



MACET
MARTHANDAM COLLEGE OF
ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Course Outcomes



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

| S.No | Sem | Course Code | Course Name |
|------|-----|-------------|---|
| 1. | I | HS8151 | Communicative English |
| 2 | I | MA8151 | Engineering Mathematics |
| 3 | I | PH8151 | Engineering Physics |
| 4 | I | CY8151 | Engineering Chemistry |
| 5 | I | GE8151 | Problem Solving and Python Programming |
| 6 | I | GE8152 | Engineering Graphics |
| 7 | I | GE 8161 | Problem Solving and Python Programming Laboratory |
| 8 | I | BS8161 | Physics and Chemistry Laboratory (Group A) |
| 9 | I | BS8161 | Physics and Chemistry Laboratory (Group B) |
| 10 | II | HS8251 | Technical English |
| 11 | II | MA8251 | Engineering Mathematics -II |
| 12 | II | PH8253 | Physics for Electronics Engineering. |
| 13 | II | C205 | Circuit Theory |
| 14 | II | GE8291 | Environmental Science and Engineering |
| 15 | II | C208 | Electric Circuits Lab |
| 16 | II | GE8261 | Engineering Practices Laboratory (Group A) |
| 17 | II | GE8261 | Engineering Practices Laboratory (Group B) |
| 18 | III | MA8353 | Transforms And Partial Differential Equations |
| 19 | III | EE8301 | Electrical Machines 1 |
| 20 | III | EE8351 | Digital Logic Circuits |
| 21 | III | EE8391 | Electromagnetic Theory |
| 22 | III | ME8792 | Power Plant Engineering |
| 23 | III | EC8311 | Electronics Laboratory |
| 24 | III | EC8353 | Electron Devices And Circuits |
| 25 | III | EE8301 | Electrical Machines 1 |
| 26 | IV | IC8451 | Control Systems |



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|----|-----|---------|---|
| 27 | IV | EE8451 | Linear Integrated Circuits And Applications |
| 28 | IV | EE8401 | Electrical Machines II |
| 29 | IV | EE8411 | Electrical Machines II Laboratory |
| 30 | IV | EE8403 | Measurements and Instrumentation |
| 31 | IV | MA8491 | Numerical Methods |
| 32 | IV | C211 | Transmission and Distribution |
| 33 | IV | EE8412 | Technical Seminar |
| 34 | V | EE8511 | Control and Instrumentation Laboratory |
| 35 | V | EE8591 | Digital Signal Processing |
| 36 | V | CS8392 | Object Oriented Programming |
| 37 | V | EE8552 | Power Electronics |
| 38 | V | EE8551 | Microprocessors and Microcontrollers |
| 39 | V | OAN 551 | Sensors And Transducers |
| 40 | V | C301 | Power System Analysis |
| 41 | VI | EE8002 | Design of Electrical Apparatus |
| 42 | VI | EE8005 | Special Electrical Machines |
| 43 | VI | EE8611 | Mini Project |
| 44 | VI | EE8691 | Embedded System |
| 45 | VI | EE8681 | Microprocessors and Microcontrollers Laboratory |
| 46 | VI | EE8661 | Power Electronics and Drives Laboratory |
| 47 | VI | EE8602 | Protection And switchgear |
| 48 | VI | EE8601 | Solid State Drives |
| 49 | VII | EE8009 | Control Of Electrical Drives |
| 50 | VII | EE8703 | Renewable Energy systems |
| 51 | VII | EI 8075 | Fibre optics and laser Instruments |
| 52 | VII | EE8701 | High Voltage Engineering |
| 53 | VII | EE8702 | Power System Operation and Control |
| 54 | VII | EE8711 | Power System Simulation Laboratory |
| 55 | VII | EE8712 | Renewable Energy Systems Laboratory |



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| 56 | VII | OML751 | Testing of Material |
| 57 | VIII | EE8011 | Flexible AC Transmission systems |
| 58 | VIII | EI8073 | Biomedical Instrumentation |
| 59 | VIII | EE8811 | Project Work |

PROGRAM OUTCOMES (POs)

List of Program Outcomes

| | |
|-------------|---|
| PO1 | Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and engineering specialization to the solution for complex engineering problems. |
| PO2 | Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. |
| PO3 | Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations |
| PO4 | Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions. |
| PO5 | Modern Tool Usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of their limitations |
| PO6 | The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice |
| PO7 | Environment and Sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts and to demonstrate the knowledge and need for sustainable development. |
| PO8 | Ethics: Apply ethical principles and commit to professional ethics, responsibilities and norms of the engineering practice |
| PO9 | Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings |
| PO10 | Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large such as being able to |



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| | comprehend and write effective reports and design documentation and to make effective presentations and to give and receive clear instructions |
| PO11 | Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member and leader in a team to manage projects in multidisciplinary environments. |
| PO12 | Life-Long Learning: Recognize the need for preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

Program Specific Outcomes (PSOs)

List of Program Specific Outcomes

| | |
|-------------|---|
| PSO1 | Apply the Knowledge of Electrical and Electronics Engineering, to design products in core domain to meet the ever changing demands of industry and society. |
| PSO2 | Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in lifelong learning and to adapt in multi disciplinary environments. |
| PSO3 | Demonstrate the technical and physical principles of Renewable energies and communicate the technological, environmental and socio-economic issues around renewable energy resources. |



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I SEMESTER



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Course Code & Course Name: HS8151 – Communicative English

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|---|
| CO1 | To develop the basic reading and writing skills of first year engineering and technology students. |
| CO2 | To help learners develop their listening skills, which will, enable them listen to lectures and comprehend them by asking questions |
| CO3 | To help learners develop their speaking skills and speak fluently in real contexts. |
| CO4 | To help learners develop vocabulary of a general kind by developing their reading skills |

Course Code & Course Name: MA8151 &ENGINEERING MATHEMATICS-I

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|--|
| CO1 | Use the matrix algebra methods for solving practical problems |
| CO2 | Apply differential calculus tools in solving various application problems. |
| CO3 | Able to use differential calculus ideas on several variable functions. |
| CO4 | Apply different methods of integration in solving practical problems. |
| CO5 | Apply multiple integral ideas in solving areas, volumes and other practical problems |

Course Code & Course Name: PH8151 Engineering Physics

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|--|
| CO1 | The students will gain knowledge on the basics of properties of matter and its applications, |
| CO2 | The Students Will Acquire Knowledge On The Concepts Of Waves And Optical Devices And Their Applications in fibre optics, |



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| CO3 | The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers, |
| CO4 | The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and |
| CO5 | The students will understand the basics of crystals, their structures and different crystal growth techniques |

course Code & Course Name: CY8151 Engineering Chemistry

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|--|
| CO1 | The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning. |
|-----|--|

Course Code & Course Name:GE8151 Problem Solving And Python Programming

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|---|
| CO1 | Develop algorithmic solutions to simple computational problems Read, write, execute by hand simple Python programs. |
| CO2 | Structure simple Python programs for solving problems. |
| CO3 | Decompose a Python program into functions. |
| CO4 | Represent compound data using Python lists, tuples, dictionaries. |
| CO5 | Read and write data from/to files in Python Programs. |



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Course Code & Course Name: **GE8152 Engineering Graphics**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Construct curves used in engineering practices and free and sketching |
| CO2 | Project orthographic projections of lines and plane surfaces |
| CO3 | Construct orthographic projections of solids |
| CO4 | Project the section of solids and development of surfaces. |
| CO5 | Visualize and project isometric and perspective projections of simple solids |

Course Code & Course Name: **GE 8161 & Problem Solving and Python Programming Laboratory**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Write, test, and debug simple Python programs. |
| CO2 | Implement Python programs with conditionals and loops. |
| CO3 | Develop Python programs step-wise by defining functions and calling them. |
| CO4 | Use Python lists, tuples, dictionaries for representing compound data. |
| CO5 | Read and write data from/to files in Python. |

Course Code & Course Name: **BS8161 Physics and Chemistry Laboratory (Group A)**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters |
|------------|--|



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Course Code & Course Name: BS8161- Physics and Chemistry Laboratory (Group B)

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|---|
| CO1 | Apply principles of elasticity, optics and thermal properties for engineering applications. |
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II SEMESTER



Course Code & Course Name: HS3251 – Technical English

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Read technical texts and write area- specific texts effortlessly. |
| CO2 | Listen and comprehend lectures and talks in their area of Specialization successfully. |
| CO3 | Speak appropriately and effectively in varied formal and informal contexts. |
| CO4 | Write reports and winning job applications |

Course Code & Course Name: MA8251/Engineering Mathematics -II

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-------------|---|
| CO 1 | Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices. |
| CO 2 | Gradient, divergence and curl of a vector point function and related identities |
| CO 3 | Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification |
| CO 4 | Analytic functions, conformal mapping and complex integration |
| CO 5 | Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients. |



Course Code & Course Name:PH8253, Physics for Electronics Engineering.

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Gain knowledge on classical and quantum electron theories, and energy band structures |
| CO2 | Acquire knowledge on basics of semiconductor physics and its applications in various devices |
| CO3 | Get knowledge on magnetic and dielectric properties of materials |
| CO4 | Have the necessary understanding on the functioning of optical materials for optoelectronics |
| CO5 | Understand the basics of quantum structures and their applications in spintronics and carbon electronics |

Course Code & Course Name :C205 CircuitTheory

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | To introduce electric circuits and its analysis |
| CO2 | To impart knowledge on solving circuit equations using network theorems |
| CO3 | To introduce the phenomenon of resonance in coupled circuits |
| CO4 | To educate on obtaining the transient response of circuits |
| CO5 | To introduce Phasor diagrams and analysis of three phase circuits. |



Course Code & Course Name: GE8291 Environmental Science and Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course. |
| CO2 | Public awareness of environmental is at infant stage. |
| CO3 | Ignorance and incomplete knowledge has lead to misconceptions . |
| CO4 | Development and improvement in std. of living has lead to serious environmental disasters |

Course Code & Course Name: GE8261 & Engineering Practices Laboratory (Group A)

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Fabricate carpentry components, pipe connections including plumbing works & use welding equipments to join the structures. |
| CO2 | Carry out the basic machining operations |
| CO3 | Make the models using sheet metal works |
| CO4 | Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings |
| CO5 | Carry out basic home electrical works and appliances, measure the electrical quantities and elaborate on the components, gates, soldering practices. |



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Course Code & Course Name: GE8261 & Engineering Practices Laboratory (Group B)

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|---|
| CO1 | Carry out basic home electrical works and appliances |
| CO2 | Measure the electrical quantities |
| CO3 | Elaborate on the components, gates, soldering practices |

course Code & Course Name: C208 Electric Circuits Lab

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|-----|---|
| CO1 | To Understand and apply circuit theorems and concepts in engineering applications |
| CO2 | To Simulate electric circuits. |

PROGRAM OUTCOMES (POs)

List of Program Outcomes

| | |
|-----|---|
| PO1 | Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and engineering specialization to the solution for complex engineering problems. |
| PO2 | Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. |
| PO3 | Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations |
| PO4 | Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation |



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|-------------|---|
| | of data and synthesis of the information to provide valid conclusions. |
| PO5 | Modern Tool Usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of their limitations |
| PO6 | The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice |
| PO7 | Environment and Sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts and to demonstrate the knowledge and need for sustainable development. |
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| PO9 | Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings |
| PO10 | Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large such as being able to comprehend and write effective reports and design documentation and to make effective presentations and to give and receive clear instructions |
| PO11 | Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member and leader in a team to manage projects in multidisciplinary environments. |
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Program Specific Outcomes (PSOs)

List of Program Specific Outcomes

| | |
|-------------|---|
| PSO1 | Apply the Knowledge of Electrical and Electronics Engineering, to design products in core domain to meet the ever changing demands of industry and society. |
| PSO2 | Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in lifelong learning and to adapt in multi disciplinary environments. |
| PSO3 | Demonstrate the technical and physical principles of Renewable energies and |



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| | communicate the technological, environmental and socio-economic issues around renewable energy resources. |
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III SEMESTER

Course Code & Course Name: **MA8353&Transforms And Partial Differential Equations**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Understand how to solve the given standard partial differential equations. |
| CO2 | Solve differential equations using Fourier series analysis which plays a vital role in engineering applications. |
| CO3 | Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations. |
| CO4 | Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering. |
| CO5 | Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems. |



Course Code & Course Name: EE8301 – Electrical Machines 1

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to analyze the magnetic-circuits. |
| CO2 | Ability to acquire the knowledge in constructional details of transformers. |
| CO3 | Ability to understand the concepts of electromechanical energy conversion |
| CO4 | Ability to acquire the knowledge in working principles of DC Generator. |
| CO5 | Ability to acquire the knowledge in working principles of DC Motor |
| CO6 | Ability to acquire the knowledge in various losses taking place in D.C. Machines |

Course Code & Course Name : **EE8351 Digital Logic Circuits**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to design combinational and sequential Circuits. |
| CO2 | Ability to study various number systems and simplify the logical expressions using Boolean functions |
| CO3 | Ability to design various synchronous and asynchronous circuits |
| CO4 | Ability to introduce asynchronous sequential circuits and PLDs |
| CO5 | Ability to introduce digital simulation for development of application oriented logic circuits |

Course Code & Course Name : **EE8391 Electromagnetic Theory**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to understand the basic mathematical concepts related to electromagnetic vector fields. |
| CO2 | Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications |
| CO3 | Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector |



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| | potential and its applications. |
| CO4 | Ability to understand the different methods of emf generation and Maxwell's equations |
| CO5 | Ability to understand the basic concepts electromagnetic waves ,characterizing parameters and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems |

Course Code & Course Name: ME8792 Power Plant Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Explain the layout, construction and working of the components inside a thermal power plant |
| CO2 | Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants. |
| CO3 | Explain the layout, construction and working of the components inside nuclear power plants. |
| CO4 | Explain the layout, construction and working of the components inside Renewable energy power plants. |
| CO5 | Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production |

Course Code & Course Name : EC8311 Electronics Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to understand and analyze Diodes |
| CO2 | Ability to understand and analyze Transistors |
| CO3 | Ability to understand and analyze Rectifiers |
| CO4 | Ability to understand and analyze Oscillators |
| CO5 | Ability to understand and analyze Photo semiconductor Device |

Course Code & Course Name :EC8353 Electron Devices And Circuits

COURSE OUTCOMES (COs)



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List of Course Outcomes

| | |
|------------|--|
| CO1 | Explain the structure and working operation of basic electronic devices |
| CO2 | Able to identify and differentiate both active and passive elements |
| CO3 | Analyze the characteristics of different electronic devices such as diodes and transistors |
| CO4 | Choose and adapt the required components to construct an amplifier circuit |
| CO5 | Employ the acquired knowledge in design and analysis of oscillators |

Course Code & Course Name: EE8301 Electrical Machines 1

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to analyze the magnetic-circuits. |
| CO2 | Ability to acquire the knowledge in constructional details of transformers. |
| CO3 | Ability to understand the concepts of electromechanical energy conversion |
| CO4 | Ability to acquire the knowledge in working principles of DC Generator. |
| CO5 | Ability to acquire the knowledge in working principles of DC Motor |
| CO6 | Ability to acquire the knowledge in various losses taking place in D.C. Machines |



IV SEMESTER

Course Code & Course Name: IC8451 Control Systems

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to develop various representations of system based on the knowledge of Mathematics, Science and Engineering fundamentals. |
| CO2 | Ability to do time domain analysis of various models of linear system. |
| CO3 | Ability to do frequency domain analysis of various models of linear system. |



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|------------|---|
| CO4 | Ability to interpret characteristics of the system to develop mathematical model and design appropriate compensator for the given specifications to understand use of PID controller in closed loop system. |
| CO5 | Ability to come out with solution for complex control problem. |

Course Code & Course Name: EE8451 Linear Integrated Circuits And Applications

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to acquire knowledge in IC fabrication procedure |
| CO2 | Ability to analyze the characteristics of Op-Amp |
| CO3 | To understand the importance of Signal analysis using Op-amp based circuits |
| CO4 | Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits |
| CO5 | To understand and acquire knowledge on the Applications of Op-amp Ability to understand and analyse, linear integrated circuits their Fabrication and Application |

Course Code & Course Name: EE8401 Electrical Machines II

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to understand the construction and working principle of Synchronous Generator |
| CO2 | Ability to understand MMF curves and armature windings. |
| CO3 | Ability to acquire knowledge on Synchronous motor. |
| CO4 | Ability to understand the construction and working principle of Three phase Induction motor |
| CO5 | Ability to understand the construction and working principle of Special Machines |

Course Code & Course Name: EE8411 Electrical Machines II Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes



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| | |
|------------|--|
| CO1 | Ability to understand and analyze EMF and MMF methods. |
| CO2 | Ability to analyze the characteristics of V and Inverted V curves. |
| CO3 | Ability to understand the importance of Synchronous machines. |
| CO4 | Ability to understand the importance of Induction Machines. |
| CO5 | Ability to acquire knowledge on separation of losses. |

Course Code & Course Name: **EE8403 Measurements and Instrumentation**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | To acquire knowledge on Basic functional elements of instrumentation |
| CO2 | To understand the concepts of Fundamentals of electrical and electronic components |
| CO3 | Ability to compare between various measurement techniques |
| CO4 | To acquire knowledge on Various storage and display devices |
| CO5 | To understand the concepts Various transducers and the data acquisition systems and to understand the concepts of Fundamentals of electrical and electronic Instruments |

Course Code & Course Name: **MA8491 Numerical Methods**

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Understand the basic concepts and techniques of solving algebraic and transcendentalequations. |
| CO2 | Appreciate the numerical techniques of interpolation and error approximations in variousintervals in real life situations. |
| CO3 | Apply the numerical techniques of differentiation and integration for engineering problems. |
| CO4 | Understand the knowledge of various techniques and methods for solving first and secondorder ordinary differential equations. |
| CO5 | Solve the partial and ordinary differential equations with initial and boundary conditions byusing certain techniques with engineering applications |



Course Code & Course Name: C211 Transmission and Distribution

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | To understand the importance and the functioning of transmission line parameters |
| CO2 | To understand the concepts of Lines and Insulators and To acquire knowledge on the performance of Transmission lines |
| CO3 | To understand the importance of distribution of the electric power in power system |
| CO4 | To acquire knowledge about underground cables. |
| CO5 | To become familiar with the function of different components used in Transmission and Distribution levels of power system and modeling of these components |

Course Code & Course Name: EE8412 Technical Seminar

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to review, prepare and present technological developments |
| CO2 | Ability to face the placement interviews |



V SEMESTER

Course Code & Course Name: EE8511 Control and Instrumentation Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to design compensators |
| CO2 | Ability to analyze the various types of converters. |
| CO3 | Ability to understand control theory and apply them to electrical engineering problems and to study the simulation packages. |



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|------------|--|
| CO4 | Ability to study the simulation packages. |
| CO5 | Ability to the basics of signal conditioning circuits. |

Course Code & Course Name : EE8591 Digital Signal Processing

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to acquire knowledge on Signals and systems & their mathematical representation. |
| CO2 | Ability to understand and analyze the discrete time systems. |
| CO3 | Ability to analyze the transformation techniques & their computation. |
| CO4 | Ability to understand the type of filters and their design for digital implementation. |
| CO5 | Ability to acquire knowledge on programmability digital signal processor & quantization effects. |

Course Code & Course Name : CS8392 Object Oriented Programming

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Develop Java programs using OOP principles |
| CO2 | Develop Java programs with the concepts inheritance and interfaces |
| CO3 | Build Java applications using exceptions and I/O streams |
| CO4 | Develop Java applications with threads and generics classes |
| CO5 | Develop interactive Java programs using swings |

Course Code & Course Name: EE8552 Power Electronics

COURSE OUTCOMES (COs)

List of Course Outcomes



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| | |
|------------|--|
| CO1 | Classify & compare the various Power Electronics devices such as SCR, TRIAC, MOSFET, IGBT, GTO etc. & its characteristics and switching. |
| CO2 | Analyze AC/DC rectifier circuit & to determine the performance parameters. |
| CO3 | Understand and analyze the operation of DC/DC converter circuits |
| CO4 | Illustrate the operation of DC/AC inverter circuit & provide solution for harmonic reduction. |
| CO5 | Analyze AC/AC converter circuit and to outline the role of power electronics play in the improvement of energy usage efficiency |

Course Code & Course Name: EE8551 Microprocessors and Microcontrollers

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to explain the architecture, addressing modes and interrupts of 8085 |
| CO2 | Ability to acquire knowledge in instruction set of 8085 |
| CO3 | Ability to explain the architecture, instruction set of 8051 microcontroller. |
| CO4 | Ability to understand the importance of Interfacing |
| CO5 | Ability to write the assembly language programme and the ability to develop Microprocessor and Microcontroller based applications. |

Course Code & Course Name : OAN 551Sensors And Transducers

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Expertise in various calibration techniques and signal types for sensors. |
| CO2 | Apply the various sensors in the Automotive and Mechatronics applications |
| CO3 | Study the basic principles of various Magnetic sensors |
| CO4 | Study the basic principles of various smart sensors |
| CO5 | Implement the DAQ systems with different sensors for real time applications |



| | |
|------|-----------------------|
| C301 | Power System Analysis |
|------|-----------------------|

Course Code & Course Name :C301 Power System Analysis

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to model the power system under steady state operating condition |
| CO2 | Ability to understand and apply iterative techniques for power flow analysis |
| CO3 | Ability to model and carry out short circuit studies on power system |
| CO4 | Ability to model and analyze stability problems in power system |
| CO5 | Ability to acquire knowledge on Fault analysis and to understand various power system components and carry out power flow, short circuit and stability studies. |



VI SEMESTER

Course Code & Course Name: EE8002 Design of Electrical Apparatus

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to understand basics of design considerations for rotating and static electrical machines |
| CO2 | Ability to design of field system for its application. |
| CO3 | Ability to design single and three phase transformers. |
| CO4 | Ability to design armature and field of DC machines. |
| CO5 | Ability to design stator and rotor of induction motor. |



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|------------|---|
| CO6 | Ability to design and analyze synchronous machines. |
|------------|---|

Course Code & Course Name: EE8005Special Electrical Machines

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to acquire the knowledge on construction and operation of stepper motor. |
| CO2 | Ability to construction, principle of operation, switched reluctance motors. |
| CO3 | Ability to acquire the knowledge on construction and operation of permanent magnet brushless D.C. motors. |
| CO4 | Ability to acquire the knowledge on construction and operation of permanent magnet synchronous motors. |
| CO5 | Ability to select a special Machine for a particular application. |

Course Code & Course Name: EE8611Mini Project

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | On completion of the project students will be in a position to take up their final year project work and find solution by formulating proper methodology |
|------------|--|

Course Code & Course Name:EE8691 Embedded System

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to understand and analyze Embedded systems. |
| CO2 | Ability to suggest an embedded system for a given application. |
| CO3 | Ability to operate various Embedded Development Strategies |
| CO4 | Ability to study about the bus Communication in processors and ability to acquire |



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| | |
|------------|---|
| | knowledge on various processor scheduling algorithms |
| CO5 | Ability to understand basics of Real time operating system. |

Course Code & Course Name : EE8681 Microprocessors and Microcontrollers Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to understand and apply computing platform and software for engineering problems. |
| CO2 | Ability to acquire knowledge on A/D and D/A. |
| CO3 | Ability to understand basics of serial communication. |
| CO4 | Ability to understand and impart knowledge in DC and AC motor interfacing. |
| CO5 | Ability to understand basics of software simulators |

Course Code & Course Name :EE8661 Power Electronics and Drives Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to practice and understand converter and inverter circuits and apply software for engineering problems |
| CO2 | Ability to experiment about switching characteristics various switches. |
| CO3 | Ability to analyze about AC to DC converter circuits and Ability to analyze about DC to AC circuits. |
| CO4 | Ability to acquire knowledge on AC to AC converters |
| CO5 | Ability to acquire knowledge on simulation software. |

Course Code & Course Name :EE8602Protection And switchgear

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to find the causes of abnormal operating conditions of the apparatus and system. |
|------------|--|



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|------------|---|
| CO2 | Ability to analyze the characteristics and functions of Electromagnetic Relays. |
| CO3 | Ability to study about the apparatus protection |
| CO4 | Ability to study about the static and numerical relays. |
| CO5 | Ability to acquire knowledge on functioning of circuit breaker. |

Course Code & Course Name EE8601 Solid State Drives

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to study about the steady state operation and transient dynamics of a motor load system. |
| CO2 | Ability to analyze the operation of the converter/chopper fed dc drive. |
| CO3 | Ability to analyze the operation and performance of induction motor drives. |
| CO4 | Ability to analyze the operation and performance of synchronous motor drives. |
| CO5 | Ability to analyze and design the current and speed controllers for a closed loop solid state DC motor drive. |



VII SEMESTER

Course Code & Course Name : EE8009 Control Of Electrical Drives

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | To understand the DC drive control. |
| CO2 | To study and analyze the Induction motor drive control. |
| CO3 | To study and understand the Synchronous motor drive control. |
| CO4 | To study and analyze the SRM and BLDC motor drive control. |
| CO5 | To analyze and design the Digital control for drives |



Course Code & Course Name: EE8703 Renewable Energy systems

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to create awareness about renewable Energy Sources and technologies. |
| CO2 | Ability to explain the Wind energy resources and technologies and their applications. |
| CO3 | Ability to explain the solar energy resources and technologies and their applications. |
| CO4 | Ability to explain the basics about biomass energy. |
| CO5 | Ability to explain the other renewable energy sources technologies and their applications. |

Course code & Course Name: EI 8075 Fibre optics and laser Instruments

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Understand the principle, transmission, dispersion and attenuation characteristics of optical fibers |
| CO2 | Apply the gained knowledge on optical fibers for its use as communication medium and as sensor as well which have important applications in production, manufacturing industrial and biomedical applications |
| CO3 | Understand laser theory and laser generation system. |
| CO4 | Students will gain ability to apply laser theory for the selection of lasers for a specific Industrial Applications |
| CO5 | Students will gain ability to apply laser theory for the selection of lasers for a specific medical application |

Course Code & Course Name: EE8701 High Voltage Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes



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| | |
|------------|--|
| CO1 | Ability to understand Transients in power system. |
| CO2 | Ability to understand breakdown mechanisms in dielectrics |
| CO3 | Ability to understand Generation of high voltages and high currents. |
| CO4 | Ability to measure high voltages and high currents. |
| CO5 | Ability to test power apparatus and insulation coordination. |

Course Code & Course Name :EE8702 Power System Operation and Control

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to understand the day-to-day operation of electric power system. |
| CO2 | Ability to analyze the control actions to be implemented on the system to meet the minute-to-minute variation of system demand. |
| CO3 | Ability to understand the significance of power system operation and control |
| CO4 | Ability to acquire knowledge on real power-frequency interaction and to understand the reactive power-voltage interaction. |
| CO5 | Ability to design SCADA and its application for real time operation. |

Course Code & Course Name :EE8711 Power System Simulation Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to understand power system planning and operational studies. |
| CO2 | Ability to acquire knowledge on Formation of Bus Admittance and Impedance Matrices and Solution of Networks. |
| CO3 | Ability to analyze the power flow using GS and NR method |
| CO4 | Ability to find Symmetric and Unsymmetrical fault |
| CO5 | Ability to understand the economic dispatch and to analyze the electromagnetic transients. |

Course Code & Course Name: EE8712 Renewable Energy Systems Laboratory



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COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to understand and analyze Renewable energy systems |
| CO2 | Ability to simulate the various Renewable energy sources. |
| CO3 | Ability to train the students in Renewable Energy Sources and technologies. |
| CO4 | Ability to recognize current and possible future role of Renewable energy sources. |
| CO5 | Ability to understand basics of Intelligent Controllers. |

Course Code & Course Name: OML751 Testing of Material

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Illustrate the vectorial and scalar representation of forces and moments |
| CO2 | Analyse the rigid body in equilibrium |
| CO3 | Evaluate the properties of distributed forces |
| CO4 | Determine the friction and the effects by the laws of friction |
| CO5 | Calculate dynamic forces exerted in rigid body |



VIII SEMESTER

Course Code & Course Name: EE8011 Flexible AC Transmission systems

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|--|
| CO1 | Ability to understand, analyze and develop analytical model of FACTS. |
| CO2 | Ability to understand Controller for power system application. |
| CO3 | Ability to understand the concepts about load compensation techniques. |



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| | |
|------------|--|
| CO4 | Ability to acquire knowledge on facts devices. |
| CO5 | Ability to understand the start-of-art of the power system |

Course Code & Course Name :EI8073Biomedical Instrumentation

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|------------|---|
| CO1 | Ability to understand the philosophy of the heart, lung, blood circulation and respiration system |
| CO2 | Ability to provide latest ideas on devices of non-electrical devices |
| CO3 | Ability to gain knowledge on various sensing and measurement devices of electrical origin |
| CO4 | Ability to understand the analysis systems of various organ types |
| CO5 | Ability to explain the medical assistance/techniques, robotic and therapeutic equipments |

Course Code & Course Name: EE8811Project Work

COURSE OUTCOMES (COs)

List of Course Outcomes

| | |
|---------------|--|
| C411.1 | Ability to take up any challenging Practical problems and find solution by formulating proper methodology. |
|---------------|--|