



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY (An Autonomous Institution)

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)

(Accredited by NBA – ECE, EEE & MECH UG Programs), Dindigul – Palani Highway, Dindigul-624 002.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Anna University Regulations-2021

List of Course Names

S.No	Sem	Course Number	Course Code	CourseName
1	I	C101	HS3152	Professional English I
2	I	C102	PH3151	Engineering Physics
3	I	C103	MA3151	MatricesandCalculus
4	I	C104	CY3151	Engineering Chemistry
5	I	C105	GE3151	Problem Solving and Python Programming
6	I	C106	GE3171	ProblemSolvingandPythonProgrammingLaboratory
7	I	C107	BS3171	PhysicsandChemistryLaboratory
8	I	C108	GE3172	English Laboratory
9	II	C109	HS3252	Professional English-II
10	II	C110	MA3251	Statistics and Numerical Methods
11	II	C111	PH3202	Physics for Electrical Engineering
12	II	C112	BE3255	Basic Civil and Mechanical Engineering
13	II	C113	EE3251	ElectricCircuitAnalysis
14	II	C114	GE3251	EngineeringGraphics
15	II	C115	GE3271	Engineering Practices Laboratory
16	II	C116	EE3271	Electric Circuit Laboratory
17	III	C201	EE3302	Digital Logic Circuits
18	III	C202	EE3301	Electromagnetic Fields
19	III	C203	EE3303	Electrical Machines-I
20	III	C204	EC3301	Electronic Devices and Circuits
21	III	C205	EC3311	Electron Devices & Laboratory
22	III	C206	EE8311	Electrical Machines Laboratory-I
23	IV	C207	EE3405	Electrical Machines-II
24	IV	C208	EE3401	Transmission and Distribution
25	IV	C209	EE8403	Measurement & Instrumentation
26	IV	C210	EE3402	Linear Integrated Circuits and Applications

27	IV	C211	EE3404	Microprocessor and Microcontroller
28	IV	C212	EE3411	Electrical Machines Laboratory-II
29	IV	C213	EE3412	Linear and Digital Integrated Circuits Laboratory
30	IV	C214	EE3413	Microprocessor and Microcontroller Laboratory
31	V	C215	EE3501	Power system Analysis
32	V	C216	EE3591	Power Electronics
33	V	C217	EE3503	Control Systems
34	V	C301	EE3006	Power Quality
35	V	C302	EE3004	HVDC and FACTS
36	V	C303	CEI331	PLC Programming
37	V	C304	EE3512	Control and Instrumentation Laboratory
38	V	C305	EE3511	Power Electronics Laboratory
39	VI	C306	EE3601	Protection and switchgear
40	VI	C307	EE3602	Power System Operation and Control
41	VI	C308	EE3009	Special Electrical Machines
42	VI	C309	EE3011	Multilevel Power Converters
43	VI	C310	EE3013.	SMPS and UPS.
44	VI	C311	EE3611	Power System Laboratory

Semester-I

Subject Code & Name: HS3152 -Professional English I

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C101.1	To use appropriate words in a professional context.
C101.2	To gain understanding of basic grammatic structures and use them in right context.
C101.3	To read and infer the denotative and connotative meanings of technical texts
C101.4	To write definitions, descriptions, narrations and essays on various topics.

Subject Code & Name: PH3151 – Engineering Physics

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C102.1	Understand the importance of mechanics.
C102.2	Express their knowledge in electromagnetic waves.
C102.3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
C102.4	Understand the importance of quantum physics.
C102.5	Comprehend and apply quantum mechanical principles towards the formation of energy band.

Subject Code & Name: MA3151 - Matrices and Calculus

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C103.1	Use the matrix algebra methods for solving practical problems..
C103.2	Apply differential calculus tools in solving various application problems
C103.3	Able to use differential calculus ideas on several variable functions.
C103.4	Apply different methods of integration in solving practical problems
C103.5	Apply multiple integral areas in solving areas, volumes and other practical problems.

Subject Code & Name: CY3151- Engineering Chemistry**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C104.1	To infer the quality of water from quality parameter data and propose suitable treatment methodologiestotreatwater.
C104.2	To identify and apply basic concepts of nano science and nano technology in designing the synthesis of nano materials for engineering and technology applications.
C104.3	To apply the knowledge of phase rule and composites for materials selection requirements.
C104.4	To recommend suitable fuels for engineering processes and applications.
C104.5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.

Subject Code & Name: GE3151- Problem Solving and Python Programming**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Develop and execute simple Python programs.
C105.3	Write simple Python programs using conditionals and loops for solving problems.
C105.4	Decompose a Python program into functions.
C105.5	Represent compound data using Python lists, tuples, dictionaries etc.
C105.6	Read and write data from/to files in Python programs.

Subject Code & Name: GE3171 – Problem Solving and Python Programming Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C106.1	Develop algorithmic solutions to simple computational problems
C106.2	Develop and execute simple Python programs.
C106.3	Implement programs in Python using conditionals and loops for solving problems.
C106.4	Deploy functions to decompose a Python program.
C106.5	Process compound data using Python data structures.
C106.6	Utilize Python packages in developing software applications.

Subject Code & Name: BS3171- Physics and Chemistry Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C107.1	Understand the functioning of various physics laboratory equipment.
C107.2	Use graphical models to analyze laboratory data.
C107.3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.
C107.4	Access, process and analyze scientific information.
C107.5	Solve problems individually and collaboratively

Subject Code & Name: GE3172 - English Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C108.1	To listen to and comprehend general as well as complex academic information
C108.2	To listen to and understand different points of view in a discussion
C108.3	To speak fluently and accurately in formal and informal communicative contexts
C108.4	To describe products and processes and explain their uses and purposes clearly and accurately
C108.5	To express their opinions effectively in both formal and informal discussions

Semester-II**Subject Code & Name: HS3252- Professional English-II****Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C109.1	To compare and contrast products and ideas in technical texts.
C109.2	To identify and report cause and effects in events, industrial processes through technical texts
C109.3	To analyze problems in order to arrive at feasible solutions and communicate them in the written format.
C109.4	To present their ideas and opinions in a planned and logical manner
C109.5	To draft effective resumes in the context of job search.

Subject Code & Name: MA3251 - Statistics and Numerical Methods**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C110.1	Apply the concept to testing of hypothesis for small and large samples in real life problems.
C110.2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
C110.3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
C110.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.

Subject Code & Name: PH3202 - Physics for Electrical Engineering**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C111.1	To know basics of dielectric materials and insulation.
C111.2	Gain knowledge on the electrical and magnetic properties of materials and their applications
C111.3	Understand clearly of semiconductor physics and functioning of semiconductor devices
C111.4	Understand clearly of semiconductor physics and functioning of semiconductor devices
C111.5	Appreciate the importance of nanotechnology and nano devices

Subject Code & Name: BE3255 – Basic Civil and Mechanical Engineering**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C112.1	Understanding profession of Civil and Mechanical engineering.
C112.2	Summarise the planning of building, infrastructure and working of Machineries.
C112.3	Apply the knowledge gained in respective discipline
C112.4	Illustrate the ideas of Civil and Mechanical Engineering applications.
C112.5	Appraise the material, Structures, machines and energy.

Subject Code & Name: EE3251 – Electric Circuit Analysis**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C113.1	Explain circuit's behavior using circuit laws.
C113.2	Apply mesh analysis/nodal analysis/network theorem to determine behavior of the given DC and AC circuit
C113.3	Compute the transient response of first order and second order systems to step and sinusoidal input
C113.1	Compute power, line/phase voltage and currents of the given three phase circuit
C113.2	Explain the frequency response of series and parallel RLC circuits
C113.3	Explain the behavior of magnetically coupled circuits.

Subject Code & Name: GE3251 – Engineering Graphics**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C114.1	Use BIS conventions and specifications for engineering drawing.
C114.2	Construct the conic curves, involutes and cycloid.
C114.3	Solve practical problems involving projection of lines.
C114.4	Draw the orthographic, isometric and perspective projections of simple solids.
C114.5	Draw the development of simple solids.

Subject Code & Name: GE3271 – Engineering Practices Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C115.1	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 woodwork.
C115.2	Wire various electrical joints in common household electrical wirework.
C115.3	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
C115.4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

Subject Code & Name: EE3271 - Electric Circuit Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C116.1	Use simulation and experimental methods to verify the fundamental electrical laws for the given DC/AC circuit (Ex 1)
C116.2	Use simulation and experimental methods to verify the various electrical theorems (Superposition, Thevenin , Norton and maximum power transfer) for the given DC/AC circuit (Ex 2-5)
C116.3	Analyze transient behavior of the given RL/RC/RLC circuit using simulation and experimental methods (Ex 6)
C116.4	Analyze frequency response of the given series and parallel RLC circuit using simulation and experimentation methods (Ex 7-8)
C116.7	Analyze the performance of the given three-phase circuit using simulation and experimental methods (Ex 9)

Semester-III**Subject Code & Name: EE3302 - Digital Logic Circuits****Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C201.1	Explain various number systems and characteristics of digital logic families
C201.2	Apply K-maps and Quine McCluskey methods to simplify the given Boolean expressions
C201.3	Explain the implementation of combinational circuit such as multiplexers and demultiplexers - code converters, adders, subtractors, Encoders and Decoders
C201.4	Design various synchronous and asynchronous circuits using Flip Flops
C201.5	Explain asynchronous sequential circuits and programmable logic devices
C201.6	Use VHDL for simulating and testing RTL, combinatorial and sequential circuits

Subject Code & Name: EE3301 - Electromagnetic Fields**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C202.1	Explain Gradient, Divergence, and Curl operations on electromagnetic vector fields.
C202.2	Explain electrostatic fields, electric potential, energy density and their applications.
C202.3	Calculate magneto static fields, magnetic flux density, vector potential
C202.4	Explain different methods of emf generation and Maxwell's equations
C202.5	Explain different methods of emf generation and Maxwell's equations

Subject Code & Name: EE3303 – Electrical Machines-I**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C203.1	Apply the laws governing the electromechanical energy conversion for singly and multiple excited systems
C203.2	Explain the construction and working principle of DC machines.
C203.3	Interpret various characteristics of DC machines.
C203.4	Compute various performance parameters of the machine, by conducting suitable tests.
C203.5	Draw the equivalent circuit of transformer and predetermine the efficiency and regulation.
C203.6	Describe the working principle of auto transformer, three phase transformer with different types of connections.

Subject Code&Name: EC3301 – ElectronicDevicesand Circuits**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C205.1	Explain the structure and operation of PN junction devices (diode, Zener diode, LED and Laser diode)
C205.2	Design clipper, clamper, half wave and full wave rectifier, regulator circuits using PN junction diodes
C205.3	Analyze the structure and characteristics BJT, FET, MOSFET, UJT, Thyristor and IGBT
C205.4	Analyze the performance of various configurations of BJT and MOSFET based amplifier
C205.5	Explain the characteristics of MOS based cascade and differential amplifier
C205.6	Explain the operation of various feedback amplifiers and oscillators

Subject Code &Name: EC3311 – Electronic Devices & Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C206.1	Analyze the characteristics of PN, Zener diode and BJT in CE,CC,CB configurations experimentally
C206.2	Analyze the characteristics of JFET and UJT experimentally
C206.3	Analyze frequency response characteristics of a Common Emitter amplifier experimentally
C206.4	Analyze the characteristics of RC phase shift and LC oscillators experimentally
C206.5	Analyze the characteristics of half-wave and full-wave rectifier with and without filters experimentally
C206.6	Analyze the characteristics of FET based differential amplifier experimentally
C206.7	Calculate the frequency and phase angle using CRO experimentally
C206.8	Analyze the frequency response characteristics of passive filters experimentally

Subject Code&Name: EE8311 - ElectricalMachinesLaboratory-I
Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C207.1	Construct the circuit with appropriate connections for the given DC machine/transformer.
C207.2	Experimentally determine the characteristics of different types of DC machines
C207.3	Demonstrate the speed control techniques for a DC motor for industrial applications.
C207.4	Identify suitable methods for testing of transformer and DC machines.
C207.5	Predetermine the performance parameters of transformers and DC motor.
C207.6	Understand DC motor starters and 3-phase transformer connections.

Semester IV

Subject Code & Name: EE3405 – Electrical Machines-II

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C208.1	Ability to understand the construction and working principle of Synchronous generator.
C208.2	Ability to understand the construction and working principle of Synchronous Motor
C208.3	Ability to understand the construction and working principle of Three Phase Induction Motor
C208.4	Acquire knowledge about the starting and speed control of induction motors.
C208.5	To gain knowledge about the basic principles and working of Single phase induction motors and Special Electrical Machines.

Subject Code & Name: EE3401 – Transmission and Distribution

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C209.1	Understand the structure of power system, computation of transmission line parameter for different configurations and the impact of skin and proximity effects.
C209.2	Model the transmission lines to determine the line performance and to understand the impact of Ferranti effect and corona on line performance.
C209.3	Do Mechanical design of transmission lines, grounding and to understand about the insulators in transmission system.
C209.4	Design the underground cables and understand the performance analysis of underground cable.
C209.5	Understand the modelling, performance analysis and modern trends in distribution system.

Subject Code & Name: EE8403 - Measurement & Instrumentation
Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C210.1	Ability to understand the fundamental art of measurement in engineering.
C210.2	Ability to understand the structural elements of various instruments.
C210.3	Ability to understand the importance of bridge circuits.
C210.4	Ability to understand about various transducers and their characteristics by experiments.
C210.5	Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments

Subject Code & Name: EE3402 – Linear Integrated Circuits and Applications
Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C211.1	Explain monolithic IC fabrication process
C211.2	Explain the fabrication of diodes, capacitance, resistance, FETs and PV Cell.
C211.3	Analyze the characteristics and basic applications (inverting/non-inverting amplifier, summer, differentiator, integrator, V/I and I/V converter) of Op-Amp
C211.4	Explain circuit and applications of op-amp based instrumentation amplifier, log/antilog amplifier, analog multiplier /divider, active filters, comparators, waveform generators, A/D and D/A 83
C211.5	Explain Functional blocks, characteristics and applications of Timer, PLL, analog multiplier ICs.
C211.6	Explain the applications of ICs in Instrumentation amplifier, fixed and variable voltage regulator, SMPS and function generator

Subject Code & Name: EE3404 – Microprocessor and Microcontroller

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C212.1	Ability to write assembly language program for microprocessor and microcontroller
C212.2	Ability to design and implement interfacing of peripheral with microprocessor and microcontroller
C212.3	Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring
C212.4	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.
C212.5	Ability to understand and appreciate advanced architecture evolving microprocessor field.

Subject Code & Name: EE3411 – Electrical Machines Laboratory-II
Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C213.1	Ability to understand and analyze EMF and MMF methods
C213.2	Ability to analyze the characteristics of V and Inverted V curves
C213.3	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
C213.4	Analyze the response of speed variation in slip-ring Induction motor for change in rotor resistance
C213.5	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
C213.6	Ability to acquire knowledge on separation of losses

Subject Code & Name: EE3412 – Linear and Digital Integrated Circuits Laboratory
Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C214.1	Ability to understand and implement Boolean Functions.
C214.2	Ability to understand the importance of code conversion
C214.3	Ability to Design and implement circuits with digital ICs like decoders, multiplexers, register.
C214.4	Ability to acquire knowledge on Application of Op-AmP.
C214.5	Ability to Design and implement counters using analog ICs like timers, VCOs and digital ICs like Flip-flops and counters.

Subject Code & Name: EE3413 – Microprocessor and Microcontroller Laboratory
Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C215.1	Ability to write assembly language program for microprocessor.
C215.2	Ability to write assembly language program for microcontroller.
C215.3	Ability to design and implement interfacing of peripheral with microprocessor and microcontroller
C215.4	Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring.
C215.5	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.

Semester V

Subject code & Subject Name: EE3501- Power system Analysis

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C301.1	Ability to model the power system under steady state operating condition.
C301.2	Ability to carry out power flow analysis using
C301.3	Ability to infer the significance of short circuit studies in designing circuit breakers.
C301.4	Ability to analyze the state of the power system for various unsymmetrical faults.
C301.5	Ability to analyze the stability of power system using different methods.

Subject Code & Name: EE3591-PowerElectronics

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C302.1	Understand the operation of semiconductor devices and dynamic characteristics and to design & analyze the low power SMPS
C302.2	Analyze the various uncontrolled rectifiers and design suitable filter circuits
C302.3	Analyze the operation of the n-pulse converters and evaluate the performance parameters
C302.4	Understand various PWM techniques and apply voltage control and harmonic elimination methods to inverter circuits.
C302.5	Understand the operation of AC voltage controllers and its applications.

Subject Code & Name: EE3503 – Control Systems

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C303.1	Represent simple systems in transfer function and state variable forms.
C303.2	Analyze simple systems in time domain.
C303.3	Analyze simple systems in frequency domain.
C303.4	Infer the stability of systems in time and frequency domain.
C303.5	Interpret characteristics of the system and find out solution for simple control problems.

Subject Code & Name: EE3006 - Power Quality

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C304.1	Use various definitions of power quality for power quality issues.
C304.2	Describe the concepts related with single phase / three phase, linear / nonlinear loads and single phase / three phase sinusoidal, non-sinusoidal source
C304.3	Solve problems related with mitigation of Power System Harmonics
C304.4	Use DSTATCOM for load compensation
C304.5	Demonstrate the role of DVR, SAFs UPQC in power distribution systems

Subject Code & Name: EE3004 – HVDC and FACTS

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C305.1	To Identify and understand the problems in AC transmission systems and understand the need for Flexible AC transmission systems and HVDC Transmission
C305.2	To understand the operation and control of SVC and TCSC and its applications to enhance the stability and damping.
C305.3	To Analyze basic operation and control of voltage source converter based FACTS controllers
C305.4	To demonstrate basic operation and control of Line Commutated HVDC Transmission
C305.5	To explain the d-q control based operation of VSC based HVDC Transmission

Subject Code & Name: CEI331 – PLC Programming

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C306.1	Understand the basics and need for Automation in industries.
C306.2	Explain the logic and flow of any particular programming written for a process.
C306.3	Apply the knowledge to design or improve an existing program to increase productivity of any process.
C306.4	Breakdown SCADA architecture and communication protocols.
C306.5	Build and logic in any of the programming languages from IEC- 61131- 3 standard.

Subject Code & Name: EE3512 - Control and Instrumentation Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C307.1	To model and analyze simple physical systems and simulate the performance in analog and digital platform.
C307.2	To design and implement simple controllers in standard forms.
C307.3	To design compensators based on time and frequency domain specifications.
C307.4	To design a complete closed control loop and evaluate its performance for simple physical systems.
C307.5	To analyze the stability of a physical system in both continuous and discrete domains.

Subject Code & Name: EE3511 – Power Electronics Laboratory**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C308.1	Determine the characteristics of SCR, IGBT, TRIAC, MOSFET and IGBT.
C308.2	Find the transfer characteristics of full converter, semi converter, step up and step down choppers by simulation experimentation.
C308.3	Analyze the voltage waveforms for PWM inverter using various modulation techniques.
C308.4	Design and experimentally verify the performance of basic DC/DC converter topologies used for SMPS.
C308.5	Understand the performance of AC voltage controllers by simulation and experimentation

Semester VI**Subject Code & Name: EE3601 – Protection and switchgear****Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C309.1	Understand and select proper protective scheme and type of Earthing.
C309.2	Explain the operating principles of various relays.
C309.3	Suggest suitable protective scheme for the protection of various power system apparatus.
C309.4	Analyze the importance of static relays and numerical relays in power system protection.
C309.5	Summarize the merits and demerits and application areas of various circuit breakers.

Subject Code & Name: EE3602 – Power System Operation and Control**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C310.1	Understand the day – to – day operation of power system.
C310.2	Model and analyze the control actions that are implemented to meet the minute-to-minute variation of system real power demand.
C310.3	Model and analyze the compensators for reactive power control and various devices used for voltage control.
C310.4	Prepare day ahead and real time economic generation scheduling.
C310.5	Understand the necessity of computer control of power systems.

Subject Code & Name: EE3009 – Special Electrical Machines**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C311.1	Ability to model and analyze power electronic systems and equipment using computational software.
C311.2	Ability to optimally design magnetics required in special machines based drive systems using FEM based software tools.
C311.3	Ability to analyze the dynamic performance of special electrical machines
C311.4	Ability to understand the operation and characteristics of other special electrical machines.
C311.5	Ability to design and conduct experiments towards research.

Subject Code & Name: EE3011 – Multilevel Power Converters**Course Outcomes (Cos)**

Course Outcome No.	Course Outcome
C312.1	Examine the different topologies of multilevel inverters (MLIs) with and without DC link capacitor.
C312.2	Examine the performance of MLIs with Bipolar Pulse Width Modulation (PWM) Unipolar PWM Carrier- Based PWM Schemes Phase Level Shifted Multicarrier Modulation
C312.3	Demonstrate the working principles of Cascaded H-Bridge MLI, diode clamped MLI, flying capacitor MLI and MLI with reduced switch count.
C312.4	Analyze the voltage balancing performance in Diode clamped MLI.
C312.5	Simulate three level, capacitor clamed and diode clamped MLI with R and RL load
C312.6	Simulate MLI with reduced switch configuration using fundamental switching scheme

Subject Code & Name: EE3013 – SMPS and UPS.

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C313.1	Demonstrate the working of buck boost and buck- boost converters in continuous and discontinuous conduction mode.
C313.2	Build buck/boost converters using suitable design method.
C313.3	Analyze the behaviors of isolated DC-DC converters and to design SMPS for battery operated vehicle.
C313.4	Compute state space averaged model and transfer function for buck, boost and buck-boost converters
C313.5	Demonstrate the P, PI and PID controller performance analytically and by simulation for buck boost and buck- boost converters.
C313.6	Compare the different topologies of UPS and also simulate them.

Subject Code & Name: EE3611 – Power System Laboratory

Course Outcomes (Cos)

Course Outcome No.	Course Outcome
C314.1	Model and analyze the performance of the transmission lines.
C314.2	Perform power flow, short circuit, and stability analysis for any power system network.
C314.3	Understand, design, and analyze the load frequency control mechanism.
C314.4	Perform optimal scheduling of generators and compute the state of the power system.
C314.5	Understand, analyze, and apply the relays for power system protection.