

**2014-2015**

**ELECTRICAL & ELECTRONICS ENGINEERING**

## ACADEMIC YEAR 2014-2015

### Odd Semester

#### S5 EEE (2012 Batch)- 2008 Scheme

Sl no	Course code	Subject name	Staff handled
1	08.501	Engineering Mathematics IV	Sumi S.
2	08.502	Electronic Instrumentation	Aryamol Sudhakaran
3	08.503	Electrical Measurements	Karthika
4	08.504	Electrical Machines II	Aswathy
5	08.505	Power Electronics	Mrudul Raj
6	08.506	New and Renewable Energy Sources	Chandu S.
7	08.507	Digital Electronics Lab	Dhanya
8	08.508	Electrical Measurements & Instrumentation Lab	Karthika

### COURSE OBJECTIVES AND COURSE OUTCOMES FOR

#### 08.501: ENGINEERING MATHEMATICS IV COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide a basic understanding of random variables and probability distributions.	After successful completion of this course, the students will be familiar with the large scale applications of linear programming techniques which require only a few minutes on the computer.

2	Mathematical programming techniques are introduced as a part of this course.	Also they will be familiar with the concepts of probability distributions which are essential in transportation engineering.
3	These techniques are concerned with the allotment of available resources so as to minimize cost or maximize profit subject to prescribed restrictions.	

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.502 ELECTRONIC INSTRUMENTATION COURSE**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the basic concepts related to the operation of Electrical and Electronic Measuring Instruments.	Apply the knowledge about the instruments to use them more effectively
2	Maintain various electronic, test and measuring instrument.	Suggest the kind of instrument suitable for typical measurements
3	Differentiate between moving iron and moving coil type instruments	Will help to develop skills to measure electrical parameters using various instruments.
4	Discriminate between energy and power.	Students will able to know basics of various Instruments, transducers and working of electronic circuits used in electronic test and measuring instrument.
5		Measure parameters viz. Amplitude,

		frequency and time period using CRO
6		Understand working principle of various analogue electrical measuring instruments.

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.503 ELECTRICAL MEASUREMENTS II**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To develop understanding of various magnetic measuring devices	Explain working and application of CRO
2	Understanding of illumination and its laws	To draw the phasor diagram of instrument transformers.
3	To develop understanding about instrument transformers and its types	To know about definitions of illumination.
4	Use Signal Generator, frequency counter, CRO and digital IC tester for appropriate measurement	Methods for measuring high current and high voltage.
5		Types of lissajous patterns obtained in the CRO

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.504 ELECTRICAL MACHINES II**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:

<b>1</b>	<b>Identify alternator types, and appreciate their performance.</b>	<b>The ability to formulate and then analyze the working of any electrical machine under loaded and unloaded conditions</b>
<b>2</b>	<b>Determine the voltage regulation and analyze their performance.</b>	<b>The skill to analyze the response of any electrical machine.</b>
<b>3</b>	<b>Describe the principle of operation of synchronous motors and different applications.</b>	<b>The students will be able to explain how synchronous machines work</b>
<b>4</b>	<b>To give exposure to the students about the concepts of alternating current machines including the Constructional details, principle of operation and performance analysis.</b>	<b>The students will have a basic knowledge on synchronous machines with an understanding of fundamental concepts.</b>
<b>5</b>		<b>The ability to troubleshoot the operation of an electrical machine.</b>
<b>6</b>		<b>The understanding of areas of application of synchronous machines</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.505 POWER ELECTRONICS**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To get an overview of different types of power semiconductor devices and their switching characteristics.</b>	<b>Choose appropriate power semiconductor device in converter circuits and develop their triggering circuits</b>

<b>2</b>	<b>To study the operation and characteristics of various types of power electronic converters.</b>	<b>Analyze various types of power electronic converters and apply different switching techniques</b>
<b>3</b>	<b>To study advanced converters and switching techniques implemented in recent technology</b>	<b>Select appropriate power converter for specific applications</b>
<b>4</b>	<b>To prepare the students to analyze and design different chopper circuits.</b>	<b>Interpret and use datasheets of power semiconductor devices for design</b>
<b>5</b>		<b>Ability to express communication methods.</b>
<b>6</b>		<b>Design of power electronic converters in power control applications</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.506 NEW & RENEWABLE ENERGY SOURCES**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To understand and analyze the present and future energy demand of world and nation</b>	<b>know the energy demand of world, nation and available resources to fulfill the demand</b>
<b>2</b>	<b>Techniques to exploit the available renewable energy resources such as, solar, bio-fuels, wind power, tidal and geothermal effectively.</b>	<b>Know about the exploration of nonconventional energy resources and their effective tapping technologies</b>
<b>3</b>	<b>To impart knowledge about different types of energy sources.</b>	<b>Know the Effective utilization of available renewable energy resources</b>

<b>4</b>	<b>To create awareness on the principles of conversion of heat</b>	<b>Acquire the knowledge of modern energy conversion technologies</b>
<b>5</b>		<b>Explain the principle of different technologies for generating power from renewable energy sources</b>
<b>6</b>		<b>Explain the concepts of solar, wind, ocean and geothermal energy</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
DIGITAL ELECTRONICS AND CIRCUITS (2008)**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
1	Provide students with an understanding of how to analyze, build, and troubleshoot digital circuits	To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuit
2	Proficient in using oscilloscopes, signal analyzers, and similar equipment to test digital circuits.	To identify basic requirements for a design application and propose a cost effective solution.
3	Demonstrate theoretical device/circuit operation implemented in properly constructed digital circuits.	Identify and prevent various hazards and timing problems in a digital design
4	Able to apply creativity through the use of project-based work to the design of circuits, systems or processes.	To develop skill to build, and troubleshoot digital circuits.
5		To understand, analyze and design various combinational and sequential circuits.

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.508 ELECTRICAL MEASUREMENTS AND INSTRUMENTATION LAB**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To prepare the students to have a basic knowledge of basic integrator differentiator and summer circuits.	Ability to conduct experiments on op-amp circuits.
2	To prepare the students to have a basic transducers.	Ability to conduct experiments using transducer kits such as LVDT, thermistor, thermocouple etc.
3	The ability to conduct using bridge circuits.	Have knowledge of range extension of ammeter and voltmeter using Kelvin's double bridge and wheaston's bridge..
4	To expose the students to the operation potentiometers.	Understand the measurement and calibration of vernier dial potentiometer and slide wire potentiometer.
5	Study of energy meters.	Calibration of single phase and 3 phase energy meters



**S3 EEE (2013 Batch)- 2013 Scheme**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
<b>1</b>	13.301	Engineering Mathematics	Ms.Liji
<b>2</b>	13.302	Humanities	Prof.Rajan
<b>3</b>	13.303	Networks and Systems	Ms.Rinu
<b>4</b>	13.304	Analog Electronics	Ms.Ponnambili
<b>5</b>	13.305	Dc Machines and Transformers	Mr.Chandu
<b>6</b>	13.306	Hydraulic Machines and Heat Engines	Mr.Krishnadas
<b>7</b>	13.307	Electronic Circuits lab	Ms.Sony
<b>8</b>	13.308	Hydraulic Machines and Heat Engines Lab	Mr.Sudeep

**COURSE OBJECTIVES AND COURSE OUTCOME FOR****13.301: ENGINEERING MATHEMATICS II COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>This course provides students a basic understanding of vector</b>	<b>At the end of the course, the students will have the basic concepts of vector analysis.</b>

	<b>calculus, Fourier series and Fourier transforms which are very useful in many engineering fields.</b>	
<b>2</b>	<b>Partial differential equations and its applications are also introduced as a part of this course.</b>	<b>At the end of the course, the students will have the basic concepts of Fourier series, Fourier transforms which they can use later to solve problems related to engineering fields.</b>
<b>3</b>		<b>At the end of the course, the students will have the basic concepts of Partial differential equations</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
13.302: HUMANITIES COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To explore the way in which economic forces operate in the Indian Economy.</b>	<b>The students will be acquainted with its basic concepts, terminology, principles and assumptions of Economics.</b>
<b>2</b>	<b>The subject will cover analysis of sectors, dimensions of growth, investment, inflation and the role of government will also be examined.</b>	<b>It will help students for optimum or best use of resources of the country</b>
<b>3</b>	<b>The principle aim of this subject is to provide students with some basic techniques of economic analysis to understand the economic processes with particular reference to India.</b>	<b>It helps students to use the understanding of Economics of daily life</b>
<b>4</b>	<b>To give basic concepts of book</b>	<b>The students will get acquainted with the</b>

	keeping and accounting	basics of book keeping and accounting
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**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
13.303 NETWORK & SYSTEM**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	Use network techniques, like node analysis and loop analysis, to write equations for large linear circuits	To solve the electrical network using mesh and nodal analysis by applying network theorems.
2	Apply Thevenin and Norton theorems to analyze and design for maximum power transfer	To understand the concept of circuit elements lumped circuits, waveforms, circuit laws and network reduction
3	Apply the concept of linearity and the associated technique of superposition to circuits and networks	To solve the electrical network using mesh and nodal analysis by applying network theorems.
4	Use complex numbers to develop impedance and admittance concepts and solve ac steady state circuits, and determine dc and single phase ac power in simple passive circuits	To understand the concept of active, reactive and apparent powers, power factor and resonance in series and parallel circuits.
5		know the basic concepts of coupled circuits, three phase loads and power measurement
		To analyze the transient response of series and parallel

<b>6</b>		<b>A.C. circuits and to solve problems in time domain using Laplace Transform</b>
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**COURSE OBJECTIVE AND COURSE OUTCOME FOR**

**13.304: ANALOG ELECTRONICS (E)**

<b>SI NO:</b>	<b>COURSE OBJECTIVE</b>	<b>COURSE OUTCOMES</b>
<b>1</b>	<b>To impart an in depth knowledge in electronic semiconductor devices and circuits giving importance to the various aspects of design and analysis.</b>	<b>Able to bias transistor and attain bias stability.  Able to analyze amplifier circuits.</b>
<b>2</b>	<b>Depth knowledge about the structure, working, biasing of JFET and MOSFET.</b>	<b>Able to design and compare different oscillators and waveform generators</b>
<b>3</b>	<b>Understand their capabilities and limitations and make decisions regarding their best utilization in a specific situation. Study large signal amplifiers and feedback amplifiers</b>	<b>Acquire reasonable proficiency in the analysis and design of power amplifiers and feedback amplifiers</b>
<b>4</b>	<b>To provide a sound understanding of the fundamentals of operational amplifier circuits. Analyze differential amplifiers and study the applications of opamp.</b>	<b>Able to design the opamp circuits.</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR**

**13.305 DC MACHINES AND TRANSFORMERS**

		<b>Course Outcomes</b>
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<b>Sl. No.</b>	<b>Course Objectives</b>	<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To impart knowledge on Constructional details, principle of operation, Performance, starters and speed control of DC Machines</b>	<b>Formulate and then analyze the working of any electrical machine using mathematical model under loaded and unloaded conditions.</b>
<b>2</b>	<b>To impart knowledge on constructional details, principle of operation of single phase Transformers.</b>	<b>Troubleshoot the operation of an electrical machine.</b>
<b>3</b>	<b>To impart knowledge on constructional details, principle of operation of three phase Transformers.</b>	<b>Identify and solve DC machine and Transformer related problem</b>
<b>4</b>	<b>To familiarize with winding diagrams</b>	<b>Perform the analysis of any electromechanical system.</b>
<b>5</b>		<b>Conduct testing and experimental procedures on different types of electrical machines.</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.306 HYDRAULIC MACHINES AND HEAT ENGINES**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>The students completing this course are expected to understand the importance and theory of Fluid mechanics.</b>	<b>Students are able to perform the verification Bernoulli's theorem</b>

2	Finding head loss due to friction in pipes and verifying Bernoulli's principle.	Finding head loss due to friction in pipes based on Darcy Weisbach equation.
3	Develop the concept of combustion in Compression ignition engine, Pressure Vs crank angle diagrams, Knocking, Detonation	Gain the knowledge about performance calculations in I.C.Engine
4	Develop an idea about performance calculations in I.C.Engine.	This study is also used for the estimation of efficiency and performance of the turbine with the study of characteristics curves.
5		Finding coefficient of discharge for the venturimeter and orifice meter.
6		They are able to analyse the performance characteristics curves of different turbines and centrifugal pump.

### COURSE OBJECTIVE AND COURSE OUTCOME FOR

#### 13.307 ELECTRONIC CIRCUITS LAB

SI NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	Design and construct simple electronic circuits to accomplish a specific function	Able to design rectifiers, clipping, clamping, amplifiers, etc...
2	Understand their capabilities and limitations and make decisions regarding their best utilization in a specific situation.	Able to design and compare different oscillators and waveform generators
3	Students should have to acquire reasonable proficiency in the analysis and design of basic electronic circuits.	Able to analyze the frequency response of amplifiers and able to design voltage regulators

4	Introduction to SPICE and simulation of experiments	Able to design the circuit and generate circuit layout using SPICE
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.308 HYDRAULIC MACHINES AND HEAT ENGINES LAB**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce students, the fundamental concepts related to the mechanics of fluids.	Knowledge on basic concepts of fluid properties.
2	To acquire knowledge on hydraulic machines such as pumps and turbines	Analyze flow problems associated with statics, kinematics and dynamics of fluids.
3	To apply acquired knowledge on real life problems.	Calculate forces and work done by a jet on fixed or moving plate and curved plates.
4	To impart knowledge of fluid flow problems and mechanical power generating devices which have applications in electrical engineering.	Know the working of turbines and select the type of turbine for an application.
5		Design and analyze fluid devices such as water turbines and pumps.
6		Know the working of turbines and select the type of turbine for an application.

**S1S2 EEE (2014 Batch)- 2013 Scheme**

Sl no	Course code	Subject name	Staff handled
1	13.101	Engineering Mathematics	Ms.Prabhiya

<b>2</b>	13.102	Engineering Physics	Ms.Sreeti Gangadharan
<b>3</b>	13.103	Engineering Chemistry	Ms.Renju R.
<b>4</b>	13.104	Engineering Graphics	Mr.K.S.Sasi
<b>5</b>	13.105	Engineering Mechanics	Mr.Shankar Ram
<b>6</b>	13.106	Basic Civil Engineering	Ms.Lekshmi
<b>7</b>	13.107	Basic Mechanical Engineering	Mr.John P. George
<b>8</b>	13.108	Basic Communication and Information Engineering	Ms.Anuja
<b>9</b>	13.109	Fundamentals of Electrical Engineering	Mr.Praveen
<b>10</b>	13.110	Mechanical Workshop	Mr.V.K.Soman

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.101: ENGINEERING MATHEMATICS I COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	<b>This course provides students an insight into the various applications of differentiation, partial differentiation techniques</b>	<b>At the end of the course, the students will be familiar with various concepts of calculus which are essential for engineering.</b>
2	<b>The methods for solving differential equations and the concept of linear algebra are also introduced as a part of this course.</b>	<b>They'll also become acquainted with the basic ideas of Laplace transforms and linear algebra</b>
3	<b>This course provides students an insight into the various applications</b>	



	<b>of multiple integrals</b>	
<b>4</b>	<b>This course provides students an insight into the various applications of Laplace transforms.</b>	
<b>5</b>		

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.102 ENGINEERING PHYSICS**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
1	To understand how induced electric and magnetic fields lead to electromagnetic waves and to calculate the intensity of light transmitted through a series of polarizing filters.	On completion of the course the student shall be able to: - formulate potential problems within electrostatics, magnetostatics and stationary current distributions in linear, isotropic media,
		Solve such problems in simple geometries using separation of variables and the method of images
		Interpret the terms in the theorem physically - describe and make calculations of plane electromagnetic waves in homogeneous media, including reflexion of such waves in plane boundaries between homogeneous media
2	Connect the historical development of quantum mechanics with previous	Show an understanding of wave mechanics in three dimensions

	knowledge and learn the basic properties of quantum world.	Describe the structure of the hydrogen atom and show an understanding of quantisation of angular momentum
		Apply techniques such as Fourier methods and ladder operators for selected problems in quantum mechanics;
3	Using Einstein's two postulates, derive space and time transformations between inertial reference frames (derived transformations are same as the Lorentz transformations) The principle of relativity. (Same principle as in Newtonian physics) The constancy of the speed of light. (Breaks from Newtonian physics)	The more quantitative approach is designed for those students who desire the deepest understanding of the special theory of relativity (within the introductory context of this course).  The primary assignments for students who take this approach will be to watch lecture videos each week, take an assessment quiz for each video, take a weekly review quiz, and work on weekly problem sets.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.103 ENGINEERING CHEMISTRY**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To acquire knowledge about desalination of brackish water and treatment of municipal water.	1. develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
2	To gain the knowledge of conducting polymers, biodegradable polymers and fibre reinforced plastics. synthesis of nano materials	2. Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution.  3. Design economically and new methods of

		synthesis nano materials.
3	To learn significance of green chemistry and green synthesis .	4.Have the knowledge of converting solar energy into most needy electrical
4	To understand mechanism of corrosion and preventive methods.	5.Apply their knowledge for protection of different metals from corrosion. 6.To prevent the monuments from getting corroded.
5.	To have an idea and knowledge about the Chemistry of Fuels Understanding of electrochemistry	7.types of fuels and their applications 8.recent trends in electrochemical energy storage devices.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.104: ENGINEERING GRAPHICS COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Enable the students to effectively communicate graphic representation as per standards	Able to prepare the orthographic projections of points and straight lines placed in various quadrants
2	To develop imagination skill in students and represent them effectively in a paper	Demonstrate the ability to draw orthographic projections of various solids.
	Learn to sketch and take field dimensions.	Ability to draw and interpret the sectioned views of solids
4	Learn to take data and transform it into graphic drawings.	Ability to draw the developments of various solids

<b>5</b>		<b>Will be confident in preparing the isometric and perspective views of various solids.</b>
<b>6</b>		<b>Ability to draw the projections of intersection of solids and perform free hand sketching.</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

**13.105: ENGINEERING MECHANICS COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	<b>To apply the principles of mechanics to practical engineering problems.</b>	<b>Understand the fundamental concepts of mechanics.</b>
2	<b>To identify appropriate structural system for studying a given problem and isolate it from its environment.</b>	<b>Students would be able to apply and demonstrate the concepts of resultant and equilibrium of force system.</b>
	<b>To develop simple mathematical model for engineering problems and carry out static analysis.</b>	<b>Students would be able to determine the properties of planes and solids.</b>
4	<b>To develop simple mathematical model for engineering problems and carry out static analysis.</b>	<b>Understand the concepts of moment of inertia.</b>
5		<b>Students would be able to apply fundamental concepts of dynamics to practical problems.</b>
6		<b>Understand the basic elements of vibration.</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.106: BASIC CIVIL ENGINEERING COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course imparts to the students, the fundamentals of civil engineering and creates awareness on various issues related to our living environment and their remedies	At the end of the course, the students will be familiar with the different stages of building construction, various materials used for construction and environmental issues
2	To inculcate the essentials of civil engineering field to the students of all branches	The students will be able to illustrate the fundamental aspects of civil engineering
	To provide the students an illustration of the significance of the civil engineering profession satisfying societal needs.	The students should able to plan a building
4	To inculcate the essentials of civil engineering field to the students of all branches	Students will be able to explain about surveying for making horizontal and vertical measurements.
5	.	They will able to illustrate the uses of various building materials and construction of different components of a building.
6		The students will be able to illustrate the fundamental aspects of civil engineering

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

**13.107: BASIC MECHANICAL ENGINEERING COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
1	<b>To expose the students to the thrust areas in Mechanical Engineering and their relevance by covering the fundamental concepts</b>	<b>The student will be able to understand the inter dependence of the thrust areas in Mechanical Engineering and their significance leading to the development of products, processes and systems.</b>
2	<b>This subject covers wide areas of Mechanical Engineering and is intended for exposing the students to the various theoretical and practical aspects of thermal engineering, fluid mechanics and machines, manufacturing and power transmission.</b>	<b>The student can able to understand the inter dependence of the thrust areas in Mechanical Engineering and their significance leading to the development of products and systems.</b>
3		<b>The students can able to understand working of automobiles.</b>
4		<b>Able to understand about various mechanical processes.</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

**13.108: BASIC COMMUNICATION AND INFORMATION ENGINEERING COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To get basic idea about types, specification and common values of passive components.	Student can identify the active and passive electronic components.
2	To familiarise the working and characteristics of diodes transistors, MOSFET and some measuring instruments.	Student can setup simple circuits using diodes, transistors and other electronic components.
	To understand working of diodes in circuits and in rectifiers.	Student will get fundamental idea about basic communication and entertainment electronics.
4	To understand the concept of mobile networks.	Student will get fundamental idea about mobile operation.
5	To get basic idea about types, specification and common values of passive components.	Student will get fundamental idea about different electronic circuits.
6		Student can identify the active and passive electronic components.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.109 FUNDAMENTALS OF ELECTRICAL ENGINEERING COURSE**

SI NO	COURSE OBJECTIVES	Subject Learning Outcomes or Course Outcomes
		ON COMPLETION OF THE

		<b>COURSE STUDENTS WILL BE THE ABLE TO:</b>
<b>1</b>	<b>Understand the basic concepts of ac and dc circuits</b>	<b>Predict the behaviour of electric circuits</b>
<b>2</b>	<b>Understand the behaviour of earthing and protective devices</b>	<b>Predict the behaviour of magnetic circuits</b>
<b>3</b>	<b>Understand the basic concepts of magnetic circuits</b>	<b>Design earthing system</b>
<b>4</b>	<b>Understanding the phenomenon of resonance</b>	<b>Design electrically resonating circuits</b>
<b>5</b>		<b>Apply Kirchhoff's law to daily electrical issues</b>
<b>6</b>		<b>Predict the behaviour of active and passive electrical components</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.110: MECHANICAL ENGINEERING WORKSHOP COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>The Engineering Workshop Practice for engineers is a training lab course spread over entire semester.</b>	<b>Student will be able to make various joints in the given object with the available work material.</b>
<b>2</b>	<b>The modules include training on different trades like Fitting, Carpentry, etc... which makes the students to learn how various joints</b>	<b>Student will be able to know how much time a joint will take for the assessment of time</b>



	are made using wood and other metal pieces.	
	Familiarization of basic manufacturing hand tools and equipment like files, hacksaw, spanner chisel hammers, etc.	Knowledge achieved to explain the various manufacturing process in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
4	Familiarization of various measuring devises like vernier height gauge, vernier caliper, micrometer, steel rule etc.	Identify the various hand tools used in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
5		Able to choose different measuring devises according to the work.
6		Skill achieved to construct models by using basic mechanical workshop sections like welding, moulding, smithy, carpentry etc.

### **COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

#### **13.111: ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
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		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To enable the student to have the practical skills for Electrical wiring and basic awareness of safety measures.</b>	<b>On successful completion of this course the student will have fundamental ideas about the electrical and electronic circuit, and will be able to apply safety practices to avoid accidents.</b>
<b>2</b>	<b>To impart fundamental knowledge in the use of electronic components to set up circuits by soldering and testing them.</b>	<b>Familiarity with supply arrangements and their limitations, knowledge of standard voltages and their tolerances, safety aspects of electrical systems and importance of protective measures in wiring systems.</b>
<b>3</b>	<b>The objective of this course is to familiarize the students with commonly used components, accessories and measuring equipment in Electrical installations.</b>	<b>Knowledge about the types of wires, cables and other accessories used in wiring. Creating awareness of energy conservation in electrical systems.</b>
<b>4</b>	<b>The course also provides hands on experience in setting up of simple wiring circuits</b>	<b>Students should be able to wire simple lighting circuits for domestic buildings, distinguish between light and power circuits.</b>
<b>5</b>	<b>This course gives the basic introduction of electronic hardware systems and provides hands-on training with familiarization, identification, testing, assembling, dismantling, fabrication and repairing such systems by making use of the various tools and instruments available in the Electronics Workshop</b>	<b>To measure electrical circuit parameters and current, voltage and power in a circuit.</b>
<b>6</b>		<b>Familiarity with backup power supply in domestic installation</b>

**ACADEMIC YEAR 2014-2015**

**Even Semester**

**S6 EEE (2012 Batch)- 2008 Scheme**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
<b>1</b>	08.601	Electrical Machines - III	Aswathy Chandran
<b>2</b>	08.602	Microprocessors & Application	Chandu S.
<b>3</b>	08.603	Numerical Techniques & Computer Programming	Shagna
<b>4</b>	08.604	Industrial Engineering & Management	Smith P.S.
<b>5</b>	08.605	Power System Engineering -II	Aryamol Sudhakaran
<b>6</b>	08.606	Biomedical Instrumentation	Karthika V.S.
<b>7</b>	08.607	Power Electronics Lab	Mrudul Raj
<b>8</b>	08.608	Microprocessor Lab	Sreeji
<b>9</b>	08.609	Software Lab	Shagna

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.601 ELECTRICAL MACHINES III**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To learn the characteristics of induction machines and to learn how it can be employed for various applications.</b>	<b>The ability to formulate and then analyze the working of any electrical machine under loaded and unloaded conditions</b>
<b>2</b>	<b>To get an overview of some machines for control and industrial</b>	<b>The skill to analyze the response of any electrical machine.</b>

	applications	
3	Describe the principle of operation of induction machines and special electrical machines and different applications.	The students will be able to explain how induction machines and special electrical machines work.
4	Describe the principle of operation of three phase induction motors and select appropriate motor types for different applications	The students will have a basic knowledge on induction machines and special electrical machines with an understanding of fundamental concepts.
5		The ability to troubleshoot the operation of an electrical machine.
6		The understanding of areas of application of induction machines and special electrical machines.

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.602 MICROPROCESSORS AND APPLICATION**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To learn the 8085 architecture and instruction set.	The ability to formulate programs based on instruction set.
2	To get an overview of timing and control of 8085.	The skill to analyze the response of 8085 microprocessor using timing and control circuit.
3	Describe the principle of interfacing.	The students will be able to explain how different interfacing techniques.

<b>4</b>	<b>To learn the 8086 architecture and instruction set and to understand the interfacing.</b>	<b>Provide with the knowledge of 8086 architecture, programming and interfacing.</b>
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**COURSE OBJECTIVES AND COURSE OUTCOMES**

**13.604 NUMERICAL TECHNIQUES & COMPUTER PROGRAMMING**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>Introduction to C programming. Introduction to loop and decision making statements.</b>	<b>Able to write simple C programs.</b>
<b>2</b>	<b>Basic concepts of pointers, functions and files.</b>	<b>Develop C programs using files, pointers and functions.</b>
<b>3</b>	<b>Programming examples in C for the solution of linear equations.</b>	<b>Develop programs to solve engineering problems using numerical methods.</b>
<b>4</b>	<b>Programming examples in C for the solution of numerical integration.</b>	<b>Develop programs to find roots using simpson method, RK method, NR method etc.</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR**

**08.604 INDUSTRIAL ENGINEERING & MANAGEMENT**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the</b>

		<b>students will be able to:</b>
<b>1</b>	<b>Effectively manage business operations and project management teams</b>	<b>An ability to communicate effectively</b>
<b>2</b>	<b>To be able to adapt and solve the increasingly complex problems faced by industry</b>	<b>.An ability to design and conduct experiments, as well as to analyze and interpret data;</b>
<b>3</b>	<b>Embrace innovation through intellectual diversity and creative problem solving;</b>	<b>An ability to apply knowledge of mathematics, science, and engineering;</b>
<b>4</b>	<b>Continue to develop holistically, including the personal and professional skills necessary to adapt to our changing societal, technological, and global environments</b>	<b>An ability to identify, formulate, and solve engineering problems;</b>
<b>5</b>		<b>An understanding of professional and ethical responsibility.</b>
<b>6</b>		<b>A knowledge of contemporary issues.</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.605 POWER SYSTEM ENGINEERING II**

		<b>Course Outcomes</b>

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To explain the modeling of the power system using various methodologies.</b>	<b>Discuss the various components of power system, their characteristics and modeling.</b>
<b>2</b>	<b>To expose to sequence impedance networks of power system components.</b>	<b>Draw the equivalent single line diagrams of per unit impedance and reactances.</b>
<b>3</b>	<b>To explain symmetrical and unsymmetrical fault conditions.</b>	<b>Explain the significance of fault analysis.</b>
<b>4</b>	<b>To familiarize with the principle of operation and application of switchgear.</b>	<b>Interpret the effect of symmetrical and unsymmetrical fault on power system.</b>
<b>5</b>	<b>.</b>	<b>Explain the significance of different switchgear apparatus.</b>
<b>6</b>		<b>Decide the protection schemes to be adopted in various cases.</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR**

**8.606 ELECTIVE II BIOMEDICAL ENGINEERING**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>

<b>1</b>	<b>Interpret technical aspects of medicine</b>	<b>To introduce students to the measurements involved in some medical equipments.</b>
<b>2</b>	<b>Solve Engineering Problems related to medical field</b>	<b>Ability to understand diagnosis and therapy related equipments</b>
<b>3</b>	<b>Understand medical diagnosis and therapy</b>	<b>Understanding the problem and ability to identify the necessity of an equipment to a specific problem</b>
<b>4</b>	<b>To familiarize students with various medical equipments and their technical aspects</b>	<b>Application of systematic engineering synthesis and design processes..</b>
<b>5</b>		<b>Review the cardiac, respiratory and muscular physiological systems.</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR**

**08.607 POWER ELECTRONICS LAB**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To simulate and design various gate firing circuits</b>	<b>Ability to design and conduct simulation and experiments</b>
<b>2</b>	<b>To familiarize the students by introducing P-Sim and MultiSim and help them to simulate and analyses different Converters.</b>	<b>Ability to use the techniques, skills and modern engineering tools necessary for engineering practice</b>
<b>3</b>	<b>To enable the student to study and simulate various Chopper Circuits using Matlab</b>	<b>Ability to identify, formulate and solve engineering problems with simulation</b>



<b>4</b>	<b>Calculate the power transfer capability of transmission lines</b>	<b>Ability to simulate characteristics of SCR, MOSFET, IGBT</b>
<b>5</b>		<b>Ability to simulate Gate firing circuits</b>
<b>6</b>		<b>Ability to simulate Rectifier, Chopper, Inverter and AC Voltage Controller</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.608 MICROPROCESSOR LAB**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To get practical knowledge about 8085 Microprocessor</b>	<b>Develop and execute programs to perform data transfer, arithmetic &amp; logical operations. and code conversions using 8085 microprocessors and basic arithmetic operations using 8085.</b>
<b>2</b>	<b>To develop and execute programs for microprocessor based applications in electrical and electronics engineering.</b>	<b>Generate square wave using 8085 microprocessor and to interface using PPI 8255</b>
<b>3</b>	<b>To understand basic operating</b>	<b>Make use of 8085 microprocessor for speed</b>

	concepts of microprocessors	and position control of dc motor and stepper motor
4	To understand low level programming like generation of square wave, triangular wave etc	
5	To give awareness about the concept of 8086 Microprocessor	
6	To understand the basic arithmetic operations in 8 bit and 16 bit microprocessor that can be run on 8086 microprocessors	

## COURSE OBJECTIVES AND COURSE OUTCOMES

### 08.609 SOFTWARE LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To impart the basic concepts C programming	Able to develop simple applications like calculator, interest calculations etc. using C
2	Understand the C programming using array, structure	Able to develop programs for alphabetical sorting of names, sorting of students details based on certain criteria
3	Practise usage of functions in programming	Familiarized with modularised programming

<b>4</b>	<b>To provide the knowledge of pointers, programming using command line arguments, files</b>	<b>Able to store and retrieve data records permanently</b>
<b>5</b>	<b>Find accurate solutions for numerical problems using computer programming.</b>	<b>Able to develop solutions for Newton Raphson method, Gauss elimination, Gauss Jordan elimination, RK method</b>

#### **S4 EEE (2013 Batch)- 2013 Scheme**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
<b>1</b>	13.401	Engineering Mathematics	Arun A.
<b>2</b>	13.402	Digital Electronics and Logic Design	Rinu Simon
<b>3</b>	13.403	Engineering Electromagnetics	Mrudul Raj
<b>4</b>	13.404	Electrical Measurements and Measuring Instruments	Archana S Nair
<b>5</b>	13.405	Power Electronics	Bijaly Priya Raj
<b>6</b>	13.406	Power Generation, Transmission & Distribution	Nivea S.
<b>7</b>	13.407	Electrical Machines Lab	Nivea S.
<b>8</b>	13.408	Digital Circuits lab	Rinu Simon

#### **COURSE OBJECTIVES AND COURSE OUTCOME FOR**

#### **13.401: ENGINEERING MATHEMATICS III COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>

1	To introduce the basic notion in complex analysis such as Analytic Functions, Harmonic functions and their applications in fluid mechanics and differentiations and integration of complex functions, transformations and their applications in engineering fields.	After successful completion of this course, the students will be able to use numerical methods to solve problems related to engineering fields.
2	Numerical techniques for solving differential equations are also introduced as a part of this course.	This course helps students to master the basic concepts of complex analysis which they can use later in their career.
3		

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
13.402 DIGITAL ELECTRONICS & LOGIC DESIGNS**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.	Acquired knowledge about basics of digital electronics
2	To understand and examine the structure of various number systems and its application in digital design	Acquired knowledge about solving problems related to number systems and Boolean algebra.
3	The ability to understand, analyze and design various combinational and sequential circuits.→	Ability to identify, analyze and design combinational circuits.
4	Ability to identify basic requirements for a design application and propose a cost effective solution	Ability to design various synchronous and asynchronous

		sequential circuits.
5		Acquired knowledge about internal circuitry and logic behind any digital system
6		To study and analyze the rectifier and regulated circuits.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.403 ENGINEERING ELECTROMAGNETICS COURSE**

SI NO	COURSE OBJECTIVES	SUBJECT LEARNING OUTCOMES OR COURSE OUTCOMES
		ON COMPLETION OF THE COURSE STUDENTS WILL BE THE ABLE TO:
1	Provide basic skills required to understand and develop applications involving electromagnetic fields	Apply vector calculus to static electromagnetic fields
2	Provide basic skills required to design applications involving electromagnetic fields	Analyse Maxwell's equations in various forms
3	To lay foundations of electromagnetism in modern communication	Apply Gauss' equation to diverse engineering problems
4	To explore scope of electromagnetism in fibre optics and electromagnetic structures	Examine phenomena of wave propagation in different media

<b>5</b>		<b>Examine the effect of interference in microwave engineering</b>
<b>6</b>		<b>Analyse the nature of electromagnetic wave propagation in guided medium using microwave applications</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
13.404 MEASUREMENTS AND INSTRUMENTATION**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To develop understanding of various electrical measuring instruments and instrumentation devices.</b>	<b>Explain working and application of DC bridges.</b>
<b>2</b>	<b>Use AC and DC bridges for relevant parameter measurement..</b>	<b>Differentiate between moving iron and moving coil type instruments</b>
<b>3</b>	<b>Use Signal Generator, frequency counter, CRO and digital IC tester for appropriate measurement</b>	<b>Measure energy and power using Watt meter and Energy Meter.</b>
<b>4</b>	<b>Maintain various types of test and measuring instruments.</b>	<b>Differentiae the following: active and passive, primary and secondary transducers.</b>
<b>5</b>		<b>Describe the working if different types of temperature transducers.</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR**

### 13.405 POWER ELECTRONICS

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To get an overview of different types of power semiconductor devices and their switching characteristics.	Choose appropriate power semiconductor device in converter circuits and develop their triggering circuits
2	To study the operation and characteristics of various types of power electronic converters	Analyze various types of power electronic converters and apply different switching techniques
3	To study advanced converters and switching techniques implemented in recent technology	Select appropriate power converter for specific applications
4	To prepare the students to analyze and design different chopper circuits.	Interpret and use datasheets of power semiconductor devices for design
5		Ability to express communication methods.
6		Design of power electronic converters in power control applications

### COURSE OBJECTIVES AND COURSE OUTCOME FOR

### 13.406 POWER GENERATION, TRANSMISSION AND PROTECTION

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To understand different power generating stations and their	Discuss the various power

	<b>working.</b>	<b>generating methods.</b>
<b>2</b>	<b>To create awareness on the economical aspects of power generation.</b>	<b>Interpret the effect of economics on electric power generation.</b>
<b>3</b>	<b>To explain the modeling of transmission lines and their classification.</b>	<b>Discuss various components of transmission lines, their classification and modeling.</b>
<b>4</b>	<b>To expose to the mechanical and electrical characteristics of transmission lines.</b>	<b>Analyze the mechanical and electrical characteristics of transmission lines.</b>
<b>5</b>	<b>To understand high voltage dc transmission system and distribution systems.</b>	<b>Explain HVDC transmission and distribution system.</b>
<b>6</b>		<b>To select the appropriate distribution system for specific area.</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
13.407 ELECTRICAL MACHINES 1 LAB**

<b>SI NO</b>	<b>COURSE OBJECTIVES</b>	<b>SUBJECT LEARNING OUTCOMES OR COURSE OUTCOMES</b>
		<b>ON COMPLETION OF THE COURSE STUDENTS WILL BE THE ABLE TO:</b>
<b>1</b>	<b>Expose students to operation of DC generator</b>	<b>Analyse characteristics of DC generator</b>
<b>2</b>	<b>Expose students to operation of DC motor</b>	<b>Analyse characteristics of DC motor</b>
<b>3</b>	<b>Expose students to operation of single phase transformer</b>	<b>Analyse characteristics of single phase transformer</b>



<b>4</b>	<b>Expose students to operation of three phase transformer</b>	<b>Analyse characteristics of three phase transformer</b>
<b>5</b>		<b>Predetermine the efficiency of transformer</b>
<b>6</b>		<b>Predetermine the efficiency of dc machine</b>

**COURSE OBJECTIVES AND COURSE OUTCOME FOR**

**13.408 DIGITAL ELECTRONICS AND CIRCUITS**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>Provide students with an understanding of how to analyze, build, and troubleshoot digital circuits</b>	<b>To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuit</b>
<b>2</b>	<b>Proficient in using oscilloscopes, signal analyzers, and similar equipment to test digital circuits.</b>	<b>To identify basic requirements for a design application and propose a cost effective solution.</b>
<b>3</b>	<b>Demonstrate theoretical device/circuit operation implemented in properly constructed digital circuits.</b>	<b>Identify and prevent various hazards and timing problems in a digital design</b>
<b>4</b>	<b>Able to apply creativity through the use of project-based work to the design of circuits, systems or processes.</b>	<b>To develop skill to build, and troubleshoot digital circuits.</b>
<b>5</b>		<b>To understand, analyze and design various combinational and sequential circuits.</b>

