

**DEPARTMENT
OF
ELECTRICAL
AND
ELECTRONICS
ENGINEERING**

2021REGULATION

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

2021 REGULATION

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1	Find employment in Core Electrical and Electronics Engineering and service sectors.
PEO2	Get elevated to technical lead position and lead the organization competitively.
PEO3	Enter into higher studies leading to post-graduate and research degrees. Become consultant and provide solutions to the practical problems of core organization.
PEO4	Become an entrepreneur and be part of electrical and electronics product and service industries.

PROGRAM OUTCOMES (POs)

PO1	Engineering knowledge: Apply knowledge of mathematics, basic science and engineering science.
PO2	Problem analysis: Identify, formulate and solve engineering problems.
PO3	Design/development of solutions: Design an electrical system or process to improve its performance, satisfying its constraints.
PO4	Conduct investigations of complex problems: Conduct experiments in electrical and electronics systems and interpret the data.
PO5	Modern tool usage: Apply various tools and techniques to improve the efficiency of the system.
PO6	The Engineer and society: Conduct themselves to uphold the professional and social obligations.
PO7	Environment and sustainability: Design the system with environment consciousness and sustainable development.
PO8	Ethics: Interacting industry, business and society in a professional and ethical manner.
PO9	Individual and teamwork: Function in a multidisciplinary team.
PO10	Communication: Proficiency in oral and written Communication.
PO11	Project management and finance: Implement cost effective and improved system.
PO12	Life-long learning: Continue professional development and learning as a life-long activity.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1	Foundation of Electrical Engineering: Ability to understand the principles and working of electrical components, circuits, systems and control that are forming a part of power generation, transmission, distribution, utilization, conservation and energy saving. Students can assess the power management, auditing, crisis and energy saving aspects.
PSO2	Foundation of Mathematical Concepts: Ability to apply mathematical methodologies to solve problems related with electrical engineering using appropriate engineering tools and algorithms.
PSO3	Computing and Research Ability: Ability to use knowledge in various domains to identify research gaps and hence to provide solution which leads to new ideas and innovations.

LIST OF COURSES

REGULATION 2021

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING		
SEMESTER I		
S.NO.	COURSECODE	COURSE TITLE
1	IP3151	Induction Programme
THEORY		
2	HS3152	Professional English - I
3	MA3151	Matrices and Calculus
4	PH3151	Engineering Physics
5	CY3151	Engineering Chemistry
6	GE3151	Problem Solving and Python Programming
7	GE3152	Heritage of Tamils
PRACTICALS		
8	GE3171	Problem Solving and Python Programming Laboratory
9	BS3171	Physics and Chemistry Laboratory
10	GE3172	English Laboratory
SEMESTER II		
S.NO.	COURSECODE	COURSE TITLE
THEORY		
1	HS3252	Professional English-II
2	MA3251	Statistics and Numerical Methods
3	PH3254	Physics for Electronics Engineering
4	BE3254	Electrical and Instrumentation Engineering
5	GE3251	Engineering Graphics
6	EC3251	Electric Circuit Analysis
7	GE3252	Tamils and Technology
8		NCCCreditCourseLevel1 [#]
PRACTICALS		
9	GE3271	Engineering Practices Laboratory
10	EC3271	Circuits Analysis Laboratory
11	GE3272	Communication Laboratory/ Foreign Language
SEMESTER III		
S.NO.	COURSECODE	COURSE TITLE
THEORY		
1	MA3303	Probability and Complex Functions

2	EE3301	Electromagnetic Fields
3	EE3302	Digital Logic Circuits
4	EC3301	Electron Devices and Circuits
5	EE3303	Electrical Machines - I
6	CS3353	C Programming and Data Structures
PRACTICALS		
7	EC3311	Electronic Devices and Circuits Laboratory
8	EE3311	Electrical Machines Laboratory – I
9	CS3362	C Programming and Data Structures Laboratory
10	GE3361	Professional Development
SEMESTER IV		
THEORY		
S.NO.	COURSECODE	COURSE TITLE
1	GE3451	Environmental Sciences and Sustainability
2	EE3401	Transmission and Distribution
3	EE3402	Linear Integrated Circuits
4	EE3403	Measurements and Instrumentation
5	EE3404	Microprocessor and Microcontroller
6	EE3405	Electrical Machines - II
7	GE3451	NCC Credit Course Level 2
PRACTICALS		
8	EE3411	Electrical Machines Laboratory - II
9	EE3412	Linear and Digital Circuits Laboratory
10	EE3413	Microprocessor and Microcontroller laboratory
SEMESTER V		
THEORY		
S.NO.	COURSECODE	COURSE TITLE
1	EE3501	Power System Analysis
2	EE3591	Power Electronics
3	EE3503	Control Systems
4	EE3006	Power Quality
5	EE3009	Special Electrical Machines
6	EE3022	VLSI Design
7	MX3084	Disaster Risk Reduction and Management
PRACTICALS		
8	EE3511	Power Electronics Laboratory
9	EE3512	Control and Instrumentation Laboratory
SEMESTER VI		
THEORY		

S.NO.	COURSE CODE	COURSE TITLE
1	EE3601	Protection and Switchgear
2	EE3602	Power System Operation and Control
3		Open Elective
4		Professional Elective IV
5		Professional Elective V
6		Professional Elective VI
7		Mandatory Course II
8		NCC Credit Course Level 3
PRACTICALS		
1	EE3611	Power System Laboratory
SEMESTER VII		
S.NO.	COURSE CODE	COURSE TITLE
THEORY		
1	EE3701	High Voltage Engineering
2	GE3791	Human Values and Ethics
3		Elective – Management
4		Open Elective-II
5		Open Elective-III
6		Open Elective-IV
7		Professional Elective -VII
SEMESTER VIII		
PRACTICALS		
1	EE3811	Project Work/Internship

COURSE OUTCOME FOR ELECTRICAL AND ELECTRONICS ENGINEERING

DEGREE	U.G
PROGRAMME	B.E – ELECTRICAL AND ELECTRONICS ENGINEERING
ACADEMIC YEAR	2022-23
REGULATION	2021

SEMESTER 01		
1.Course Code and Name : HS3151 PROFESSIONAL ENGLISH - I		
	CO Statements	Knowledge Level
At the end of the course the learners will be able to		
1	To use appropriate words in a professional context	K2
2	To gain understanding of basic grammatical structures and use them in right context.	K2
3	To read and infer the denotative and connotative meanings of technical texts	K2
4	To read and interpret information presented in tables, charts and other graphic forms	K3
5	To write definitions, descriptions, narrations and essays on various topics	K4
2.Course Code and Name : MA3151 MATRICES AND CALCULUS		
	CO Statements	Knowledge Level
At the end of the course the students will be able to		
1	Use the matrix algebra methods for solving practical problems.	K3
2	Apply differential calculus tools in solving various application problems.	K3
3	Able to use differential calculus ideas on several variable functions.	K3
4	Apply different methods of integration in solving practical problems.	K3
5	Apply multiple integral ideas in solving areas, volumes and other practical problems.	K3
3.Course Code and Name : PH3151 ENGINEERING PHYSICS		
	CO Statements	Knowledge Level
After completion of this course, the students should be able to		
1	Understand the importance of mechanics.	K1
2	Express their knowledge in electromagnetic waves.	K2
3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.	K3
4	Understand the importance of quantum physics.	K3
5	Comprehend and apply quantum mechanical principles towards the formation of energy bands	K4

4.Course Code and Name : CY3151 ENGINEERING CHEMISTRY		
	CO Statements	Knowledge Level
At the end of the course, the students will be able:		
1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.	K3

2	To identify and apply basic concepts of nano science and nanotechnology in designing the synthesis of nano materials for engineering and technology applications.	K4
3	To apply the knowledge of phase rule and composites for material selection Requirements.	K2
4	To recommend suitable fuels for engineering processes and applications.	K2
5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.	K3

5.Course Code and Name : GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING		
	CO Statements	Knowledge Level
Upon completion of the course, the students will be able to		
1	Develop algorithmic solutions to simple computational problems.	K3
2	Develop and execute simple Python programs.	K3
3	Write simple Python programs using conditionals and loops for solving problems.	K4
4	Decompose a Python program into functions.	K4
5	Represent compound data using Python lists, tuples, dictionaries etc.	K4
6	Read and write data from/to files in Python programs.	K4

7.Course Code and Name : GE3171 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY		
	CO Statements	Knowledge Level
On completion of the course, the students will be able to:		
1	Develop algorithmic solutions to simple computational problems	K3
2	Develop and execute simple Python programs.	K4
3	Implement programs in Python using conditionals and loops for solving problems.	K2
4	Deploy functions to decompose a Python program.	K3
5	Process compound data using Python data structures.	K4
6	Utilize Python packages in developing software applications.	K2

8.Course Code and Name : GE3172 ENGLISH LABORATORY		
	CO Statements	Knowledge Level

At the end of the course, the learners will be able to		
1	To listen to and comprehend general as well as complex academic information	K2
2	To listen to and understand different points of view in a discussion	K2
3	To speak fluently and accurately in formal and informal communicative contexts	K2
4	To describe products and processes and explain their uses and purposes clearly and accurately	K2
5	To express their opinions effectively in both formal and informal discussions	K2
9.Course Code and Name : BS3171 PHYSICS AND CHEMISTRY LABORATORY		
	CO Statements	Knowledge Level
Upon the completion of the course, the students will be able		
PHYSICS LABORATORY		
1	Understand the functioning of various physics laboratory equipment.	K3
2	Use graphical models to analyze laboratory data.	K2
3	Use mathematical models as a medium for quantitative reasoning and describing Physical reality.	K1
4	Access, process and analyze scientific information.	K1
5	Solve problems individually and collaboratively.	K1
CHEMISTRY LABORATORY		
1	To analyse the quality of water samples with respect to their acidity, alkalinity, Hardness and DO.	K2
2	To determine the amount of metal ions through volumetric and spectroscopic techniques	K1
3	To analyse and determine the composition of alloys.	K1
4	To learn simple method of synthesis of nanoparticles	K2
5	To quantitatively analyse the impurities in solution by electro analytical techniques	K3
SEMESTER 02		
1.Course Code and Name : HS3252 PROFESSIONAL ENGLISH - II		
	CO Statements	Knowledge Level
At the end of the course learners will be able to		
1	To compare and contrast products and ideas in technical texts.	K2
2	To identify and report cause and effects in events, industrial processes through technical texts	K2
3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format.	K2
4	To present their ideas and opinions in a planned and logical manner	K3
5	To draft effective resumes in the context of job search.	K4
2.Course Code and Name : MA3251 STATISTICS AND NUMERICAL METHODS		
	CO Statements	Knowledge Level

Upon successful completion of the course, students will be able to		
1	Apply the concept of testing of hypothesis for small and large samples in real life problems.	K3
2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.	K3
3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.	K3
4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	K3
5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.	K3
3.Course Code and Name : PH3202 - PHYSICS FOR ELECTRICAL ENGINEERING		
	CO Statements	Knowledge Level
At the end of the course, the students should be able to		
1	Know basics of dielectric materials and insulation.	K2
2	Gain knowledge on the electrical and magnetic properties of materials and their applications	K2
3	Understand clearly of semiconductor physics and functioning of semiconductor devices	K2
4	Understand the optical properties of materials and working principles of various optical devices	K3
5	Appreciate the importance of nanotechnology and nano devices	K2
4.Course Code and Name : BE3255- BASIC CIVIL AND MECHANICAL ENGINEERING		
	CO Statements	Knowledge Level
The students should be able to		
1	Understanding profession of Civil and Mechanical engineering.	K3
2	Summaries the planning of building, infrastructure and working of Machineries.	K2
3	Apply the knowledge gained in respective discipline	K4
4	Illustrate the ideas of Civil and Mechanical Engineering applications.	K2
5	Appraise the material, Structures, machines and energy.	K2
5.Course Code and Name : GE3251 ENGINEERING GRAPHICS		
	CO Statements	Knowledge Level
On successful completion of the course, the students should be able to		
1	Use BIS conventions and specifications for engineering drawing.	K3
2	Construct the conic curves, involutes and cycloid.	K3
3	Solve practical problems involving projection of lines.	K3
4	Draw the orthographic, isometric and perspective projections of simple solids.	K5
5	Draw the development of simple solids.	K5
6.Course Code and Name : GE3271 ENGINEERING PRACTICES LABORATORY		
	CO Statements	Knowledge Level

Upon completion of this course, the students will be able to		
1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household Wood work.	K5
2	Wire various electrical joints in common household electrical wire work.	K6
3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.	K2
4	Solder and test simple electronic circuits;	K6
5	Assemble and test simple electronic components on PCB.	K6

8.Course Code and Name : EE3251 ELECTRIC CIRCUIT ANALYSIS

	CO Statements	Knowledge Level
After completion of the course, the students will be able to		
1	Explain circuit's behavior using circuit laws.	K2
2	Apply mesh analysis/ nodal analysis / network theorems to determine behavior of the given DC and AC circuit	K5
3	Compute the transient response of first order and second order systems to step and sinusoidal input	K5
4	Compute power, line/ phase voltage and currents of the given three phase circuit	K5
5	Explain the frequency response of series and parallel RLC circuits	K5

9.Course Code and Name : GE3272 COMMUNICATION LABORATORY

	CO Statements	Knowledge Level
1	Speak effectively in group discussions held in a formal/semi S formal context.	K5
2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions	K3
3	Write emails, letters and effective job applications.	K3
4	Write critical reports to convey data and information with clarity and precision	K3
5	Give appropriate instructions and recommendations for safe execution of tasks	K5

SEMESTER 03

1.Course Code and Name : MA3303-PROBABILITY AND COMPLEX FUNCTIONS

	CO Statements	Knowledge Level
Upon successful completion of the course, the students should be able to:		
1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon	K2
2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications	K2
3	To develop an understanding of the standard techniques of complex variable theory in particular analytic function and its mapping property	K2
4	To familiarize the students with complex integration techniques and contour	K2

	integration techniques which can be used in real integrals	
5	To acquaint the students with Differential Equations which are significantly used in engineering problems.	K3
2.Course Code and Name : EE3301 ELECTROMAGNETIC FIELDS		
	CO Statements	Knowledge Level
Upon successful completion of the course, the students would be able to		
1	Explain Gradient, Divergence, and Curl operations on electromagnetic vector fields	K2
2	Explain electrostatic fields, electric potential, energy density and their applications	K2
3	Calculate magneto static fields, magnetic flux density, vector potential	K3
4	Explain different methods of emf generation and Maxwell's equations	K3
5	Explain the concept of electromagnetic waves and characterizing parameters	K2
3.Course Code and Name : EE3302 DIGITAL LOGIC CIRCUITS		
	CO Statements	Knowledge Level
Upon successful completion of the course, the student is expected to		
1	Explain various number systems and characteristics of digital logic families	K2
2	Apply K maps and Quine Mc Cluskey methods to simplify the given Boolean expressions	K3
3	Explain the implementation of combinational circuit such as multiplexers and demultiplexers - code converters, adders, subtractors, Encoders and Decoders	K2
4	Design various synchronous and asynchronous circuits using Flip Flops	K2
5	Explain asynchronous sequential circuits and programmable logic devices	K2
	Use VHDL for simulating and testing RTL, combinatorial and sequential circuits	K3
4.Course Code and Name : EC3301 ELECTRON DEVICES AND CIRCUITS		
	CO Statements	Knowledge Level
Upon successful completion of the course, Students will be able to		
1	Explain the structure and operation of PN junction devices (diode, Zener diode, LED and Laser diode)	K2
2	Design clipper, clamper, half wave and full wave rectifier, regulator circuits using PN junction diodes	K3
3	Analyze the structure and characteristics BJT, FET, MOSFET, UJT, Thyristor and IGBT	K2
4	Analyze the performance of various configurations of BJT and MOSFET based amplifier	K3
5	Explain the characteristics of MOS based cascade and differential amplifier	K2
	Explain the operation of various feedback amplifiers and oscillators	K3
5.Course Code and Name : EE3303 ELECTRICAL MACHINES-I		
	CO Statements	Knowledge Level

At the end of the course, the student is expected to		
1	Apply the laws governing the electro mechanical energy conversion for singly and multiple excited systems.	K3
2	Explain the construction and working principle of DC machines.	K2
3	Interpret various characteristics of DC machines.	K2
4	Compute various performance parameters of the machine, by conducting suitable tests.	K3
5	Draw the equivalent circuit of transformer and predetermine the efficiency and regulation.	K3
6	Describe the working principle of auto transformer, three phase transformer with different types of connections.	K3

6.Course Code and Name : : CS3353 C PROGRAMMING AND DATA STRUCTURES

	CO Statements	Knowledge Level
At the end of the course, the student is expected to		
1	Develop C programs for any real world/technical application	K2
2	Apply advanced features of C in solving problems.	K3
3	Write functions to implement linear and non-linear data structure operations.	K3
4	Suggest and use appropriate linear/non-linear data structure operations for solving a given problem.	K2
5	Appropriately use sort and search algorithms for a given application.	K2
6	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.	K2

7.Course Code and Name : EC3311 ELECTRONIC DEVICES AND CIRCUITS LABORATORY

	CO Statements	Knowledge Level
Upon the completion of the course, the student is expected to		
1	Analyze the characteristics of PN, Zener diode and BJT in CE, CC, CB configurations experimentally	K2
2	Analyze the characteristics of JFET and UJT experimentally	K2
3	Analyze frequency response characteristics of a Common Emitter amplifier experimentally	K2
4	Analyze the characteristics of RC phase shift and LC oscillators experimentally	K2
5	Analyze the characteristics of half-wave and full-wave rectifier with and without filters experimentally	K2
	Analyze the characteristics of FET based differential amplifier experimentally	K2
	Calculate the frequency and phase angle using CRO experimentally	K2
8	Analyze the frequency response characteristics of passive filters experimentally	K2

8.Course Code and Name : EE3311 ELECTRICAL MACHINES LABORATORY-I

	CO Statements	Knowledge Level
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At the end of the course, the student is expected to		
1	Construct the circuit with appropriate connections for the given DC machine/transformer.	K3
2	Experimentally determine the characteristics of different types of DC machines.	K3
3	Demonstrate the speed control techniques for a DC motor for industrial applications.	K3
4	Identify suitable methods for testing of transformer and DC machines.	K3
5	Predetermine the performance parameters of transformers and DC motor.	K3
	Understand DC motor starters and 3-phase transformer connections	K3
9.Course Code and Name : CS3362 C PROGRAMMING AND DATA STRUCTURES LABORATORY		
	CO Statements	Knowledge Level
Upon the completion of the course, the students will be able to		
1	Use different constructs of C and develop applications	K3
2	Write functions to implement linear and non-linear data structure operations	K3
3	Suggest and use the appropriate linear / non-linear data structure operations for a given problem	K3
4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval	K3
5	Implement Sorting and searching algorithms for a given application	K3
10.Course Code and Course Name:GE3361 PROFESSIONAL DEVELOPMENT		
	CO Statements	Knowledge Level
Upon the successful completion of the course, the students will be able		
1	Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements	K2
2	Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding	K3
3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.	K3
SEMESTER 04		
1.Course Code and Name : GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY		
	CO Statements	Knowledge Level
The student is expected to		
1	To recognize and understand the functions of environment, ecosystems and bio diversity and their conservation.	K2
2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.	K2
3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them For future generations.	K2
4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.	K2
5	To demonstrate the knowledge of sustainability practices and identify green materials,	K3

	energy cycles and the role of sustainable urbanization.	
2.Course Code and Name : EE3401 TRANSMISSION AND DISTRIBUTION		
	CO Statements	Knowledge Level
Upon the successful completion of the course, Students will be able to		
1	Understand the structure of power system, computation of transmission Line parameter for different configurations and the impact of skin and proximity effects.	K2
2	Model the transmission lines to determine the line performance and to understand the impact of Ferranti effect and corona online performance.	K2
3	Do Mechanical design of transmission lines, grounding and to understand about the insulators in transmission system.	K3
4	Design the underground cables and understand the performance analysis of underground cable.	K2
5	Understand the modeling, performance analysis and modern trends in distribution system	K2
3.Course Code and Name : EE3402		
	CO Statements	Knowledge Level
Upon the successful completion of the course, the student will be able to		
1	Explain monolithic IC fabrication process	K2
2	Explain the fabrication of diodes, capacitance, resistance, FET s and PV Cell.	K2
3	Analyze the characteristics and basic applications (inverting/non-inverting amplifier, summer, differentiator, Integrator, V/I and I/V converter) of Op-Amp	K2
4	Explain circuit and applications of op-amp based instrumentation amplifier, log/antilog amplifier, an analog multiplier/ divider, active filters, comparators, wave form generators, A/D and D/A converters	K3
5	Explain Functional blocks, characteristics and applications of Timer, PLL, analog multiplier ICs.	K2
6	Explain the applications of ICs in Instrumentation amplifier, fixed and variable voltage regulator, SMPS and function generator	K3
4.Course Code and Name : EE3403 MEASUREMENTS AND INSTRUMENTATION		
	CO Statements	Knowledge Level
Upon the successful completion of the course, the student is expected to be able to		
1	Ability to understand the fundamental art of measurement in engineering.	K2
2	Ability to understand the structural elements of various instruments.	K3
3	Ability to understand the importance of bridge circuits.	K2
4	Ability to understand about various transducers and their characteristics by experiments.	K2
5	Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments.	K2
5.Course Code and Name : EE3404 MICROPROCESSOR AND MICROCONTROLLER		
	CO Statements	
Upon the successful completion of the course, the student is expected to		

1	Ability to write assembly language program for microprocessor and microcontroller	K3
2	Ability to design and implement interfacing of peripheral with microprocessor and microcontroller	K2
3	Ability to analyze, comprehends, design and simulate microprocessor-based systems used for control and monitoring.	K2
4	Ability to analyze, comprehend, design and simulate microcontroller-based systems used for control and monitoring.	K3
5	Ability to understand and appreciate advanced architecture evolving microprocessor field	K3
6.Course Code and Name : EE3405 ELECTRICAL MACHINES-II		
	CO Statements	Knowledge Level
Upon the successful completion of the course, the students will be able to		
1	Ability to understand the construction and working principle of Synchronous generator	K2
2	Ability to understand the construction and working principle of Synchronous Motor	K3
3	Ability to understand the construction and working principle of Three Phase Induction Motor	K3
4	Acquire knowledge about the starting and speed control of induction motors.	K2
5	To gain knowledge about the basic principles and working of Single-phase induction motors and Special Electrical Machines.	K3
7.Course Code and Name : EE3411 ELECTRICAL MACHINES LABORATORY-II		
	CO Statements	Knowledge Level
Upon the successful completion of the course, the students will be able to		
1	Ability to understand and analyze EMF and MMF methods	K2
2	Ability to analyze the characteristics of V and Inverted V curves	K2
3	Acquire hands on experience of conducting various tests on alternators and obtaining their performance indices using standard analytical as well as graphical methods. to understand the importance of Synchronous machines	K3
4	Acquire hands on experience of conducting various tests on alternators and obtaining their performance indices using standard analytical as well as graphical methods. to understand the importance of single and three phase Induction motors	K2
5	Ability to acquire knowledge on separation of losses	K2
8.Course Code and Name : EE3412 LINEAR AND DIGITAL CIRCUITS LABORATORY		
	CO Statements	Knowledge Level
Upon the successful completion of the course, the students will be able to		
1	Ability to understand and implement Boolean Functions.	K3
2	Ability to understand the importance of code conversion	K3
3	Ability to Design and implement circuits with digital ICs like decoders, multiplexers, register.	K3
4	Ability to acquire knowledge on Application of Op-Amp	K3
5	Ability to Design and implement counters using analog ICs like timers, VCO and digital	K3

	ICs like Flip-flops and counters.	
9.Course Code and Name : EE3413 MICROPROCESSOR AND MICROCONTROLLER LABORATORY		
	CO Statements	Knowledge Level
Upon the successful completion of the course, the students will be able to		
1	Ability to write assembly language program for micro processor	K3
2	Ability to write assembly language program for microprocessor and microcontroller EE3412 Linear and Digital Circuits Laboratory	K3
3	Ability to design and implement interfacing of peripheral with microprocessor and microcontroller	K3
4	Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring	K3
5	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.	K3
SEMESTER 05		
1.Course Code and Name : EE3501 POWER SYSTEM ANALYSIS		
	CO Statements	Knowledge Level
The student will be able to		
1	Ability to model the power system under steady state operating condition.	K2
2	Ability to carry out power flow analysis.	K2
3	Ability to infer the significance of short circuit studies in designing circuit breakers.	K3
4	Ability to analyze the state of the power system for various un symmetrical faults.	K2
5	Ability to analyze the stability of power system using different methods.	K3
2.Course Code and Name : EE3591 POWER ELECTRONICS		
	CO Statements	Knowledge Level
The student will be able to		
1	Understand the operation of semiconductor devices and dynamic characteristics and to design & analyze the low power SMPS	K2
2	Analyze the various uncontrolled rectifiers and design suitable filter circuits	K2
3	Analyze the operation of the n-pulse converters and evaluate the performance parameters	K2
4	Understand various PWM techniques and apply voltage control and harmonic elimination methods to inverter circuits.	K3
5	Understand the operation of AC voltage controllers and its applications.	K2
3.Course Code and Name : EE3503 CONTROL SYSTEMS		
	CO Statements	Knowledge Level
The student is expected to be able to		
1	Represent simple systems in transfer function and state variable forms.	K2
2	Analyze simple systems in time domain.	K2
3	Analyze simple systems in frequency domain.	K2
4	Infer the stability of systems in time and frequency domain.	K2

5	Interpret characteristics of the system and find out solution for simple control problems.	K2
4.Course Code and Name : EE3006 POWER QUALITY		
	CO Statements	Knowledge Level
The Students will be able to		
1	Use various definitions of power quality for power quality issues	K2
2	Describe the concepts related with single phase / three phase, linear /nonlinear loads and single phase / three phase sinusoidal, non-sinusoidal source	K3
3	Solve problems related with mitigation of Power System Harmonics	K2
4	Use DSTATCOM for load compensation	K3
5	Demonstrate the role of DVR, SAFs UPQC in power distribution systems	K2
5.Course Code and Name : EE3009 SPECIAL ELECTRICAL MACHINES		
	CO Statements	Knowledge Level
The student will be able to understand the output of digitalization of construction		
1	Ability to model and analyze power electronic systems and equipment using computational software.	K3
2	Ability to optimally design magnetic required in special machines based drive systems using FEM based software tools.	K2
3	Ability to analyse the dynamic performance of special electrical machines	K2
4	Ability to understand the operation and characteristics of other special electrical machines.	K3
5	Ability to design and conduct experiments towards research.	K3
6.Course Code and Name : EE3022 VLSI DESIGN		
	CO Statements	Knowledge Level
At the end of this course, the students will be able to		
1	Develop CMOS design techniques	K2
2	Learn and build IC fabrication	K3
3	Explain the need of reconfigurable computing with PLDs	K3
4	Design and development of reprogrammable FPGA.	K2
5	Illustrate and develop HDL computational processes with improved design strategies	K2
7.Course Code and Name : MX3084 DISASTER RISK REDUCTION AND MANAGEMENT		
	CO Statements	Knowledge Level
At the end of this course, the students will be able to		
1	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)	K5
2	To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction	K3
3	To develop disaster response skills by adopting relevant tools and technology	K5
4	Enhance awareness of institutional processes for Disaster response in the country and	K3
5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity	K5

8.Course Code and Name : EE3511 POWER ELECTRONICS LABORATORY

	CO Statements	Knowledge Level
At the end of this course, the students will be able to		
1	Determine the characteristics of SCR, IGBT, TRIAC, MOSFET and IGBT	K3
2	Find the transfer characteristics of full converter, semi converter, step up and step down choppers by simulation experimentation.	K3
3	Analyze the voltage waveforms for PWM inverter using various modulation techniques.	K3
4	Design and experimentally verify the performance of basic DC/DC converter topologies used for SMPS.	K3
5	Understand the performance of AC voltage controllers by simulation and experimentation	K3

9.Course Code and Name : EE3512 CONTROL AND INSTRUMENTATION LABORATORY

	CO Statements	Knowledge Level
At the end of this course, the students will be able to		
1	To model and analyze simple physical systems and simulate the performance in analog and digital platform.	K3
2	To design and implement simple controllers in standard orms.	K3
3	To design compensators based on time and frequency domain specifications.	K3
4	To design a complete closed control loop and evaluate its performance for simple physical systems.	K3
5	To analyze the stability of a physical system in both continuous and discrete domains.	K3