Evaluate steady state and transient behaviour of drives

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC803.1	Gain knowledge to plan a small Generation and Transmission system and predict its behaviour, in order to achieve reliability.
EEC803.2	Understand the different power system planning and forecasting techniques.
EEC803.3	Estimate and optimize the power system reliability using various methods.
EEC803.4	Synthesise reliability, indices of the power system based on system model and the load curve
EEC803.5	Analyse a generation system model for the power system in terms of frequency and duration of failure
EEC803.6	Evaluate probability and reliability of basic reliability indices

Class/Sem: B.E/VIII

Course Name: Flexible AC Transmission  
Systems

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEE801.1	Gain knowledge on basic concepts of FACTS
EEE801.2	Understand problems in high voltage AC transmission
EEE801.3	Analyse the type of FACTS controllers for different compensation
EEE801.4	Apply the appropriate type of compensation needed for an application
EEE801.5	Synthesise the flexibility in power transmission
EEE801.6	Evaluate proper solution to mitigate the problems in power system

The students will be able to:

<b>Course Code</b>	<b>Course Outcome Statements</b>
EEC805.1	Work in team and handled different tools to ensure satisfactory completion of project in all respect.
EEC805.2	Able to design and analyse problem on area where the student like to acquire specialized skills.
EEC805.3	Analyse the process of making and testing.
EEC805.4	Communicate effectively finding in verbal and written forms.
EEC805.5	Evaluate and critically access own and other scientific result.
EEC805.6	Provide solution to the current issue faced by society.