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KUPPAM ENGINEERING COLLEGE

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KUPPAM - 517 425, Chittoor Dist., A.P. ☎: 08570 - 256966 (O), 256977 (F)

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

R19 CO-PO-PSO MAPPING

Year/Sem: I/I

Subject code: 19A54101		Subject Name: Linear Algebra & Calculus													
CO1	Solve systems of linear equations; determine the rank, eigenvalues and eigenvectors.														
CO2	Analyze the behaviour of functions by using mean value theorems														
CO3	Find partial derivatives numerically and symbolically and use them to analyze and interpret the way a function varies.														
CO4	Apply double integration techniques in evaluating areas bounded by region														
CO5	Find beta and gamma functions and its relations														
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Cos															
CO 1	2	2	2										3		
CO 2	2	2	3	3									1	1	
CO 3	3	2	3	1									1	3	
CO 4	2	2													
CO 5	1	1													


Program Co-ordinator


Head of Dept.
Electrical & Electronics En
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Subject code: 19A56101T		Subject Name: Applied Physics												
CO1	Identify the importance of the optical phenomenon.													
CO2	Explain the significant concepts of dielectric and magnetic materials.													
CO3	Impart knowledge in basics concepts of electromagnetic waves.													
CO4	Identify the importance of semiconductor and super conductivity .													
CO5	Familiarize the applications of nano materials relevant to engineering branches.													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1	3	2											3	
CO 2	3	2											3	
CO 3	3												3	
CO 4	3												3	
CO 5	3		3											3

P. Kiran
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Subject code: 19A52101T		Subject Name: Communicative English I												
CO1	Compose letters and writing paragraphs													
CO2	Could analyse graphs and charts													
CO3	Compose SMS and writing E-mails													
CO4	Participate effectively in GD and debate													
CO5	Comprehend and write report according to the requirement													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1									1	3			2	2
CO 2									2	3			1	1
CO 3									1	3			1	3
CO 4									2	3			2	
CO 5									1	3				1

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Subject code: 19A02101	Subject Name: Electrical & Electronics Engineering Workshop
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CO1	Apply wood working skills in real world applications.
-----	---

CO2	Build different objects with metal sheets in real world applications.
-----	---

CO3	Apply fitting operations in various applications.
-----	---

CO4	Apply different types of basic electric circuit connections.
-----	--

CO5	Use soldering and brazing techniques.
-----	---------------------------------------

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	3	2											2
CO 2	3		3										1	3
CO 3	3	2											3	
CO 4	3												3	
CO 5	3												3	

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Subject code: 19A56101P				Subject Name: Applied Physics Lab										
CO1	Understands the concepts of interference and diffraction and their applications.													
CO2	Understand the role of optical fiber parameters in communication.													
CO3	Recognize the importance of energy gap in the study of conductivity and hall effect in a semiconductor.													
CO4	Illustrate the magnetic and dielectric materials applications.													
CO5	Apply the principle of semiconductor in various electronic devices.													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1	3			3										3
CO 2	3												3	
CO 3	3	2											3	
CO 4	3		2											2
CO 5	2		3										3	

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Subject code: 19A52101P		Subject Name: Communicative English 1 Lab												
CO1	Make use of pronunciation and accent.													
CO2	Apply the stress pattern and voice modulation													
CO3	Improves participation in just a minute and role play.													
CO4	Develop interview skills.													
CO5	Illustrate fluently a review of book or movie efficiently.													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1									1	3				
CO 2									2	3				
CO 3									1	3			3	
CO 4									2	3				
CO 5									1	3			3	

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Year/Sem: I/II

Subject code: 19A01201T		Subject Name: Basic Civil & Mechanical Engineering												
CO1	Outline sources of energy, power plant economics, and environmental aspects													
CO2	Describe working components of a steam power plant													
CO3	Illustrate the working mechanism of Diesel and Gas turbine power plants													
CO4	Explain different types of pumps and their application													
CO5	Explain working of IC engines with combustion process													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1	3	2	1										3	
CO 2	2	2	2										3	
CO 3	1	2	1										2	
CO 4	2	2	3										2	
CO 5	2	2	1											

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Subject code: 19A54201		Subject Name: Differential Equations and Vector Calculus													
CO1	solve the differential equations related to various engineering fields														
CO2	Identify solution methods for partial differential equations that model physical processes														
CO3	interpret the physical meaning of different operators such as gradient, curl and divergence														
CO4	estimate the work done against a field, circulation and flux using vector calculus														
CO5	evaluate the rates of fluid flow along and across curves														
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Cos															
CO 1	2	2											3		
CO 2	2	3											3		
CO 3	3	2											3		
CO 4	2	3											3		
CO 5	2	2											3		


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Subject code: 19A51102T		Subject Name: Chemistry												
CO1	Compare the materials of construction for battery and electrochemical sensors													
CO2	Explain the preparation, properties, and applications of thermoplastics & thermo settings, elastomers & conducting polymers													
CO3	Explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures													
CO4	Apply the principle of supramolecular chemistry in application of molecular machines and switches													
CO5	Demonstrate the application of Rotaxanes and Catenanes as artificial molecular machines													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1	3	2											3	
CO 2	3	3											3	
CO 3	3												3	
CO 4	3		3										2	
CO 5	2		3											3


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Subject code: 19A05201T		Subject Name: Data Structures													
CO1	Select Appropriate Data Structure for solving a real world problem														
CO2	Select appropriate file organization technique depending on the processing to be done														
CO3	Construct Indexes for Databases														
CO4	Analyse the Algorithms														
CO5	Develop Algorithm for Sorting large files of data														
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Cos															
CO 1	3	2	1											1	
CO 2	1	2		1									2		
CO 3	2	1	2	1											
CO 4	2		2	2										1	
CO 5	2	2		1										2	


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Subject code: 19A03101		Subject Name: Engineering Workshop												
CO1	Apply wood working skills in real world applications													
CO2	Build different parts with metal sheets in real world applications													
CO3	Apply fitting operations in various applications													
CO4	Apply different types of basic electric circuit connections													
CO5	Demonstrate soldering and brazing													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1	3	2		3									1	
CO 2	2		3											
CO 3	3	1		3										
CO 4	3	1		3									3	
CO 5	2		3										2	

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Subject code: 19A03102		Subject Name: Engineering Graphics Lab												
CO1	Draw various curves applied in engineering													
CO2	Show projections of solids and sections graphically													
CO3	Draw the development of surfaces of solids													
CO4	Use computers as a drafting tool													
CO5	Draw isometric and orthographic drawings using CAD packages.													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1	3		2	3									2	
CO 2	2	2	3	3									2	
CO 3	1	3	3											
CO 4	3	2			3									3
CO 5	3	2		3										3


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Subject code: 19A01201P		Subject Name: BASIC CIVIL & MECHANICAL ENGINEERING LAB												
CO1	Explain different working cycles of engine.													
CO2	Illustrate the working of refrigeration systems													
CO3	Evaluate heat balance sheet of IC engine.													
CO4	Find heat losses in various engines													
CO5	Performance test on vapour absorption refrigeration system													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cos														
CO 1	3	2	1										2	
CO 2	3	2	3										1	
CO 3	3												2	
CO 4	3	3											2	
CO 5	2			3										3

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Subject code: 19A51102P		Subject Name: Chemistry Lab													
CO1		Determine the cell constant and conductance of solutions													
CO2		Prepare advanced polymer materials													
CO3		Measure the strength of an acid present in secondary batteries													
CO4		Analyse the IR and NMR of some organic compounds													
CO5		Verify the fundamental concepts with experiments													
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Cos															
CO 1	2		3										3		
CO 2	3	2		3										3	
CO 3	3	3		3									2		
CO 4		3											2		
CO 5	3	3													

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Subject code: 19A05201P

Subject Name: DATA STRUCTURES LAB

CO1 Select the data structure appropriate for solving the problem

CO2 Implement searching and sorting algorithms

CO3 Design new data types

CO4 Illustrate the working of stack and queue

CO5 Organize the data in the form of files

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	1										2	
CO 2	2	2											2	
CO 3	1	2	1											2
CO 4	2	2											1	
CO 5	2	2	1											2


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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Year/Sem: II/I

Subject code : 19A54302				Subject name: COMPLEX VARIABLES & TRANSFORMS										
CO1	Understand the analyticity of complex functions and conformal mappings.													
CO2	Apply cauchy's integral formula and cauchy's integral theorem to evaluate improper integrals along contours.													
CO3	Understand the usage of laplace transforms, fourier transforms and z transforms.													
CO4	Evaluate the fourier series expansion of periodic functions.													
CO5	Understand the use of fourier transforms and apply z transforms to solve difference equations.													
POs→ COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	2	2	2										3	
CO 2	2	2	3	3									2	
CO 3	3	2	3	1									2	
CO 4	2	2	1	3										
CO 5	3	1	1	3										3


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Subject Code: 19A02301T						Subject Name: Basic Electrical Circuits								
CO1	Determine electrical parameters for a given network													
CO2	To solve 1- ϕ AC circuits with series and parallel combinations of electrical circuit elements R, L and C.													
CO3	Apply the network theorems suitably to determine required parameter													
CO4	To distinguish between various theorems and inter-relationship between various theorems													
CO5	To identify the solution methodology in solving electrical circuits based on the topology													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2											3	
CO2	3	3	2										3	
CO3	3	3												3
CO4	2	3											2	
CO5		3	3											3


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Subject Code: 19A02302		Subject name: Power System Architecture												
CO1	Obtain the principle of operation of Thermal, Hydro and Nuclear Power Plants													
CO2	Obtain the principle of operation of Solar, Wind, Bio-Gas, Geothermal and Ocean Power generation													
CO3	Obtain the transmission line parameters for different types of lines and also for symmetrical and asymmetrical single and three phase, single and double circuit lines.													
CO4	Obtain the classification of transmission lines and A,B,C,D constants for transmission lines, need of shunt compensation.													
CO5	Learn Substation and types of Substations, Various arrangements in Substations.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3												2	
CO2	3													
CO3	3	3											3	
CO4		3	3										3	
CO5	3													


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Subject Code: 19A02303T		Subject Name: DC Machines & Transformers												
CO1	To understand the electro mechanical energy conversion and magnetic materials and properties and applications.													
CO2	To understand the construction, operation, armature winding and characteristics on DC generators.													
CO3	To analyse the speed control, testing and parallel operation and analyse the characteristics of DC motors.													
CO4	To understand the construction operation, and parallel operation of transformers And the efficiency and regulation of a transformers.													
CO5	Analyse the phase conversion and tap changing of transformers.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3		3											3
CO2	3													
CO3	2	3		3									3	2
CO4	3	3											3	
CO5	3													


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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Subject Code:19A04304		Subject name: Digital Electronics and Logic Design													
CO1	Understand various number systems, error detecting, correcting binary codes, logic families, combinational and sequential circuits.														
CO2	Apply Boolean laws, k-map and Q-M methods to minimize switching functions. Also describe the various performance metrics for logic families.														
CO3	Construct combinational and sequential logic circuits.														
CO4	Explain RAM, ROM, PROM, EPROM and PLDs.														
CO5	Compare different types of Programmable logic devices and logic families.														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2												2		
CO2	3	3											3	3	
CO3	3	3													
CO4		3													
CO5	2	3											3		

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Subject code : 19A02301P		Subject name: Basic Electrical Circuits Lab													
CO1	Remember. understand and apply various theorems and verify practically.														
CO2	Understand and analyse active, reactive power measurements in three phase balanced & un balanced circuits.														
CO3	Calculate self, Mutual inductances of coupled circuits														
CO4	Understand and analysed locus diagrams of series RL, RC circuits.														
CO5	Understand and verify the resonance phenomenon.														
POs→ COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO 1	1	2		3									3		
CO 2	2	2	1	3										2	
CO 3	1	2		3										3	
CO 4	3	3	1												
CO 5	1	2		2									3		


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Subject code : 19A04306P		Subject name: Semiconductor Devices And Circuits Lab													
CO1	To verify the theoretical concepts practically from all the experiments.														
CO2	To analyse the characteristics of Diodes, BJT, MOSFET, UJT.														
CO3	Design and simulate to Prove the Miller's and dual of Miller's theorem in CE amplifier														
CO4	To design the amplifier circuits from the given specifications														
CO5	To Model the electronic circuits using tools such as PSPICE/Multisim.														
POs→ COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO 1	3	1	2										3		
CO 2	3	1	2										3		
CO 3	3	2	3	2									3		
CO 4	2	2	2												
CO 5	2	1	2	3									3		


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Subject code : 19A02303P		Subject name: DC MACHINES & TRANSFORMERS LAB													
CO1	Able to conduct and analyse load test on DC shunt generators														
CO2	Able to understand and analyse magnetization characteristics of DC shunt generator														
CO3	Able to understand and analyse speed control techniques and efficiency of DC machines														
CO4	Able to understand to predetermine efficiency of single phase Transformers														
CO5	Able to understand to predetermine regulation of single phase Transformers														
POs→	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
COs↓															
CO 1	3		2	3									3		
CO 2	3	3		3									3		
CO 3	3	2	3										3	3	
CO 4	2	2	2										3		
CO 5	2	2	3										3		

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Year/Sem: II/II

Subject code: 20A54402		Subject name: Numerical Methods & Probability Theory												
CO1	Understanding the concepts of iterative methods newton rapsion gauss sidel													
CO2	Understanding the concepts of Lagrange's formulae. Gauss forward and backward formula, Stirling's formula, Bessel's formula.													
CO3	Understanding concept of simpson trepezodial taylors series etc to solve the de													
CO4	Understanding concept of probability and random variables													
CO5	Understanding the concept of random variable distribution by binomial poissions normal distribution													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3										3	
CO2	3	2	3										2	
CO3	3	2	2											3
CO4	2	3	3											2
CO5	3	2	2											


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Subject code : 19A02401T		Subject name: Electrical Circuit Analysis													
CO1	Identify the basic concepts of locus diagram and distinguish its parameters														
CO2	Illustrate the network parameters of T and π configuration of DC circuits.														
CO3	Analyze the performance of R-L, R-C, R-L-C series circuits using Transients.														
CO4	Develop the Fourier Fourier transforms Applications using non sinusoidal sources in electrical circuits.														
CO5	compare and summarize the types of filters and equalizers														
POs→ COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO 1	3	3	2										3		
CO 2	2	3		3										3	
CO 3	2	2	3											2	
CO 4	3	3	2										3		
CO 5		3	2	3											


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Subject code: 19A02402				Subject name: Engineering Electromagnetics										
CO1	understand the concept of electrostatics													
CO2	understand the concept of conductors and dielectrics													
CO3	understand the concept of fundamental laws related to magneto materials maxwells equation													
CO4	understanding the concept of scalar magnetic potential and vector magnetic potential and boundary conditions of the field													
CO5	understanding the concept of time varying fields by using faradays law and maxwells equation and Poynting vector & Theorem													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2											2	
CO2	2	3											2	
CO3	3	2											2	
CO4	3	2												3
CO5	3	2												3


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Subject code: 19A02403				Subject name: Power Electronics										
CO1	Understand the basic power semiconductor devices & detail study of their characteristics													
CO2	Understand the concepts of phase controlled rectifiers for single and three phases													
CO3	Understand the types of choppers and their waveforms													
CO4	Understand the single and three phase inverter using different loads													
CO5	Understand the concept of AC voltage controllers and Cyclo converters													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2									3	
CO2	3	3	3	3									3	
CO3	3	3	2	2										3
CO4	3	2	2	2										3
CO5	3	2	2	2										3


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Subject code: 19A04405		Subject Name: Analog Electronic Circuits												
CO1	Apply multistage amplifiers to solve engineering problems													
CO2	Analyse feedback amplifiers and oscillator													
CO3	Analyse harmonic distortion in large signal amplifiers													
CO4	Understand different Offsets present in Op amp & nullification circuits.													
CO5	Apply linear ICs in a given engineering situation													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2										3	
CO2	3	2	2											3
CO3	2	3	2										3	
CO4	2	3	2											3
CO5	3	2	2											3


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Subject code:19A05304T		Subject name: Python Programming												
CO1	Apply the features of Python language in various real applications													
CO2	Select appropriate data structure of Python for solving a problem.													
CO3	Apply object orientation concepts.													
CO4	Develop object oriented programs using Python for solving real-world problems.													
CO5	Apply modularity to programs.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3									3	3
CO2	3	3	3	3									3	3
CO3	3	3	3	3									3	3
CO4	3	3	3	3									3	3
CO5	3	3	3	3									3	3


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Subject code: 19A52301		Subject name: UHV													
CO1	Students are expected to become more aware of themselves, and their surroundings														
CO2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.														
CO3	They would have better critical ability.														
CO4	They would also become sensitive to their commitment towards what they have understood														
CO5	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2	3	2											3	
CO2	3	2	3											3	
CO3	2	2	3												
CO4	2	3	2												
CO5	3	2	2											3	


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year/sem: II-II Sem

Subject code:19A02401P				Subject name: Electrical Circuit Analysis Lab										
CO1	Compute the parameters of Two Port Networks													
CO2	Understand and analysed locus diagrams of series RL, RC circuits.													
CO3	Understand and verify the resonance phenomenon.													
CO4	Calculate self , Mutual inductances of coupled circuits													
CO5	Verify fundamental theorems of circuit theory using software.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2		3									2	
CO2	3	3	2										3	
CO3	2	2		2									2	
CO4	3	2		3										3
CO5	2	2	3											3

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Subject code: 19A04406					Subject name: Electronic Circuits Lab									
CO1	Analyse various amplifier circuits.													
CO2	Design multistage amplifiers.													
CO3	Design OPAMP based analog circuits.													
CO4	Understand working of logic gates.													
CO5	Design and implement Combinational and Sequential logic circuits.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2		2									3	
CO2	2	2	3										2	
CO3	3	3		3									2	
CO4	3	2		3										3
CO5	2	3	3											2


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Subject code: 19A99301		Subject name: Environmental Science												
CO1	Grasp multidisciplinary nature of environmental studies and various renewable and non-renewable resources.													
CO2	Understand flow and bio-geo- chemical cycles and ecological pyramids.													
CO3	Understand various causes of pollution and solid waste management and related preventive measures.													
CO4	About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.													
CO5	Casus of population explosion, value education and welfare programmes.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2												3
CO2	3	3	3										2	
CO3	2	2												2
CO4	3	2												
CO5	2	2	2										3	

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Year/Sem: **III-I SEM**

Subject code: 19A02501T					Subject name: AC machines									
CO1	Understand the concept of windings, MMF's and rotating magnetic field													
CO2	Understand the operation and performance characteristics of Induction machines													
CO3	Understand the methods of starting, braking and determining equivalent circuit of single-phase induction motor.													
CO4	Understand characteristics, performance and parallel operation of synchronous generator													
CO5	Understand the operation, starting methods, V and inverted V curves of synchronous motor													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2									3	
CO2	3	3	3	2									2	
CO3	3	3	3	3									2	
CO4	3	3	2	2										2
CO5	3	3	2	3										3


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Subject code: 19A02502		Subject name: Control Systems												
CO1	To make the students familiarize various representation of system.													
CO2	To make the students analyse the time response and steady state errors and error constants													
CO3	To make the students analyse the stability of linear system in time domain.													
CO4	To make the students design compensator based on the frequency domain specification.													
CO5	To develop linear models mainly state variable model and transfer function model.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	2	2									3	
CO2	3	2	2	2									2	
CO3	2	3	2	2									3	
CO4	2	3	2	2										2
CO5	2	2	3	2										2


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Subject code: 19A52601				Subject name: English Language Skills										
CO1	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English													
CO2	Apply grammatical structures to formulate sentences and correct word forms													
CO3	Analyse discourse markers to speak clearly on a specific topic in informal discussions													
CO4	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.													
CO5	Create a coherent paragraph interpreting a figure/graph/chart/table													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	3											3
CO2	3	3	2											2
CO3	3	2	3										3	
CO4	3	3	2										2	
CO5	3	3	2											


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Subject code:19A02504			Subject name: Electrical Machine Design											
CO1	Exhibit the study of mmf calculation and thermal rating of various types of electrical machines.													
CO2	Construct armature and field systems for D.C machines													
CO3	Apply knowledge to design core, yoke, windings and cooling systems of transformers.													
CO4	Construct the design of stator and rotor of induction machines.													
CO5	Construct stator and rotor of synchronous machines and study their thermal behaviour.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2											3
CO2	3	3	3										2	
CO3	3	3	3											
CO4	3	3	2										3	
CO5	3	3	2										2	

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Subject code: 19A02503b			Subject name: DC drives											
CO1	The basic concepts of DC Motor fundamentals and mechanical systems.													
CO2	The concept of converter control control strategies													
CO3	Design various chopper control techniques.													
CO4	The concept of closed loop control of DC Drives													
CO5	Design digital control of DC Drives.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	3										3	
CO2	3	3	2										2	3
CO3	3	2	3	3									3	
CO4	3	3	2	3									3	
CO5	3	3	3										3	3


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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Subject code: 19A04506a				Subject name: Analog Electronics										
CO1	Understand the characteristics of various types of electronic devices and circuits.													
CO2	Apply various principles of electronic devices and circuits to solve complex Engineering problems													
CO3	Utilize the functions of various types of electronic devices and circuits.													
CO4	Illustrate the functions of various types of electronic devices and circuits in real time applications.													
CO5	Develop various types of electronic circuits for use in real time applications.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2									2	2
CO2	3	3	3	3									3	3
CO3	3	3	3	3									3	3
CO4	2	2	2	2									2	2
CO5	2	2	2	2									2	2


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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Subject code: 20A02402T				Subject name: AC Machines Lab										
CO1	Analyze the behavior of Induction Machines													
CO2	Experiment with synchronous machines for deliberate its performances													
CO3	Analyze the performance characteristics of Induction motors.													
CO4	Asses the performance of the given Synchronous motors													
CO5	Determination of Equivalent circuit of a single phase induction motor.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		3	3									2	
CO2	2			3									2	
CO3	3	3	3	2										2
CO4	3	3	2	3									2	
CO5	2	2	3	2										2


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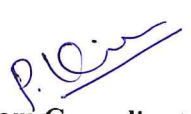
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Subject code: 19A02506		Subject name: Power Electronics & Simulation Lab												
CO1	Demonstrate the Characteristics of SCR, MOSFET & IGBT													
CO2	Analyze the operation of firing circuits for SCR													
CO3	Classify and analyze control of different power electronic converters													
CO4	Analyze the operation of forced commutation circuits for SCR													
CO5	Analyze the operation of power electronic converter using simulation tools													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3		3	2									3	
CO2	3		2	3										3
CO3	3			3									3	
CO4	3		3	3									3	
CO5	3			3										3


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Subject code: 19A99601		Subject name: Research Methodology													
CO1	Understand basic concepts and its methodologies														
CO2	Demonstrate the knowledge of research processes														
CO3	Read, comprehend and explain research articles in their academic discipline														
CO4	Analyse various types of testing tools used in research														
CO5	Design a research paper without any ethical issues														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2	3	3										3		
CO2	2	2											2		
CO3	3	3	3											2	
CO4	3	3	2											3	
CO5	2	2	3											3	


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III YEAR II SEM

Subject code: 19A04301				Subject name: Signals & Systems										
CO1	Understand the mathematical description and representation of continuous-time and discrete-time signals and systems													
CO2	Understand the concepts of various transform techniques.													
CO3	Apply sampling theorem to convert continuous-time signals to discrete-time signals and reconstruct back, different transform techniques to solve signals and system related problems.													
CO4	Explain the frequency spectra of various continuous-time and discrete-time signals using different transform methods.													
CO5	Classify the systems based on their properties and determine the response of them.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2										2	2
CO2	2		2										2	2
CO3	3	3	3	3									3	3
CO4	2		2										2	2
CO5	2	2	2										2	2

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Subject code: 19A02601					Subject name: Digital Computer Platforms									
CO1	Understand the basic architecture & pin diagram of 8086 microprocessor.													
CO2	Assembly language programming to perform a given task, Interrupt service routines for all interrupt types													
CO3	Microprocessor and Micro controller designing for various applications.													
CO4	Write Assembly Language Programs for the Digital Signal Processors and use Interrupts for real-time control applications													
CO5	Write Xilinx programming and understanding of Spartan FPGA board													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	3											2
CO2	2	2	2											2
CO3	3	3	3										3	
CO4	3	3	2											3
CO5	3	2	3										2	

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Subject code: 19A02602		Subject name: Power System Analysis													
CO1	Model the various power system components for steady state analysis and to formulate Y bus using different methods														
CO2	Analyse and to develop algorithm for Z bus and modified Z bus														
CO3	To carry out the power flow analysis by Gauss sidel, Newton raphson,D ecoupled and FDLF														
CO4	To carry out short circuit analysis of the power system for unbalanced fault using symmetrical components theory														
CO5	To compute the stability of system with the help of equal area criteria & finding solution of swing equation														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	3	2	3	2									3		
CO2	3	3	3	3										2	
CO3	3	3	3	2									2		
CO4	3	2	3	2										3	
CO5	3	3	3	3									3		


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Subject code: 19A02603a		Subject name: Power Quality													
CO1	Explain the basic concepts of power quality and its standards.														
CO2	Understand the transients, short duration and long duration variations in the power lines.														
CO3	Recall the fundamentals of harmonics/applied harmonics and the mitigation techniques.														
CO4	Choose the power quality measurement data with measuring equipment.														
CO5	Explain the power measurement data according to standards.														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2												2		
CO2	2												2		
CO3	3												2	3	
CO4	3	3		3									3		
CO5	2	2											2		


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Subject code: 19A02605		Subject name: CONTROL SYSTEMS AND SIMULATION LAB												
CO1	examine the characteristics of various control system components													
CO2	interpret the effects of P, PI, PID controllers													
CO3	verify compensator characteristics and logic gates function through PLC													
CO4	analyse the response of a second order system													
CO5	Illustrate the capability of effective usage of MATLAB in the analysis of Linear Time Invariant Systems													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3		3									2	
CO2	3	3		2									3	
CO3	3	3		2										2
CO4	3	3												3
CO5	3	3		3									2	


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Subject code: 19A04604a				Subject name: Basics Of VLSI										
CO1	Learn the basic fabrication process of MOS transistors, study CMOS inverter circuits, basic circuit concepts such as Sheet Resistance, Area Capacitance and Delay calculation													
CO2	Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality.													
CO3	Analyse the performance of CMOS Inverter circuits													
CO4	Compare various Scaling models and understand the effect of scaling on device parameters													
CO5	Field programmable gate arrays and realization techniques, CPLDs and FPGAs for implementing the various logic functions.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2										2	
CO2	2	2	3										3	
CO3	3	3	3										2	
CO4	3	3	2										3	
CO5	2	2	3											2


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Subject code: 19A52602b				Subject name: Managerial Economics And Financial Analysis										
CO1	Define the concepts related to Managerial Economics, financial accounting and management.													
CO2	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets													
CO3	Apply the Concept of Production cost and revenues for effective Business decision													
CO4	Analyse how to invest their capital and maximize returns													
CO5	Evaluate the capital budgeting techniques													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	2										2	
CO2	3	3	3										3	
CO3	3	3	2											2
CO4	2	3	3											3
CO5	3	3	3										2	


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Subject code: 19A02601		Subject name: Digital Computer Platforms Lab												
CO1	Understand the basic concepts to write assembly language programming													
CO2	Understand the basic concepts to write assembly language programming on 8086 Microprocessors.													
CO3	Design various device configurations and Interfacing of various devices with 8086.													
CO4	Understand the basic concepts to write programming on 8051 Micro controller.													
CO5	Design various Interfacing circuitry with 8051 Micro controller with its peripheral devices													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3									2	
CO2	3			2										2
CO3			3										3	
CO4	3			3										2
CO5			3										2	


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Year/Sem: IV/I

Subject code: 19A02701				Subject Name: Measurements & Sensors										
CO1	Able to Understand the working of various instruments and equipment's used for the measurement of various electrical engineering parameters like voltage, current, power, phase etc in industry as well as in power generation, transmission and distribution sectors													
CO2	Able to analyse and solve the varieties of problems and issues coming up in the vast field of electrical measurements													
CO3	Analyse the different operation of extension range ammeters and voltmeters, DC and AC bridge for measurement of parameters and different characteristics of periodic and aperiodic signals using CRO													
CO4	Design and development of various voltage and current measuring meters and the varieties of issues coming up in the field of electrical measurements													
CO5	Understand various Lissajous pattern													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3	2									3	2
CO2	2	3	2	3									2	3
CO3	3	3	3	2										2
CO4	2	3	3	2									2	3
CO5	3	2	2	3									3	2

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Subject code: 19A02702		Subject name: Power System Protection													
CO1	To understand the purpose and operation of fuses and circuit breakers														
CO2	To understand the operation of relays and importance of zones of protection.														
CO3	To understand the various types of faults and protection schemes of faults in generators and transformers.														
CO4	To understand the protection of feeders, bus bars, transmission lines and know about over current relay and 3 Zone protection														
CO5	To understand the concept on generation over voltages and protection and know about lightning arresters and insulation coordination.														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2	2	3										3		
CO2	2	3	2											2	
CO3	3	2	2											3	
CO4	3	2	3										2		
CO5	2	3	2											2	

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Subjectcode:19A02703d		Subject name: Applications of Power Electronics to Renewable Energy Sources												
CO1	Identify specific applications of Power Electronics in certain alternate sources.													
CO2	Understand about Power Quality problems as applied to Power Systems and the converters to be used													
CO3	Explain the UPC and its design and application.													
CO4	Understand the designing of high power drives for wind turbines.													
CO5	Understand the principle of electric aircraft and applications of power converters to it													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3											3	3
CO2	2												2	2
CO3	3		2										3	3
CO4	3		2										2	2
CO5	2												3	3


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Subject code: 19A04704b					Subject name: Principles Of Digital Signal Processing									
CO1	Formulate engineering problems in terms of DSP tasks.													
CO2	Apply engineering problems solving strategies to DSP problems.													
CO3	Design and test DSP algorithms.													
CO4	Analyse digital and analog signals and systems.													
CO5	Encode information into signals.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	2	3									2	
CO2	3	2	2	2										3
CO3	3	3	2	2									2	
CO4	2	3	3	2									3	
CO5	3	3	2	3										2

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Subject code: 19A52701b							Subject name: Management Science							
CO1	Explain the principles and applications of management knowledge and exposure to the latest developments in the field.													
CO2	Understand and organization design and structure.													
CO3	Describe the various functional aspects of human resource and functional management.													
CO4	Explain the nature of organizational control and effective project management.													
CO5	Analyse the contemporary management issues.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1							2				2		2	
CO2							2				2			2
CO3						3					2		3	
CO4						2					3			2
CO5						3					3		2	


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Subject code: 19A02705		Subject name: Power Systems & Simulation Lab												
CO1	Build the practical knowledge on calculation of sequence impedance, fault currents, voltages and sub transient reluctance's.													
CO2	Build the practical knowledge on how to draw the equivalent circuit of three winding transformer.													
CO3	Get the knowledge on development of MATLAB program for formation of Y and Z buses.													
CO4	Get the knowledge on development of MATLAB programs for Gauss-Seidel and Fast Decouple Load Flow studies.													
CO5	Get the knowledge on development of SIMULINK model for single area load frequency problem.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3		3									3	3
CO2	3	3		3									3	3
CO3	3		3	3									3	3
CO4	3		3	3									3	3
CO5	3		3	3									3	3


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Subject Code : 19A02706		Subject name: Measurements Lab													
CO1	Calibrate various electrical measuring instruments														
CO2	Find the values of inductance and capacitance using AC bridges														
CO3	Solve the coefficient of coupling between two coupled coils.														
CO4	Find the values of very low resistances														
CO5	Experiment with Measurement of resistance for different range of resistors using bridges														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2	2		2									2	2	
CO2	3	2		3									2		
CO3	3	3		3										3	
CO4	3	2		2									3		
CO5	3	3		3									3		


Program Co-ordinator


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Kuppam Engineering College
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

IV Year II Sem

Subject code: 19A02801a				Subject name: Electrical Distribution System Automation										
CO1	Understand the distribution system planning and automation													
CO2	Explain the design considerations of sub transmission lines													
CO3	Explain the design considerations of primary and secondary systems													
CO4	Apply various protective devices and its coordination techniques to distribution system													
CO5	Evaluate voltage drop and line loss calculations and design the capacitors and voltage regulating equipment to improve the power factor and voltage profile													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3		2									3	
CO2	3	2		3										2
CO3	2	2		2									2	
CO4	3	3	2											3
CO5	3	2	3											2

P. I. C.
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Subject code: 19A03802a		Subject name: Energy conservation and management												
CO1	Analyse electrical systems performance of electric motors and lighting systems.													
CO2	Examine energy conservation methods in thermal systems.													
CO3	Estimate efficiency of major utilities such as fans, pumps, compressed air systems ,HVAC													
CO4	Elaborate principles of energy management, programs, energy demand and energy pricing													
CO5	Train on energy conservation in major utilities.													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3												2	
CO2	3													
CO3		3												3
CO4	3												3	
CO5		3												


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Subject code: 19A02803		Subject name: Project												
CO1	Analyse the problem, formulation and solution of the selected project													
CO2	Develop solutions for contemporary problems using modern tools for sustainable development.													
CO3	Demonstrate ethical and professional sustainability while working in a team and communicate effectively for the benefit of the society.													
CO4	Understand the engineering, finance and management principles.													
CO5	Design and develop of electrical equipment's for domestic, industrial and agricultural needs													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3									3	
CO2	3	3	3	2	3	3	2		3	3	2	3	3	3
CO3	3	3	3	2		2	3	3	2	3	3	3	3	3
CO4	3	3	3	2	3						2	2	3	
CO5	3	3	3									3	3	


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