



**ANJUMAN-I-ISLAM'S  
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,  
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

**DEPARTMENT OF ELECTRICAL ENGINEERING**

<b>Vision</b>	To be the most sought after academic, research and practice based department of Electrical Engineering that others would wish to emulate.
<b>Mission</b>	Creating Exuberant Electrical Engineering Professionals.

**Programme Outcomes**

PO01	<b>Engineering Knowledge</b>	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO02	<b>Problem Analysis</b>	Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO03	<b>Design/Development of Solutions</b>	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO04	<b>Conduct Investigations of Complex Problems</b>	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems.
PO05	<b>Modern Tool Usage</b>	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO06	<b>The Engineer and Society</b>	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO07	<b>Environment and Sustainability</b>	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO08	<b>Ethics</b>	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO09	<b>Individual and Team Work</b>	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	<b>Communication</b>	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	<b>Project Management and Finance</b>	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	<b>Life-long Learning</b>	Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.
	PSO 01	Develop models, design, analyze and assess the performance of different types of Electrical Machines, Control Systems and generation, transmission, distribution, protection mechanisms in Power Systems.
	PSO 02	To empower the students with engineering concepts along with aptitude skills for developing competency to succeed in competitive examinations.



Course Code & Name	CO No.	Course outcome	PO 01	PO 02	PO 03	PO 04	PO 05	PO 06	PO 07	PO 08	PO 09	PO 10	PO 11	PO 12	PSO 01	PSO 02
FEC104 EM	CO 01	Illustrate the concept of force, moment and apply the same in 2D in 3D force systems	2	1												
	CO 02	Demonstrate the understanding of centroid and locate the same of given lamina	2	1												
	CO 03	Correlate real life application, and estimate the force and other parameters related to friction	2	1												
	CO 04	Establish relation between displacement, velocity and acceleration of a particle & draw the motion curves	2	1												
	CO 05	Apply the concept of Instantaneous center of Rotation (ICR) and find various parameters for the given mechanism	2	1												
	CO 06	Analyze body in motion using force, acceleration, work energy and Impulse momentum principles	2	1												
FEC105 BEE	CO1	Learner will be able to apply various network theorem to determine the circuit response /behaviour	3	3											3	3
	CO2	Learner will be able to Evaluate and analyse single phase circuit.	3	3			3								3	3
	CO3	Learner will be able to Evaluate and analyse three phase circuit.	3	3			3								3	3
	CO4	Learner will be able to understand the constructional features and operation of single phase transformer.	3	3			3								3	3
	CO 5	Learner will be able to illustrate the working principle of three phase machine	3	3			3								3	3
	CO 6	Learner will be able to illustrate the working principle of single phase machine.	3	3			3								3	3
FEL101 EP-I	CO 01	Perform the experiments based on interference in thin film and analyze the results.	2	2		1					2					
	CO 02	Sketch different crystal structures, Miller planes and confirms the theory of crystallography.	2	2		1					2					
	CO 03	Perform the experiments on various semiconductor devices and analyze their characteristics.	2	2		1					2					
	CO 04	Plan and Present mini project objectives, framework and flow based on literature survey.	2	2		2	2		1		2	2		2		
FEL101 EC-I	CO 01	Determine the quality of water sample and calculate its hardness by EDTA method (L3)	1	1		1					2	1				
	CO 02	Calculate the COD of water sample to determine the extent of water pollution by using strong oxidizing agent. (L3)	1	1		1					2	1				
	CO 03	Test various solutions for free acid pH approximately by using pH determination methods. (L4)	1	1		1					2	1				
	CO 04	Synthesize a polymer quantitatively by condensation polymerization method. (L4)	1	1		1					2	1				
	CO 05	Determine the viscosity of given oil with respect to temperature by using Redwood viscometer. (L3)	1	1		1					2	1				
03 EM	CO 01	Verify equations of equilibrium of coplanar force system	2								1					
	CO 02	Verify law of moments.	2								1					
	CO 03	Determine the centroid of plane lamina.	2								1					

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FEL101	CO 04	Evaluate co-efficient of friction between the different surfaces in contact.	2								1					
	CO 05	Demonstrate the types of collision/impact and determine corresponding coefficient of restitution.	2								1					
	CO 06	Differentiate the kinematics and kinetics of a particle.	2								1					
FEL104 BEE	CO 01	Learner will be able to interpret and analyse the behaviour of D.C. circuits using network theorems.	2						1						2	2
	CO 02	Learner will be able to perform and infer experiment on single phase AC circuits.	2		2										2	2
	CO 03	Learner will be able to perform and infer experiment on Three phase AC circuits.	2		2	3									2	2
	CO 04	Learner will be able to illustrate the performance of single phase transformers parameters.	3		2	3									2	2
FEL105 BWSP - I	CO 01	Interpret the drawings for different geometrical tolerances on the given part ,Use marking tool for marking on given part and Develop						1			1	1				
	CO 02	Develop skill required for hardware maintenance,Develop skill to install and operating system and system drives and Develop to					1				1	1				
	CO 03	Develop the necessary skill required to handle/ use different plumbing tools.(L1)						1			1	1				





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FEL 204 CP	CO 01	Implement given algorithms to a program & Correct syntax and logical errors	2	2												
	CO 02	Apply the Concept of looping and Branching Statment programs.	2		2		1									
	CO 03	Apply data in arrays, strings manipulate them through a Program	2		2		1									
	CO 04	Demonstrate the Concept of function in C programming.	2		2											
	CO 05	Demonstrate structures and manipulate them through a Program	2		2		1				1					
	CO 06	Demonstrate the Concept of pointers and implement call by reference concept	2	2	2		1				1					
FEL 205 PCE-I	CO 01	Listen and comprehend all types of spoken discourse successfully.												1		
	CO 02	Speak fluently and make effective professional presentations.												1		
	CO 03	Read large quantities of text in a short time to comprehend, summarise and evaluate content.										2				
	CO 04	Draft precise business letters, academic essays and technical guidelines.												2		
	CO 05	Dress finely and conduct themselves with panache in social, academic and professional situations.									2					1
	CO 06	Understand and implement the behavioural needs of an engineer by following professional ethics.							2		3					
FEL 206 BSWP-II	CO 01	Interpret drawings for different geometrical tolerances on the given part, use marking tool for marking on given part and develop the			1			1	1		1	1		1		
	CO 02	Produce a printed circuit board (PCB), demonstrate wiring practices for the connection of simple electrical load/equipment and identify			1			1	1	1	1	1		1		
	CO 03	Interpret drawings for preparing the given part, use marking tool for marking on given part and develop the necessary skills required to			1			1	1		1	1		1		





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EEEC305 AE	CO 02	Students will be able to describe and Analyse DC and AC parameters of BJT.		2												
	CO 03	Students will be able to describe and Analyse DC and AC parameters of MOSFET	1	2											1	
	CO 04	Students will be able to identify and explain the functioning of OP-AMP and design OP-AMP based circuits.	2		2										1	
	CO 05	Students will be able to identify and describe Practical design aspect of regulated power supply circuits using linear regulators.	1	2					1							
	CO 06	Students will be able to identify and explain applications of commonly used special semiconductor devices		2												
EEL301 EMML	CO 01	Illustrate and analyze the performance of DC machines.	1	2											1	2
	CO 02	Demonstrate different speed control methods of DC motors.	2	2											2	
	CO 03	Illustrate and analyze the working of various sensors, transducers and instruments used for measurement of the various physical parameters.	1	2												1
	CO 04	Demonstrate the use of bridges for measurements of passive electrical components.	3	3	2										3	
	CO 05	Analyse the working signal processing circuits used in measurements and instruments	1	2											1	3
EEL302 EL-I	CO 01	Identify the different types of semiconductor devices and demonstrate their applications in electronic circuits.	1													
	CO 02	Analyse the performance of different types of rectifier with and without filter.	1													
	CO 03	Determine the dc and ac parameters of various semiconductor devices.	1													
	CO 04	Illustrate the frequency response of BJT/ MOSFET amplifier.	1													
	CO 05	Analyse the practical use of Op-amps in signal processing and waveform generators.	1													
EEL303 SL-I	CO 01	students will be able to Develop knowledge of software packages to model and program electrical and electronics systems.(L3)	3													
	CO 02	Students will be able to Model different electrical and electronic systems and analyse results(L4, L3)	3	3												
	CO 03	students will be able to Articulate importance of software packages used for simulation in laboratory experimentation/research by		3												
	CO 04	students will be able to evaluate performance of electric machines/circuits (L5)				3										
	CO 05	Design and comparison of results obtained via simulation and hardware (L6)			3									1		
EEL304 AEEL	CO 01	Demonstrate the effective use of various electrical and electronic measuring lab equipments.	1													
	CO 02	Distinguish various electrical LV/HV substation, supply equipments and their network connection	1													
	CO 03	Examine and use different low voltage protective switchgears along with residential /industrial wiring practices.	1			1										
	CO 04	Illustrate & demonstrate of Repair and maintain common house-hold appliances.	1									1				

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	CO 05	Support & Handle Electrical fire and shock hazards safety challenges in real practice	1		1					1			1			
EEM01MP-1A	CO 01	Apply Knowledge and skills to solve societal /research needs in a group.	3	3	2	1	2	2	2		2			1	1	
	CO 02	Draw the proper inferences from available results through theoretical/ experimental/ simulations.	3	3		2	2		1							
	CO 03	Develop interpersonal skills to work as member or leader of group.								1	3	1		2		
	CO 04	Analyze the impact of solution in societal and environmental context for sustainable development.	2	2		2	2	2	2	1				1		1
	CO 05	Use standard norms of applicable software engineering practices	2	2	2	2	2	1	1	1	2	2	1	1	2	2
	CO 06	Demonstrate and excel in written, oral communication and project management skills.	2	2	2			1		1	1			2	2	1



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EEL400	CO 04	Compare and evaluate various energy sources and energy storage components for EV/HEV	1	1												1
	CO 05	Model, analyze and design EV/HEV drive train with energy management strategies.	1			1	1								1	
	CO 06	Recognize the need to adapt and engage in operations EV/HEV for sustainable transportation system.	1		1			1		1						
EEL401 EACML I	CO 01	Demonstrate the working principles and types of connections of 1 $\phi$ and 3 $\phi$ transformers.	1	1												
	CO 02	Analyze the performance of 3 $\phi$ transformer under various operating conditions.	1												1	
	CO 03	Evaluate the performance of 3 $\phi$ induction motor by carrying no load test , blocked rotor test and no load test	1	1												
	CO 04	Illustrate the operation of various type of 3 $\phi$ induction motor starters.	1													
	CO 05	Illustrate different methods of speed control and braking of 3 $\phi$ induction motors.	1													
EEL402 PPL	CO 01	Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python	1												1	
	CO 02	Determine & Express different Decision Making statements and Functions	1				1									1
	CO 03	Analysis of Object oriented programming in Python		2		1										
	CO 04	explain and summarize different File handling operations	1												1	
	CO 05	Explain how to design GUI Applications in Python and evaluate different database operations	1		1			1								
EEL403 EL-2	CO 01	Students will be able to apply different logic gates , ff and counter in different application	3	2	2		1								1	1
	CO 02	Students will be able to analyze sequential and combinational circuits	3	2	2	1									1	1
	CO 03	Student will be able to explain the the operation of various power electronics devices and circuits	3	2			1								1	1
	CO 04	Students will be able to apply knowledge of power converter while designing the power converter in electronics circuits.	3	2	2										1	1
	CO 05	Students will be able to explain the use of power electronics in real life application	3	2	2		1								1	1
EEL404 SBL-II	CO 01	Students will be able to Understand types of PCBs and various tools used for PCB design	3	2	2											
	CO 02	Students will be able to Identify various electrical/electronic components and their packages/ footprints.	3	2	2					1						1
	CO 03	Students will be able to Illustrate the use of PCB CAD tools and their features for the practical designs	3	2												
	CO 04	Students will be able to Design the schematic, board layout for simple, moderately complex and complex circuits	3	2	2					1						
	CO 05	Students will be able to Fabricate and assemble the PCBs for simple and moderately complex circuits	3	2	2											
	CO 01	Apply Knowledge and skills to solve societal /research needs in a group.	3	3	2	1	2	2	2		2			1	1	

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EEM401 MP 1B	CO 02	Draw the proper inferences from available results through theoretical/ experimental/ simulations.	3	3		2	2		1							
	CO 03	Develop interpersonal skills to work as member or leader of group.								1	3	1		2		
	CO 04	Analyze the impact of solution in societal and environmental context for sustainable development.	2	2		2	2	2	2	1				1		1
	CO 05	Use standard norms of applicable software engineering practices	2	2	2	2	2	1	1	1	2	2	1	1	2	2
	CO 06	Demonstrate and excel in written, oral communication and project management skills.	2	2	2			1		1	1			2	2	1

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EECS01 EACM-II	CO 01	To analyze the operation of synchronous generator, hence design synchronous generator. (L4) (L6)	1	3	3										1	2
	CO 02	To determine the voltage regulation of synchronous generator by different methods (L5)	1	-	-	3	-	-			2	2			1	2
	CO 03	To analyze the parallel operation of synchronous generators. (L4)	1	3											1	2
	CO 04	To apply Blondel's two reaction theory and solve simple problems on salient pole synchronous machines. (L3)	3												1	2
	CO 05	To analyze the operation of synchronous motor. (L4)	1	3											1	2
	CO 06	To derive the basic machine relations in dq0 variables for a synchronous machine without considering damper winding. (L3)	3												1	2
EEC 502 EPS-II	CO 01	students will be able to Analyze symmetrical faults on transmission line	1	1											1	1
	CO 02	Analyse symmetrical component and construct sequence network	1	1											1	1
	CO 03	Analysis of unsymmetrical faults on transmission lines	1	1											1	1
	CO 04	Illustrate the concept of power system transients	1												1	1
	CO 05	students will be able to distinguish different lightning arrester	1												1	1
	CO 06	student will be able to analyse the effect of corona.	1	1											1	1
EEC 503 CS	CO 01	Demonstrate an grouping of the fundamentals of (feedback) control systems	2												1	2
	CO 02	Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.	2	2	1										1	2
	CO 03	Express and solve system equations in state-variable form (state variable models).	2												1	2
	CO 04	Determine the time and frequency-domain responses of first and second-order systems to step and sinusoidal (and to some extent, sinusoidal) inputs.	2												1	2
	CO 05	Determine the (absolute) stability of a closed-loop control system	2												1	2
	CO 06	Determine the stability of system using Root locus, bode plot, polar plot, and Nyquist plot and students will be evaluate gain margin	2			2									1	2
EEC 504 EFW	CO 01	The learner will be able to apply knowledge of mathematics & physics in Electrical engineering field.	2	2	2		2		2					2		2
	CO 02	The learner will be able to analyze electrostatic field.	2	2	2		2		2					2		2
	CO 03	The learner will be able to apply & analyze magnetostatic field.	2	2	2		2		2					2		2
	CO 04	The learner will be able to analyze the effect of material medium on electric and magnetic field.	2	2	2		2		2					2		2
	CO 05	The learner will be able to analyze & formulate in Electric and magnetic field.	2	2	2		2		2					2		2
	CO 06	The learner will be able to formulate wave equation for electromagnetic propagation in different media.	2	2	2		2		2					2		2



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EEL 504	CO 04	Deliver persuasive and professional presentations.							2							
	CO 05	Develop creative thinking and interpersonal skills required for effective professional						1								
	CO 06	Apply codes of ethical conduct, personal integrity and norms of organizational behaviour.									2					
EEM501 MP 2A	CO 01	Apply Knowledge and skills to solve societal /research needs in a group.	3	3	2	1	2	2	2		2			1	1	
	CO 02	Draw the proper inferences from available results through theoretical/ experimental/ simulations.	3	3		2	2		1							
	CO 03	Develop interpersonal skills to work as member or leader of group.								1	3	1		2		
	CO 04	Analyze the impact of solution in societal and environmental context for sustainable development.	2	2		2	2	2	2	1				1		1
	CO 05	Use standard norms of applicable software engineering practices	2	2	2	2	2	1	1	1	2	2	1	1	2	2
	CO 06	Demonstrate and excel in written, oral communication and project management skills.	2	2	2			1		1	1			2	2	1





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	CO 06	To illustrate the working of Linear motors	1	1											1	
EEL601 PSPSL	CO 01	The learner will be able to understand the working principle of various protective devices like circuit breaker, fuses, switches &		2	1	1	1									
	CO 02	The learner will be able to understand the concepts of various over current protection scheme.		2	2	2	1									
	CO 03	The learner will be able to understand different protection scheme of transformer and induction motor.		1	1	1	1									
	CO 04	The learner will be able to understand protection scheme of transmission line.		1	1	1	1									
EEL602 MAL	CO 01	1. To write, debug and execute Assembly language based programs.	1	1	3										1	1
	CO 02	2. To write, debug and execute embedded language based programs.	1	1	3										1	1
	CO 03	3. To design and implement the interfacing of internal peripheral devices.	1	1	3										1	1
	CO 04	4. To design and implement the interfacing of external peripheral devices.	1	1	3										1	1
	CO 05	Identify risks, manage the change to assure quality in software projects.	1	1											1	1
	CO 06	Apply testing principles on software project and understand the maintenance concepts.	1	1											1	1
EEL603 CSDL	CO 01	Implement various types of compensators and control algorithms using simulation platforms	1	2	1						1	1			1	1
	CO 02	Apply root-locus & Bode Plot techniques to analyze and design control systems.	1	1	2						1	1			1	1
	CO 03	Able to design digital controllers, assess their design through the constraint specifications	1	2	2						1	1			1	1
EEL604 SBL3	CO 01	learner will be able to comprehend with various components and subsystems used in industrial automation				2	2									
	CO 02	learner will be able understand the integration of components and subsystem				2							2	2		
	CO 03	learner will be able to interface the microcontroller/PLC with external devices/sesors											2	2		
	CO 04	learner will be able to interface the microcontroller/PLC with control circuits											2	2		
	CO 05	learner will be able to implement system for any application											2	2		
EEM601 MP 2B	CO 01	Apply Knowledge and skills to solve societal /research needs in a group.	3	3	2	1	2	2	2		2			1	1	
	CO 02	Draw the proper inferences from available results through theoretical/ experimental/ simulations.	3	3		2	2		1							
	CO 03	Develop interpersonal skills to work as member or leader of group.								1	3	1		2		
	CO 04	Analyze the impact of solution in societal and environmental context for sustainable development.	2	2		2	2	2	2	1				1		1
	CO 05	Use standard norms of applicable software engineering practices	2	2	2	2	2	1	1	1	2	2	1	1	2	2

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	CO 06	Demonstrate and excel in written, oral communication and project management skills.	2	2	2			1		1	1			2	2	1





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E	CO 04	Implement control algorithm for a power electronic converter in hardware / simulation platform	3	2	2		1								1		
EEP701	CO 01	Apply Knowledge and skills to solve societal /research needs in a group.	3	3	2	1	2	2		2		2		1	1		
	CO 02	Draw the proper inferences from available results through theoretical/ experimental/ simulations.	3	3		2	2					1					
	CO 03	Develop interpersonal skills to work as member or leader of group.							3	1		1			2		
	CO 04	Analyze the impact of solution in societal and environmental context for sustainable development.	2	2		2	2				2	1	2		1		1
	CO 05	Develop a solution using norms of applicable software engineering practices and demonstrate excel in written, oral communication and	2	2	2	2	2	2	2	2	1	1	1	1	1	2	2
	CO 06	Combine different skills like critical thinking, problem solving approach, ethical practice and team work which will lead to life long	2	2	2				1		1	1			2	2	1

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EEC801 Design, Management and Auditing of electrical system	CO 01	Distribution System like requirements, design considerations, estimating and costing.	3	2	2										2	1
	CO 02	To do sizing, selecting transformer, switchgear and cable as required for distribution system	3	2	2										2	1
	CO 03	energy conservation method used in it and design methods of illumination system for a given purpose.	2	2	2			2							2	1
	CO 04	explain and apply fundamentals of energy audit methodology and approach. (To submit a report of Home Energy Audit)	2		2							3			2	2
	CO 05	to design suitable energy monitoring system to analyze and optimize the energy consumption	2	2				2	2						2	1
	CO 06	To illustrate Engineering knowledge in energy audit and energy efficient technologies to improve energy efficiency	2					2	2						2	2
EEC802 FACTS	CO 01	Illustrate the aspects of flexible ac transmission system over conventional ac transmission system	2	2		2			1						2	2
	CO 02	Analyze the concept of load compensation	2	2		2									2	2
	CO 03	Categorize the static shunt compensation for transmission line	2	2		2									2	2
	CO 04	Categorize the static series compensation for transmission line	2	2		2									2	2
	CO 05	Outline the concept of voltage and phase angle regulator	2	2		2									2	2
	CO 06	Explain unified power flow controller using circuit diagram and phasor	2	2		2									2	2
EED08044 PSPR	CO 01	Students will be able to EXPLAIN the different power system planning and forecasting technique.	2	2		2	2								2	
	CO 02	Students will be able to EXPLAIN & make generation system model for the power system in terms of frequency and duration failure	2	2		2	2									
	CO 03	Students will be able to calculate reliability indices of the power system based on system model and load curve	2	2		2	2									
	CO 04	system, predict its behavior and do the required change in order to achieve reliability	2	2		2	2									
	CO 05	Students will be able to EXPLAIN the Power reserves Methods.	2	2		2	2									
	CO 06	Students will be able to EXPLAIN the Composite generation and transmission system & power reliability.	2	2		2	2									
EED08021 PM	CO 01	Students will be able to Discriminate / selection criteria and select an appropriate project from different options	1	2									2			
	CO 02	Students will be able to Explain and Write work break down structure for a project and develop a schedule based on it		2									2			
	CO 03	to the project and decide an approach to deal with them strategically	1	2									2			
	CO 04	Students will be able to Use Earned value technique to design and determine & predict status of the project	2		2											
	CO 05	Students will be able to Capture lessons learned and implement during project phases and document them for future reference	1	2												
	CO 01	Apply business conceptual skills in today's market.	3										2			

Course Code & Name	CO No.	Course outcome	PO 01	PO 02	PO 03	PO 04	PO 05	PO 06	PO 07	PO 08	PO 09	PO 10	PO 11	PO 12	PSO 01	PSO 02	
ILO78028 DBM	CO 02	Analyze the consumer behaviour using modern tools.	3	3			2						2				
	CO 03	Apply business management skills to solve organizational issues	1							2			3				
	CO 04	Identify and evaluate ethical, social, and environmental impacts in business	2	2		3					2		2				
	CO 05	Formulate E-business strategy for challenges & E-transition of a business.	1	1	2	2								3	2		
	CO 06	Design a business plan.	1	2	3									3	2		
EEL801 SL4	CO 01	Analyze the operation of various electrical lighting systems using simulation.	3	1	1		2								1	1	
	CO 02	pcb design for implementation for basic electrical network	3	1	1		2								1	1	
	CO 03	Analyze the operation of various electrical systems using simulator	3	2	1		2								1	1	
	CO 04	software based design of solar pv power generating plant	3	2	1		2								1	1	
EEL802 ESDL	CO 01	Design electrical system for different applications.	1		2										1		
	CO 02	Design and Implementation of Auxiliary Circuits for Power Electronics Applications			2												
	CO 03	Design and Implementation of small scale Solar PV (upto 2 kW) power generating plant.			3										1		
EEP803	CO 01	Apply Knowledge and skills to solve societal /research needs in a group.	3	3	2	1	2	2		2		2		1	1		
	CO 02	Draw the proper inferences from available results through theoretical/ experimental/ simulations.	3	3		2	2					1					
	CO 03	Develop interpersonal skills to work as member or leader of group.							3	1		1		2			
	CO 04	Analyze the impact of solution in societal and environmental context for sustainable development.	2	2		2	2				2	1	2		1	1	
	CO 05	Develop a solution using norms of applicable software engineering practices and demonstrate excel in written, oral communication and	2	2	2	2	2	2	2	2	1	1	1	1	1	2	2
	CO 06	Combine different skills like critical thinking, problem solving approach, ethical practice and team work which will lead to life long	2	2	2				1		1	1			2	2	1