

Semester No:	3		
Course Title:	Network Analysis and Synthesis	Course Code:	2EE301
Course Outcome No.	Course Outcome Statements		
2EE301.1	understand the basic laws, theorems and the methods of analysing electrical circuits		
2EE301.2	analyse the properties of coupled circuits and usage of network graph to solve circuits		
2EE301.3	obtain the transient and steady state response of electrical circuit		
2EE301.4	understand two port network and network synthesis		

Semester No:	3		
Course Title:	Signals and Systems	Course Code:	2EE302
Course Outcome No.	Course Outcome Statements		
2EE302.1	interpret the signals in various forms for analysis		
2EE302.2	analyse various signals in time domain and frequency domain systems		
2EE302.3	obtain Fourier analysis of continuous time and discrete time signals		

Semester No:	3		
Course Title:	Electromagnetic Field Theory	Course Code:	2EE303
Course Outcome No.	Course Outcome Statements		
2EE303.1	apply vector calculus and coordinate system transformation in electromagnetic fields		
2EE303.2	understand and calculate various parameters of electromagnetic fields		
2EE303.3	apply Maxwell's equations to analyse electrical systems		

Semester No:	3		
Course Title:	Analog and Digital Electronics	Course Code:	2EE304
Course Outcome No.	Course Outcome Statements		
2EE304.1	conceptualize and analyse different electronic circuits		
2EE304.2	select various components for electronic circuits		
2EE304.3	design analog-digital electronic circuits for various applications		

Semester No:	3		
Course Title:	Analog and Digital Electronics Laboratory	Course Code:	2EE305
Course Outcome No.	Course Outcome Statements		
2EE305.1	compare BJT and FET technology		
2EE305.2	suggest and choose application specific integrated circuit		
2EE305.3	verify the operations of various analog and digital electronic circuits		

Semester No:	3		
Course Title:	Applied Mathematics for Electrical Engineering	Course Code:	2MA303
Course Outcome No.	Course Outcome Statements		
2MA303.1	comprehend and apply vector calculus and complex analysis in engineering problems		
2MA303.2	make use of numerical methods		
2MA303.3	apply the concept of Fourier series to solve electrical engineering problems		
2MA303.4	use Laplace transformation technique to solve differential equations		

Semester No:	3		
Course Title:	Principles of Management	Course Code:	2HS341
Course Outcome No.	Course Outcome Statements		
2HS341.1	interpret the various theories and process of management		
2HS341.2	relate with different functional area of management		
2HS341.3	appreciate the role and need of managers in different organisations		

Semester No:	4		
Course Title:	Control Systems Engineering	Course Code:	2EE401
Course Outcome No.	Course Outcome Statements		
2EE401.1	develop mathematical model of Linear Time Invariant (LTI) System		
2EE401.2	understand behavior of LTI System in time and frequency domain		
2EE401.3	understand design of controller		
2EE401.4	understand state space representation of LTI system and concept of controllability & observability		

Semester No:	4		
Course Title:	Electrical Measurements and Transducers	Course Code:	2EE402
Course Outcome No.	Course Outcome Statements		
2EE402.1	understand the concepts of measurement and measurement systems		
2EE402.2	comprehend construction and working of various analog and digital instruments		
2EE402.3	acquire knowledge on working, importance and applications of various transducers		
2EE402.4	appreciate the relevance of data acquisition system and its application in electrical engineering		

Semester No:	4		
Course Title:	Fundamentals of Power System	Course Code:	2EE403
Course Outcome No.	Course Outcome Statements		
2EE403.1	understand the conventional and renewable energy sources of power generation, with associated issues and challenges		
2EE403.2	apply the basic concepts of designing the transmission and distribution system		
2EE403.3	know the technical specifications to be met by the utility and the consumer to ensure secure and economic functioning of the grid		

Semester No:	4		
Course Title:	Transformers and DC Machines	Course Code:	2EE404
Course Outcome No.	Course Outcome Statements		
2EE404.1	understand the construction and operating principle of transformers and DC machines.		
2EE404.2	acquire knowledge on performance indices of transformers and DC machines.		
2EE404.3	select transformers and DC machines for specific application based on characteristics.		
2EE404.4	understand the use of Permanent Magnet materials in DC machines.		

Semester No:	4		
Course Title:	Power Electronic Converters and Applications	Course Code:	2EE405
Course Outcome No.	Course Outcome Statements		
2EE405.1	analyze operation of devices and choose the same suitable for an application		
2EE405.2	evaluate various performance parameters of converters		
2EE405.3	implement and analyze different control techniques for power electronic converters		
2EE405.4	choose and apply converter topology suitable for an application		

Semester No:	4		
Course Title:	Power Electronics Laboratory	Course Code:	2EE406
Course Outcome No.	Course Outcome Statements		
2EE406.1	illustrate the characteristics and operation of various switching devices		
2EE406.2	suggest triggering methods for various converters		
2EE406.3	analyze and implement converter circuits by using suitable power		

	semiconductor devices
2EE406.4	evaluate various performance parameters of converters
2EE406.5	apply suitable speed control method to various power electronic converter controlled dc motors

Semester No:	4		
Course Title:	Principles of Economics	Course Code:	2HS342
Course Outcome No.	Course Outcome Statements		
2HS342.1	interpret the various basic economic principles		
2HS342.2	relate the economic fundamentals with engineering practices		
2HS342.3	infer the macro-economic aspects of engineering projects		

Semester No:	5		
Course Title:	Rotating AC Machines	Course Code:	2EE501
Course Outcome No.	Course Outcome Statements		
2EE501.1	illustrate constructional features and operating principle of induction machine and synchronous machine		
2EE501.2	analyze characteristics of induction machine and synchronous machine for different operating conditions		
2EE501.3	test induction machine & synchronous machine and calculate its performance parameters		
2EE501.4	analyze and select machine for specific application		

Semester No:	5		
Course Title:	Electrical Power System Analysis	Course Code:	2EE502
Course Outcome No.	Course Outcome Statements		
2EE502.1	solve power system problems using per unit system		
2EE502.2	formulate the network matrices and determine the load flow solution		
2EE502.3	analyze the symmetrical and unsymmetrical faults		
2EE502.4	discuss the power system stability and analyze its effect on power system performance		

Semester No:	5		
Course Title:	Microprocessor and Microcontrollers	Course Code:	2EE503
Course Outcome No.	Course Outcome Statements		
2EE503.1	comprehend architecture of 8085 microprocessor and 8051 microcontroller		

2EE503.2	develop algorithm/program of the microprocessor and microcontrollers for an application
2EE503.3	apply the knowledge of peripheral devices for real world application
2EE503.4	apply the learning of architecture and operational traits for advanced microcontroller

Semester No:	5		
Course Title:	Electrical Power Supply Design	Course Code:	2EEDE01
Course Outcome No.	Course Outcome Statements		
2EEDE01.1	analyze practical design aspects of component used in power electronic converter		
2EEDE01.2	apply the basic concepts of modelling for power supply converters		
2EEDE01.3	select appropriate topology of converter for electrical power supply		
2EEDE01.4	investigate the EMI/EMC problems in electrical power supply		

Semester No:	5		
Course Title:	Modern Control Theory	Course Code:	2EEDE02
Course Outcome No.	Course Outcome Statements		
2EEDE02.1	make state space model of continuous and discrete time LTI system		
2EEDE02.2	design controller and assess stability of LTI system		
2EEDE02.3	comprehend concept of state observer and its design		
2EEDE02.4	apply methods for analysis of nonlinear system		

Semester No:	5		
Course Title:	Utilization of Electrical Power	Course Code:	2EEDE03
Course Outcome No.	Course Outcome Statements		
2EEDE03.1	apply different electrical techniques to use electrical energy to obtain heating, welding, illumination, refrigeration and electrolysis process		
2EEDE03.2	design illumination scheme to obtain required lux level at given location		
2EEDE03.3	comprehend the importance of refrigeration and air conditioning using electrical energy		
2EEDE03.4	design solutions complying with energy efficient and green building requirements		

Semester No:	5		
Course Title:	DC Drives	Course Code:	2EEDE51
Course Outcome No.	Course Outcome Statements		
2EEDE51.1	interpret performance of dc motor drives based on converter topology		
2EEDE51.2	analyze different control circuits of dc motor drives		
2EEDE51.3	analyze dc drive circuits for various applications		
2EEDE51.4	simulate and analyze performance of dc drives		

Semester No:	5		
Course Title:	High Voltage Engineering	Course Code:	2EEDE52
Course Outcome No.	Course Outcome Statements		
2EEDE52.1	illustrate the phenomenon of electrical breakdown in various dielectrics		
2EEDE52.2	make use of various high current and high voltage, generation and measurement techniques		
2EEDE52.3	select appropriate testing method for diagnostics of insulation		
2EEDE52.4	comprehend standards related to test technique and diagnostics		

Semester No:	5		
Course Title:	Data Structures and Algorithms	Course Code:	2EEDE53
Course Outcome No.	Course Outcome Statements		
2EEDE53.1	recognize the need of various data structures		
2EEDE53.2	analyse various data structures and their applicability		
2EEDE53.3	design and implement various techniques for searching, sorting and recurrence		

Semester No:	6		
Course Title:	Power System Protection and Switchgear	Course Code:	2EE601
Course Outcome No.	Course Outcome Statements		
2EE601.1	illustrate the main components and features of protection schemes		
2EE601.2	design the protection schemes for power systems		
2EE601.3	analyse the characteristics of switchgear during fault conditions		
2EE601.4	adopt the advances in power system protection		

Semester No:	6		
Course Title:	Electric Drives	Course Code:	2EE602
Course Outcome No.	Course Outcome Statements		
2EE602.1	select appropriate drive based on load dynamics		
2EE602.2	analyse the performance of ac drives for various operating conditions		
2EE602.3	suggest suitable control technique with appropriate protection for electric drives		
2EE602.4	select appropriate motor as well as its control for traction applications		

Semester No:	6		
Course Title:	Electronic System Design Laboratory	Course Code:	2EE603
Course Outcome No.	Course Outcome Statements		
2EE603.1	understand practical design aspects of components used in power electronic converters		
2EE603.2	investigate the various output waveforms with necessary troubleshooting		
2EE603.3	design and fabricate hardware for various applications		

Semester No:	6		
Course Title:	Modelling of Electrical Machines	Course Code:	2EEDE04
Course Outcome No.	Course Outcome Statements		
2EEDE04.1	evaluate the parameters of various electromechanical systems		
2EEDE04.2	develop mathematical model for electrical machines		
2EEDE04.3	make use of reference frame theory in electrical machines		
2EEDE04.4	examine the performance of electrical machine		

Semester No:	6		
Course Title:	Distribution Generation and Microgrid	Course Code:	2EEDE05
Course Outcome No.	Course Outcome Statements		
2EEDE05.1	illustrate the concept of distributed generation and microgrid		
2EEDE05.2	analyze the impact of grid integration and control aspects of distributed generation		
2EEDE05.3	analyze the operation and control aspects of microgrid		

Semester No:	6		
Course Title:	Analog and Digital Communications	Course Code:	2EEDE06
Course Outcome No.	Course Outcome Statements		
2EEDE06.1	apply concepts of analog and digital communications		
2EEDE06.2	choose and decide relevant communication protocol		
2EEDE06.3	select and apply specific communication protocol for electrical application		

Semester No:	6		
Course Title:	Smart Grid	Course Code:	2EEDE07
Course Outcome No.	Course Outcome Statements		
2EEDE07.1	recognize the concept of smart grid and its advantages over conventional grid		
2EEDE07.2	assess the role of automation in smart grid		
2EEDE07.3	learn various sensing technologies, networking and communication technologies involved with the smart grid		
2EEDE07.4	evaluate the power quality problems associated with the integration of renewable energy sources in smart grid		

Semester No:	6		
Course Title:	Electrical Distribution and Automation	Course Code:	2EEDE08
Course Outcome No.	Course Outcome Statements		
2EEDE08.1	analyse electrical distribution system installation		
2EEDE08.2	compute and analyse studies related to electrical distribution system		
2EEDE08.3	examine the performance and maintenance aspects of electrical installations		
2EEDE08.4	comprehend the distribution automation systems and the control techniques involved		

Semester No:	6		
Course Title:	Multi-Level Inverters	Course Code:	2EEDE09
Course Outcome No.	Course Outcome Statements		
2EEDE09.1	analyze different multi-level inverter topologies select them based on application need		
2EEDE09.2	acquire the knowledge of various PWM techniques and their comparative analysis for multi-level inverters		

2EEDE09.3	understand issues related to multi-level inverters and various mitigation techniques used for problems		
2EEDE09.4	select multi-level inverter topology and its control based on application need		
Semester No:	6		
Course Title:	Special Electrical Machines	Course Code:	2EEDE54
Course Outcome No.	Course Outcome Statements		
2EEDE54.1	analyze properties and characteristics of permanent magnet materials		
2EEDE54.2	analyze constructional & operational aspects of permanent magnet brushless machines and switched reluctance machines		
2EEDE54.3	evaluate performance of permanent magnet brushless machines and switched reluctance machines		
2EEDE54.4	select appropriate machine based on application requirements.		

Semester No:	6		
Course Title:	Advanced Controllers in Power Electronic Systems	Course Code:	2EEDE55
Course Outcome No.	Course Outcome Statements		
2EEDE55.1	design controllers for power electronic converters		
2EEDE55.2	implement control techniques for dc-dc converters		
2EEDE55.3	apply appropriate PWM technique for inverters		

Semester No:	6		
Course Title:	Testing Commissioning and Maintenance of Electrical Equipment	Course Code:	2EEDE56
Course Outcome No.	Course Outcome Statements		
2EEDE56.1	test various electrical equipment as per standards or guidelines and analyze results		
2EEDE56.2	apply the process of commissioning		
2EEDE56.3	appreciate and evaluate various maintenance techniques		
2EEDE56.4	apply and assess various condition monitoring techniques		

Semester No:	6		
Course Title:	Power Electronics in Renewable Energy Conversion	Course Code:	2EEDE57
Course Outcome No.	Course Outcome Statements		
2EEDE57.1	evaluate the need of power electronics in renewable energy systems		
2EEDE57.2	choose and analyze various control algorithms and strategies		
2EEDE57.3	choose and apply converter topology for interfacing of various renewable energy sources to grid		

2EEDE57.4	identify and resolve various issues related with grid integration
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Semester No:	6		
Course Title:	Advanced Microcontrollers	Course Code:	2EEDE58
Course Outcome No.	Course Outcome Statements		
2EEDE58.1	apply the knowledge of architecture for selection of microcontroller for specific task		
2EEDE58.2	develop an embedded firmware for specific microcontroller		
2EEDE58.3	make use of communication protocols for information interchange		
2EEDE58.4	design an embedded controller based system using internal and external peripherals		

Semester No:	7		
Course Title:	Power System Operation and Control	Course Code:	2EE701
Course Outcome No.	Course Outcome Statements		
2EE701.1	suggest economic dispatch of load between generating stations		
2EE701.2	analyze the effect of load variation on frequency of power system network		
2EE701.3	select appropriate voltage control and reactive power compensation techniques and appraise the monitoring and control aspects of the power system		
2EE701.4	estimate the operating state of the power system		

Semester No:	7		
Course Title:	Electrical Machine Design	Course Code:	2EE702
Course Outcome No.	Course Outcome Statements		
2EE702.1	apply theoretical concepts in designing conventional electrical machines		
2EE702.2	select appropriate material for designing electrical machines		
2EE702.3	estimate the machine performance based on the design outcome by data interpretation		
2EE702.4	demonstrate the design by appropriate drawings		

Semester No:	7		
Course Title:	Minor Project	Course Code:	2EE703
Course Outcome No.	Course Outcome Statements		
2EE703.1	make use of acquired knowledge for the problem identification		

	and definition
2EE703.2	analyse the technical aspects of the project with a comprehensive and systematic approach
2EE703.3	propose and select the appropriate solution
2EE703.4	appraise the importance of an individual / team for effective execution
2EE703.5	compile and conclude the project with effective communication amongst peers, mentors and society.

Semester No:	7		
Course Title:	Summer Internship	Course Code:	2EE704
Course Outcome No.	Course Outcome Statements		
2EE704.1	perceive a better understanding of engineering workplace		
2EE704.2	adapt Competencies necessary for professional career		
2EE704.3	value interpersonal and human relation skills		
2EE704.4	build the foundation for industrial internship/ major project		

Semester No:	7		
Course Title:	Electric Vehicle Technology	Course Code:	2EEDE10
Course Outcome No.	Course Outcome Statements		
2EEDE10.1	correlate electric vehicles with fossil fuel driven vehicles and comprehend the basics of vehicle mechanics		
2EEDE10.2	analyze the fundamental electrochemistry of battery and sustainability of advanced energy storage systems		
2EEDE10.3	select suitable motor and drivetrain for electric vehicles		
2EEDE10.4	gain broad knowledge of hybrid vehicles, networks, communications, actuators and controls used in modern automotive systems		

Semester No:	7		
Course Title:	EHVAC and FACTS Devices	Course Code:	2EEDE11
Course Outcome No.	Course Outcome Statements		
2EEDE11.1	identify the issues of conventional power transmission and offer solutions		
2EEDE11.2	calculate electric fields in EHVAC transmission system and suggest design parameters		

2EEDE11.3	interpret performance characteristics of various compensating devices
2EEDE11.4	select appropriate reactive power compensating device for improving power system performance

Semester No:	7		
Course Title:	Power System Optimization	Course Code:	2EEDE12
Course Outcome No.	Course Outcome Statements		
2EEDE12.1	analyse the power system problems requiring optimal solution		
2EEDE12.2	formulate mathematical model(s) for power system problems		
2EEDE12.3	implement classical optimization techniques to solve power system problems		
2EEDE12.4	apply soft computing techniques to solve power system optimization problems		

Semester No:	7		
Course Title:	HVDC Transmission	Course Code:	2EEDE13
Course Outcome No.	Course Outcome Statements		
2EEDE13.1	select appropriate operational aspects of HVDC systems.		
2EEDE13.2	conceptualize control strategy of HVDC systems.		
2EEDE13.3	analyse the performance of HVDC systems.		
2EEDE13.4	adapt latest developments in HVDC transmission		

Semester No:	7		
Course Title:	Electromagnetic Interference and Electromagnetic Compatibility	Course Code:	2EEDE14
Course Outcome No.	Course Outcome Statements		
2EEDE14.1	identify EMI/EMC problems in electrical systems		
2EEDE14.2	analyze the effects of EMI on system performance		
2EEDE14.3	select appropriate technique to reduce the EMI effects on electrical systems		
2EEDE14.4	design of EM compatible electrical systems		

Semester No:	7		
Course Title:	Control of Electric Drives	Course Code:	2EEDE15
Course Outcome No.	Course Outcome Statements		
2EEDE15.1	comprehend purpose of electric drives and its control aspects		
2EEDE15.2	select appropriate control strategy for given application		
2EEDE15.3	integrate schematic blocks to control electric drives		
2EEDE15.4	analyze performance of electric drives for applications concerned		

Semester No:	7		
Course Title:	Restructured Power System	Course Code:	2EEDE16
Course Outcome No.	Course Outcome Statements		
2EEDE16.1	compare the new dimensions associated with traditional power system and restructured power system		
2EEDE16.2	identify the various entities involved in the operation of restructured power market; and power market models		
2EEDE16.3	illustrate electricity transmission pricing approaches and ancillary services market		
2EEDE16.4	analyse the reform initiatives in Indian Power Sector		

Semester No:	7		
Course Title:	Digital Signal Processors for Electrical Systems	Course Code:	2EEDE59
Course Outcome No.	Course Outcome Statements		
2EEDE59.1	comprehend the architecture and memory needs of digital signal processors		
2EEDE59.2	develop programming logic as per the application needs		
2EEDE59.3	perform basic coding in DSP using instruction sets		
2EEDE59.4	apply the knowledge of interfacing systems for real time electrical applications		

Semester No:	7		
Course Title:	Condition Monitoring of	Course Code:	2EEDE60

	Electrical Machines		
Course Outcome No.	Course Outcome Statements		
2EEDE60.1	identify the need and importance of condition monitoring of electrical machine.		
2EEDE60.2	identify the type of fault in electrical machine.		
2EEDE60.3	select appropriate non-destructive diagnostic technique to diagnose the electrical machine.		
2EEDE60.4	infer the results of non-destructive tests and take necessary precautions		

Semester No:	7		
Course Title:	Artificial Intelligence in Electrical Engineering	Course Code:	2EEDE61
Course Outcome No.	Course Outcome Statements		
2EEDE61.1	demonstrate understanding about ANN and fuzzy logic		
2EEDE61.2	select appropriate AI technique for applications related to electrical engineering		
2EEDE61.3	apply meta-heuristic technique for solving optimization problems		
2EEDE61.4	implement AI techniques for electrical engineering applications		

Semester No:	7		
Course Title:	Power Quality and Custom Power Devices	Course Code:	2EEDE62
Course Outcome No.	Course Outcome Statements		
2EEDE62.1	interpret power quality terms and analyse related issues		
2EEDE62.2	implement appropriate power quality improvement solutions		
2EEDE62.3	analyse operation of FACTS controllers		
2EEDE62.4	implement control scheme for various FACTS controllers		

Semester No:	7		
Course Title:	IoT in Electrical Systems	Course Code:	2EEDE63
Course Outcome No.	Course Outcome Statements		
2EEDE63.1	comprehend about the basics and architectural components of IoT		
2EEDE63.2	apply appropriate access technology and protocols as per the		

	application requirement
2EEDE63.3	appreciate the role of big data, cloud computing and security in a IoT system
2EEDE63.4	design IoT applications in different domain and be able to analyze their performance

Semester No:	7		
Course Title:	Design of Special Electrical Machines	Course Code:	2EEDE64
Course Outcome No.	Course Outcome Statements		
2EEDE64.1	understand and apply design aspects of special electrical machines		
2EEDE64.2	select appropriate material for design of special electrical machines		
2EEDE64.3	design special electrical motors		
2EEDE64.4	analyze performance of special electrical machines		

Semester No:	7		
Course Title:	Minor Project	Course Code:	2EE703
Course Outcome No.	Course Outcome Statements		
2EE703.1	make use of acquired knowledge for the problem identification and definition		
2EE703.2	analyse the technical aspects of the project with a comprehensive and systematic approach		
2EE703.3	propose and select the appropriate solution		
2EE703.4	appraise the importance of an individual / team for effective execution		
2EE703.5	compile and conclude the project with effective communication amongst peers, mentors and society		

Semester No:	7		
Course Title:	Summer Internship	Course Code:	2EE704
Course Outcome No.	Course Outcome Statements		
2EE704.1	perceive a better understanding of engineering workplace		
2EE704.2	adapt Competencies necessary for professional career		
2EE704.3	value interpersonal and human relation skills		
2EE704.4	build the foundation for industrial internship/ major project		

Semester No:	8		
Course Title:	Major Project/Internship	Course Code:	2EE801
Course Outcome No.	Course Outcome Statements		
2EE801.1	make use of acquired knowledge for the problem identification and definition related to industry / research / societal need		
2EE801.2	analyze the technical aspects of the project with a comprehensive and systematic approach		
2EE801.3	select the appropriate modern tool(s) and technique(s) for problem solving		
2EE801.4	propose and select the appropriate and cost effective solution		
2EE801.5	appraise the importance of an individual / team for effective execution		
2EE801.6	value the health, environment, safety and ethical practices during the project		
2EE801.7	perceive the possibility of scalability and scope of intellectual property rights		
2EE801.8	compile and conclude the project with effective communication amongst peers, mentors and society		
2EE801.9	develop life-long learning skills for productive career		