ESHAN COLLEGE OF ENGINEERING, FARAH, MATHURA

Department of Electrical Engineering (EE)

Programme: B.Tech. Electrical Engineering (EE)

CO	Course Code/Course Name/ Course Outcome (CO)	Programme Outcome (PO)												Programme Specific Outcome (PSO)	
	KOE038 : Electronics Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the concept of PN junction and special purpose diodes	3	2	2	3									2	
CO2	Study the application of conventional diode and semiconductor diode	3	2	2	3									2	
CO3	Analyze the I-V characteristics of BJT and FET	2	3	3	3									2	
CO4	Analyze the of Op-Amp, amplifiers, integrator, and differentiator	2	3	3	3									2	
CO5	Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope	3	2	3	3									2	
	Target Outcome (Average) PO	2.6	2.4	2.6	3									2	

	KAS302 : Maths IV	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Remember the concept of partial differential equation and to solve partial differential equations	3	1	2	1									2	
CO2	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations	3	2	2	1									2	
CO3	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting	3	1	1	1									2	
CO4	Remember the concept of probability to evaluate probability distributions	3	1	3	1									2	
CO5	Apply the concept of hypothesis testing and statistical quality control to create control charts	2	2	3	1									2	
	Target Outcome (Average) PO	2.8	1.4	2.2	1									2	

	KAS301 : Technical Communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the nature and objective of Technical Communication relevant for the work place as Engineers										3		1		
CO2	Utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions										3		1		
CO3	Imbibe inputs by presentation skills to enhance confidence in face of diverse audience										3		1		
CO4	Create a vast know-how of the application of the learning to promote their technical competence										3		1		
CO5	Evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics										3		1		
	Target Outcome (Average) PO										3		1		

	KVE301 : Universal Human Values	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand value inputs, need, basic guidelines, content and process of value education in current scenario of the society						3	1	3				2	2	
CO2	Understand the meaning of Harmony in the Self the Co-existence of Self and Body						3	1	3				2	2	
CO3	Understand the value of harmony in human-human relationships and explore their role in ensuring a harmonious society						3	1	3				2	2	
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature						3	1	3				2	2	
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment during work						3	1	3				2	2	
	Target Outcome (Average) PO		#DIV/0!	#DIV/0!	#DIV/0!		3	1	3				2	2	

	KEE301 : Electromagnetic Field Theory	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply different coordinate systems and their application in electromagnetic field theory, establish a relation between any two systems and also understand the vector calculus	3	3	2	2									2	1
CO2	Understand the concept of static electric field. Understand the concept of current and properties of conductors. Establish boundary conditions and to calculate capacitances of different types of capacitors	3	2	2	2									2	1
CO3	Understand the concept of static magnetic field, magnetic scalar and vector potential	3	2	2	2									2	1
CO4	Understand the forces due to magnetic field, magnetization, magnetic boundary conditions and inductors	3	2	2	2									2	1

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CO5	Understand displacement current, time varying fields, propagation and reflection of EM waves and transmission lines	3	2	2	2									2	1
	Target Outcome (Average) PO	3	2.2	2	2									2	1

	KEE302 : Electrical Measurements & Instrumentation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Evaluate errors in measurement as well as identify and use different types of instruments for the measurement of voltage, current, power and energy	2	3	2	3	2								2	1
CO2	Display the knowledge of measurement of electrical quantities resistance, inductance and capacitance with the help of bridges	2	2	2	2	2								2	1
CO3	Demonstrate the working of instrument transformers as well as calculate the errors in current and potential transformers	2	2	2	3	2								2	1
CO4	Manifest the working of electronic instruments like voltmeter, multi-meter, frequency meter and CRO	3	2	2	2	2								2	1
CO5	Display the knowledge of transducers, their classifications and their applications for the measurement of physical quantities like motion, force, pressure, temperature, flow and liquid level	3	2	2	2	2								2	1
	Target Outcome (Average) PO	2.4	2.2	2	2.4	2								2	1

	KEE303 : Basic Signals & Systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Represent the various types of signals & systems and can perform mathematical operations on them	3	2	2	3	2								2	1
CO2	Analyze the response of LTI system to Fourier series and Fourier transform and to evaluate their applications to network analysis	3	3	2	2	2								2	1
CO3	Analyze the properties of continuous time signals and system using Laplace transform and determine the response of linear system to known inputs	3	3	2	2	2								2	1
CO4	Implement the concepts of Z transform to solve complex engineering problems using difference equations	3	2	2	2	2								2	1
CO5	Develop and analyze the concept of state-space models for SISO & MIMO system	2	2	3	3	2								2	1
	Target Outcome (Average) PO	2.8	2.4	2.2	2.4	2								2	1

	KEE351 : Analog Electronics Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the characteristics and applications of the Semiconductor devices		2	3	3	3				2				2	2
CO2	Draw the characteristics of BJT, FET and MOSFET		3	3	3	3				2				2	2
CO3	Understand the parameters of Operational Amplifier and instrumentation Amplifier with their applications		2	3	3	3				2				2	2
CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits		2	3	3	3				2				2	2
CO5	Understand the V-I characteristics of Power devices like SCR, TRIAC		2	3	3	3				2				2	2
	Target Outcome (Average) PO		2.2	3	3	3				2				2	2

	KEE352 : Electrical Measurements and Instrumentation Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the importance of calibration of measuring instruments.		3	3	3	3				2				2	2
CO2	Demonstrate the construction and working of different measuring instruments.		3	3	3	3				2				2	2
CO3	Demonstrate the construction and working of different AC and DC bridges, along with their applications.		3	3	3	3				2				2	2
CO4	Ability to measure electrical engineering parameters like voltage, current, power & phase difference in industry as well as in power generation, transmission and distribution sectors.		3	3	3	3				2				2	2
CO5	Capability to analyze and solving the variety of problems in the field of electrical measurements		3	3	3	3				2				2	2
	Target Outcome (Average) PO		3	3	3	3				2				2	2

	KEE353 : Electrical Workshop	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Perform various types of Electrical connections		3	3	3	3				2				3	2
CO2	Develop small circuits on PCB		3	3	3	3				2				3	2
CO3	Differentiate between various electrical wires, cables and accessories.		3	3	3	3				2				3	2
CO4	Demonstrate the layout of electrical substation & various safety measures.		3	3	3	3				2				3	2
	Target Outcome (Average) PO		3	3	3	3				2				3	2

	KEE354 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and apply the knowledge of the industry in which the internship is done		3	3	3					2		3	1	3	2
CO2	Remember and apply the knowledge and skills learned in the classroom in a work setting		3	3	3					2		3	1	3	2

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CO3	Understand and analyze the activities and functions of business professionals		3	3	3					2		3	1	3	2
CO4	Understand and evaluate the areas for future knowledge and skill development		3	3	3					2		3	1	3	2
CO5	Analyze and develop a greater understanding about career options while more clearlydefining personal career goals		3	3	3					2		3	1	3	2
	Target Outcome (Average) PO		3	3	3					2		3	1	3	2

	KNC301 : Computer System Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats					2	2		2				1	3	2
CO2	Discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats					2	2		2				1	3	2
CO3	Discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques					2	2		2				1	3	2
CO4	Articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios					2	2		2				1	3	2
CO5	Articulate the well-known cyber-attack incidents, explain the attack scenarios, and explain mitigation techniques					2	2		2				1	3	2
	Target Outcome (Average) PO					2	2		2				1	3	2

	KNC302 : Python Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Read and write simple Python programs					3							2	3	2
CO2	Develop Python programs with conditionals and loops					3							2	3	2
CO3	Define Python functions and to use Python data structures — lists, tuples, dictionaries					3							2	3	2
CO4	Do input/output with files in Python					3							2	3	2
CO5	Do searching, sorting and merging in Python					3							2	3	2
	Target Outcome (Average) PO					3							2	3	2

	KOE034 : Sensor and Instrumentation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the use of sensors for measurement of displacement, force and pressure	2	3	3	3	3								3	2
CO2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level	3	3	3	3	3								3	2
CO3	Demonstrate the use of virtual instrumentation in automation industries	1	3	3	3	3								3	2
CO4	Identify and use data acquisition methods	1	3	3	3	3								3	2
CO5	Comprehend intelligent instrumentation in industrial automation	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1.6	3	3	3	3								3	2

	KOE035 : Basics Data Structure and Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and analyze the time and space complexity of an algorithm	3	2	2	2	3								3	2
CO2	Understand and implement fundamental algorithms (including sorting algorithms, graph algorithms, and dynamic programming)	2	2	2	2	3								3	2
CO3	Discuss various algorithm design techniques for developing algorithms	2	3	3	3	3								3	2
CO4	Discuss various searching, sorting and graph traversal algorithms	3	3	3	2	3								3	2
CO5	Understand operation on Queue, Priority Queue, D-Queue	3	2	2	3	3								3	2
	Target Outcome (Average) PO	2.6	2.4	2.4	2.4	3								3	2

	KOE036 : Introduction to Soft Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory	2	3	2	2	3								3	2
CO2	Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic	2	3	2	2	3								3	2
CO3	Describe with genetic algorithms and other random search procedures useful while seeking global optimum in self-learning situations	2	3	2	3	3								3	2
CO4	Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications	2	3	2	2	3								3	2
CO5	Develop some familiarity with current research problems and research methods in Soft Computing Techniques	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	2.2	2.4	3								3	2

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	KOE037 : Analog Electronics Circuits	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the characteristics of diodes and transistors	3	3	2	3	3								3	2
CO2	Design and analyze various rectifier and amplifier circuits	2	2	3	2	3								3	2
CO3	Design sinusoidal and non-sinusoidal oscillators	2	2	3	2	3								3	2
CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits	3	3	2	3	3								3	2
CO5	Design LPF, HPF, BPF, BSF	2	2	3	2	3								3	2
	Target Outcome (Average) PO	2.4	2.4	2.6	2.4	3								3	2

	KAS402 : Maths IV	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Remember the concept of partial differential equation and to solve partial differential equations	3	1	3	1										
CO2	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations	3	1	3	1										
CO3	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting	3	1	3	1										
CO4	Remember the concept of probability to evaluate probability distributions	3	1	3	1										
CO5	Apply the concept of hypothesis testing and statistical quality control to create control charts	3	1	3	1										
	Target Outcome (Average) PO	3	1	3	1										

	KVE401 : Universal Human Values	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society						2	1	3				2		
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body						2	1	3				2		
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society						2	1	3				2		
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature						2	1	3				2		
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work						2	1	3				2		
	Target Outcome (Average) PO						2	1	3				2		

	KAS401 : Technical Communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the nature and objective of Technical Communication relevant for the work place as Engineers					3					3		1		
CO2	Utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions					3					3		1		
CO3	Imbibe inputs by presentation skills to enhance confidence in face of diverse audience					3					3		1		
CO4	Create a vast know-how of the application of the learning to promote their technical competence					3					3		1		
CO5	Evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics					3					3		1		
	Target Outcome (Average) PO					3					3		1		

	KEE401 : Digital Electronics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply concepts of Digital Binary System and implementation of Gates	2	2	3	2	3								3	2
CO2	Analyze and design of Combinational logic circuits	3	3	2	3	3								3	2
CO3	Analyze and design of Sequential logic circuits with their applications	3	3	2	3	3								3	2
CO4	Implement the Design procedure of Synchronous & Asynchronous Sequential Circuits	3	2	3	3	3								3	2
CO5	Apply the concept of Digital Logic Families with circuit implementation	2	3	2	2	3								3	2
	Target Outcome (Average) PO	2.6	2.6	2.4	2.6	3								3	2

	KEE402 : Electrical Machines-I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyze the various principles & concepts involved in Electromechanical Energy conversion	1	3	3	3	3								3	2
CO2	Demonstrate the constructional details of DC machines as well as transformers, and principle of operation of brushless DC motor, Stepper and DC Servo motors	1	3	3	3	3								3	2
CO3	Evaluate the performance and characteristics of DC Machine as motor and as well as generator	1	3	3	3	3								3	2
CO4	Evaluate the performance of transformers, individually and in parallel operation	1	3	3	3	3								3	2
CO5	Demonstrate and perform various connections of three phase transformers	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

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	KEE403 : Networks Analysis & Synthesis	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the knowledge of basic circuital law, nodal and mesh methods of circuit analysis and simplify the network using Graph Theory approach	1	3	3	3	3								3	2
CO2	Analyze the AC and DC circuits using Kirchhoff's law and Network simplification theorems	1	3	3	3	3								3	2
CO3	Analyze steady-state responses and transient response of DC and AC circuits using classical and Laplace transform methods	1	3	3	3	3								3	2
CO4	Demonstrate the concept of complex frequency and analyze the structure and function of one and two port network. Also evaluate and analysis two-port network parameters	1	3	3	3	3								3	2
CO5	Synthesize one port network and analyze different filters	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

	KEE451 : Circuit and Simulation Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the knowledge of basic circuital law, nodal and mesh analysis for given circuit		2	3	2	3				2			1	3	2
CO2	Analysis of the AC and DC circuits using simulation techniques		3	2	2	3				2			1	3	2
CO3	Analysis of transient response of AC circuits		3	2	2	3				2			1	3	2
CO4	Evaluation and analysis of two-port network parameters		3	3	3	3				2			1	3	2
CO5	Estimation of parameters of different filters		3	3	3	3				2			1	3	2
	Target Outcome (Average) PO		2.8	2.6	2.4	3				2			1	3	2

	KEE452 : Electrical Machines - I Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyze and conduct basic tests on DC Machines and single-phase Transformer		3	3	3	3				2			1	3	2
CO2	Obtain the performance indices using standard analytical as well as graphical methods		3	3	3	3				2			1	3	2
CO3	Determine the magnetization, Load and speed-torque characteristics of DC Machines		3	3	3	3				2			1	3	2
CO4	Demonstrate procedures and analysis techniques to perform electromagnetic and electromechanical tests on electrical machines		3	3	3	3				2			1	3	2
	Target Outcome (Average) PO		3	3	3	3				2			1	3	2

	KEE453 : Digital Electronics Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understanding of Digital Binary System and implementation of Gates		2	2	3	3				2			1	3	2
CO2	Design the Sequential circuits with the help of combinational circuits and feedback element		2	3	2	3				2			1	3	2
CO3	Design data selector circuits with the help of universal Gates		2	3	2	3				2			1	3	2
CO4	Design the counters with the help of sequential circuit and basic Gates		2	3	2	3				2			1	3	2
CO5	Implement the projects using the digital ICs and electronics components		2	2	3	3				2			1	3	2
	Target Outcome (Average) PO		2	2.6	2.4	3				2			1	3	2

	KNC402 : Python Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Read and write simple Python programs		1	1	3	3									
CO2	Develop Python programs with conditionals and loops		2	3	3	3									
CO3	Define Python functions and to use Python data structures – lists, tuples, dictionaries		2	3	1	3									
CO4	Do input/output with files in Python		2	1	3	3									
CO5	Do searching, sorting and merging in Python		1	1	3	3									
	Target Outcome (Average) PO		1.6	1.8	2.6	3									

	KNC401 : Computer System Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats					3			1						
CO2	Discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats					3			1						
CO3	Discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques					3			1						
CO4	Articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios					3			1						
CO5	Articulate the well-known cyber-attack incidents, explain the attack scenarios, and explain mitigation techniques					3			1						
	Target Outcome (Average) PO					3			1						

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	KOE044 : Sensor and Instrumentation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the use of sensors for measurement of displacement, force and pressure	1	3	3	3	3								3	2
CO2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration, flow and level	1	3	3	3	3								3	2
CO3	Demonstrate the use of virtual instrumentation in automation industries	1	3	3	3	3								3	2
CO4	Identify and use data acquisition methods	1	3	3	3	3								3	2
CO5	Comprehend intelligent instrumentation in industrial automation	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

	KOE045 : Basics Data Structure and Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and analyze the time and space complexity of algorithm	2	3	3	3	3								3	2
CO2	Understand and implement fundamental algorithms (including sorting algorithms, graph algorithms, and dynamic programming)	2	3	3	3	3								3	2
CO3	Discuss various algorithm design techniques for developing algorithms	2	3	3	3	3								3	2
CO4	Discuss various searching, sorting and graph traversal algorithms	2	3	3	3	3								3	2
CO5	Understand operation on Queue, Priority Queue, D-Queue	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KOE046 : Introduction to Soft Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory	1	3	3	3	3								3	2
CO2	Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic	1	3	3	3	3								3	2
CO3	Describe with genetic algorithms and other random search procedures useful while seeking global optimum in self-learning situations	1	3	3	3	3								3	2
CO4	Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications	1	3	3	3	3								3	2
CO5	Develop some familiarity with current research problems and research methods in Soft Computing Techniques	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

	KOE047 : Analog Electronics Circuits	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the characteristics of diodes and transistors	1	3	3	3	3								3	2
CO2	Design and analyze various rectifier and amplifier circuits	1	3	3	3	3								3	2
CO3	Design sinusoidal and non-sinusoidal oscillators	1	3	3	3	3								3	2
CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits	1	3	3	3	3								3	2
CO5	Design LPF, HPF, BPF, BSF	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

	KOE048 : Electronics Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the concept of PN junction and special purpose diodes	3	3	3	3	3								3	2
CO2	Study the application of conventional diode and semiconductor diode	3	3	3	3	3								3	2
CO3	Analyze the I-V characteristics of BJT and FET	3	3	3	3	3								3	2
CO4	Analyze the of Op-Amp, amplifiers, integrator, and differentiator	3	3	3	3	3								3	2
CO5	Understand the concept of digital storage oscilloscope	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KEE501 : Power System – I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the working principle and basic components of conventional power plants	3	3	3	3	2								3	2
CO2	Recognize elements of power system and their functions, as well as compare the different types of supply systems	3	3	3	3	2								3	2
CO3	Calculate sag and tension in overhead lines with and without wind and ice loading	3	3	3	3	2								3	2
CO4	Understand the effect of earth on capacitance of transmission lines.	3	3	3	3	2								3	2
CO5	Elucidate different types of cables and grading of cables	3	3	3	3	2								3	2
	Target Outcome (Average) PO	3	3	3	3	2								3	2

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	KEE502 : Control System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify the basic elements, structures and the characteristics of feedback control systems	3	3	3	3	3								3	2
CO2	Design specification for different control action	3	3	3	3	3								3	2
CO3	Analyze the stability of linear time-invariant systems	3	3	3	3	3								3	2
CO4	Determine the stability of linear time-invariant systems	3	3	3	3	3								3	2
CO5	Design different type of compensators to achieve the desired performance of control System	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KEE503 : Electrical Machines-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate the constructional details and principle of operation of three phase Induction and Synchronous Machines.	1	3	3	3	3								3	2
CO2	Analyze the performance of the three phase Induction and Synchronous Machines	1	3	3	3	3								3	2
CO3	Select appropriate three phase AC machine for any application and appraise its significance	1	3	3	3	3								3	2
CO4	Start and observe the various characteristics of three phase Induction & Synchronous Machines	1	3	1	3	3								3	2
CO5	Explain the principle of operation and performance of Single-Phase Induction Motor & Universal Motor	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	2.6	3	3								3	2

	KEE051 : Robotics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Learn the basic terminology used in robotics	3	3	3	3	3								3	2
CO2	Conceptualize 3-D translation & orientation of robot arm kinematics	3	3	3	3	3								3	2
CO3	Understand different robotic actuators and power transmission systems	3	3	3	3	3								3	2
CO4	Classify the types of robotic grippers used in automation industries	3	3	3	3	3								3	2
CO5	Realization of robotic sensoric system and their interfacing with robot controller	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KEE052 : Sensors and Transducers	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the working of commonly used sensors in industry for measurement of displacement, force and pressure	3	3	3	3	3								3	2
CO2	Recognize the working of commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level	3	3	3	3	3								3	2
CO3	Identify the application of machine vision	3	3	3	3	3								3	2
CO4	Conceptualize signal conditioning and data acquisition methods	3	3	3	3	3								3	2
CO5	Comprehend smart sensors and their applications in automation systems	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KEE053 : Industrial Automation & Control	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the concept of automation, its terminology and basic communication protocol	1	3	3	3	3								3	2
CO2	Apply Relay logic for automation	1	3	3	3	3								3	2
CO3	Learn about PLC, its operation and application in automation	1	3	3	3	3								3	2
CO4	Analyze the industrial sensors, its terminology and how one can interface with PLC	1	3	3	3	3								3	2
CO5	Demonstrate Pneumatic system and its application in industry	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

	KEE054 : Electrical Standards and Engineering Practices	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Interpret different National & International Electrical Standards in practice	3	3	3	3								2	3	2
CO2	Understand Indian standards for cables, lighting and motors	3	3	3	3								2	3	2
CO3	Understand Indian standards of transformers, LV & HV switchgears	3	3	3	3								2	3	2
CO4	Demonstrate the basic guidelines for National codes and design practices	3	3	3	3								2	3	2
CO5	Select the size and type of transformer, cable & switchgear for electrical applications	3	3	3	3								2	3	2
	Target Outcome (Average) PO	3	3	3	3								2	3	2

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	KEE055 : Optimization Techniques	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the importance of optimization techniques in engineering applications	3	3	3	3								2	3	2
CO2	Learn optimization methods for solving linear programming problems	3	3	3	3								2	3	2
CO3	Learn optimization methods for solving nonlinear programming problems	3	3	3	3								2	3	2
CO4	Be aware of the concept of simulation and modern methods of optimization	3	3	3	3								2	3	2
CO5	Apply optimization techniques to electrical engineering problems	3	3	3	3								2	3	2
	Target Outcome (Average) PO	3	3	3	3								2	3	2

	KEE056 : Neural Networks & Fuzzy Systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the concepts of feed forward neural networks and their learning techniques	3	3	3	3	3								3	2
CO2	Comprehend the architecture, develop algorithms and apply the concepts of back propagation networks	3	3	3	3	3								3	2
CO3	Differentiate between the fuzzy and the crisp sets, apply the concepts of fuzziness and the fuzzy set theory	3	3	3	3	3								3	2
CO4	Select the membership functions, write rules and develop the fuzzy controller for Industrial applications	3	3	3	3	3								3	2
CO5	Demonstrate the working of fuzzy neural networks and identify its applications	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KEE057 : Digital Signal Processing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Represent discrete sequence and LTI systems, frequency domain of discrete sequence. Compute Fourier transform. Draw structure of systems based on System type-IIR & FIR Systems	3	3	3	3	3								3	2
CO2	Describe sampling of signal and its reconstruction, processing of continuous time and discrete time signals	3	3	3	3	3								3	2
CO3	Evaluate the response of LTI system and rational system function	3	3	3	3	3								3	2
CO4	Design IIR & FIR filters with the desired specification with the help of impulse invariant and bilinear transformation method for IIR, with the help of window techniques for FIR. Design Butterworth and Chebyshev filter response	3	3	3	3	3								3	2
CO5	Compute DFT using efficient algorithm like FFT in decimation in time and decimation in frequency both, using convolution property and Goertzel algorithm. Comparison between wavelet and Fourier transform. Application of WCT & DCT	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KEE058 : Analog & Digital Communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the Amplitude Modulation in communication system	3	3	3	3	3								3	2
CO2	Comprehend the Frequency & Phase modulation	3	3	3	3	3								3	2
CO3	Realize the Pulse Modulation Techniques	3	3	3	3	3								3	2
CO4	Get the Digital Modulation Techniques and their use in communication system	3	3	3	3	3								3	2
CO5	Apply the concept of Information Theory in Communication Engineering.	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KEE551 : Power System-I Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Use programming tools /Software: Scilab, MATLAB or any C, C++ - Compiler and formulate a program/simulation model for calculation of various parameters related to transmission line		3	3	3	3							1	3	2
CO2	Determine constants for transmission line		3	3	3	3							1	3	2
CO3	Simulate the Ferranti & skin effects in transmission line		3	3	3	3							1	3	2
CO4	Calculate losses in transmission line		3	3	3	3							1	3	2
CO5	Calculate grading & other various parameters for a underground cable		3	3	3	3							1	3	2
	Target Outcome (Average) PO		3	3	3	3							1	3	2

	KEE552 : Control System Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Determine the characteristics of control system components like ac servo motor, synchro, potentiometer, servo voltage stabilizer and use them in error detector mode.		3	3	3	3							1	3	2
CO2	Compare the performance of control systems by applying different controllers / compensators		3	3	3	3							1	3	2
CO3	Analyze the behavior of dc motor in open loop and closed loop conditions at various loads & determine the response of 1st& 2nd order systems for various values of constant K		3	3	3	3							1	3	2
CO4	Apply different stability methods of time & frequency domain in control systems using software & examine their stability		3	3	3	3							1	3	2

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CO5	Convert the transfer function into state space & vice versa & obtain the time domain response of a second order system for step input and their performance parameters using software.		3	3	3	3							1	3	2
	Target Outcome (Average) PO		3	3	3	3							1	3	2

	KEE553 : Electrical Machines-II Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Perform various tests and demonstrate the various characteristics of three phase induction motor		3	3	3	3							1	3	2
CO2	Demonstrate the working of three phase synchronous machine under different operating conditions		3	3	3	3							1	3	2
CO3	Evaluate the performance of single-phase induction motor under different operating conditions		3	3	3	3							1	3	2
CO4	Develop simulation models for Electrical Machines		3	3	3	3							1	3	2
	Target Outcome (Average) PO		3	3	3	3							1	3	2

	KEE554 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and apply the knowledge of the industry in which the internship is done		3	3	3							3	2		
CO2	Remember and apply the knowledge and skills learned in the classroom in a work setting		3	3	3							3	2		
CO3	Understand and analyze the activities and functions of business professionals		3	3	3							3	2		
CO4	Understand and evaluate the areas for future knowledge and skill development		3	3	3							3	2		
CO5	Analyze and develop a greater understanding about career options while more clearlydefining personal career goals		3	3	3							3	2		
	Target Outcome (Average) PO		3	3	3							3	2		

	KNC501 : Constitution of India, Law and Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify and explore the basic features and modalities about Indian constitution.						2	1	2				2		
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.						2	1	2				2		
CO3	Differentiate different aspects of Indian Legal System and its related bodies						2	1	2				2		
CO4	Discover and apply different laws and regulations related to engineering practices						2	1	2				2		
CO5	Correlate role of engineers with different organizations and governance models						2	1	2				2		
	Target Outcome (Average) PO						2	1	2				2		

	KNC502 : Indian Tradition, Culture and Society	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Get basic principles of thought process, reasoning and inference to identify the roots and details of contemporary issues faced by our nation and try to locate possible solutions						2	1	2				2		
CO2	Understand the importance of our surroundings and encourage the students to contribute towards sustainable development						2	1	2				2		
CO3	Sensitize towards issues related to 'Indian' culture, tradition and its composite character						2	1	2				2		
CO4	Aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions						2	1	2				2		
CO5	Acquaint with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system						2	1	2				2		
	Target Outcome (Average) PO						2	1	2				2		

	KEE601 : Power System-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify power system components on one line diagram of power system and its representation including the behavior of the constituent components and sub systems and Analyse a network under both balanced and unbalanced fault conditions and design the rating of circuit breakers.	3	2	3	2									3	2
CO2	Perform load flow analysis of an electrical power network and interpret the results of the analysis	2	2	3	2									3	2
CO3	Describe the concept of travelling waves in transmission lines and use the travelling wave theory to determine the over voltage caused by surge propagation in transmission networks	2	2	2	2									3	2
CO4	Assess the steady state and transient stability of the power system under various conditions.	3	2	2	2									3	2
CO5	Describe Operating Principle of a relay and classify them according to applications. Explain working principle of Circuit breaker and phenomenon of arc production and quenching.	2	2	3	2									3	2
	Target Outcome (Average) PO	2.4	2	2.6	2									3	2

	KEE602 : Microprocessor and Microcontroller	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

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CO1	Demonstrate the basic architecture of 8085 & 8086 microprocessors	1	3	2	3									3	2
CO2	Illustrate the programming model of microprocessors & write program using 8085 microprocessor	1	2	2	1									3	2
CO3	Interface different external peripheral devices with 8085 microprocessor	1	2	2	3									3	2
CO4	Comprehend the architecture of 8051 microcontroller	1	3	2	3									3	2
CO5	Compare advance level microprocessor & microcontroller for different applications	1	3	3	3									3	2
	Target Outcome (Average) PO	1	2.6	2.2	2.6									3	2

	KEE603 : Power Electronics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate the characteristics as well as the operation of BJT, MOSFET, IGBT, SCR, TRIAC and GTO and identify their use in the power switching applications	1	2	2	3									3	2
CO2	Comprehend the non-isolated DC-DC converters and apply their use in different Power electronics applications	1	2	2	3									3	2
CO3	Analyze the phase-controlled rectifiers and evaluate their performance parameters	1	3	2	2									3	2
CO4	Apprehend the working of single-phase ac voltage controllers, cyclo-converters and their various applications	1	2	2	2									3	2
CO5	Explain the single-phase and three phase bridge inverters differentiate between CSI and VSI and apply PWM for harmonic reduction	1	2	2	3									3	2
	Target Outcome (Average) PO	1	2.2	2	2.6									3	2

	KEE061 : Special Electrical Machines	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the working principle, Constructional Features of different types of electrical machines including the fractional kilowatt machines	2	2	3	2									3	2
CO2	Analyse torque- speed characteristics of different electrical machines and interpret their performance and identify the suitable machine for an operation.	2	3	2	2									3	2
CO3	Study different types of control techniques for a machine and identify the best control strategy based upon different constraints.	2	3	3	2									3	2
CO4	Illustrate the use of stepper, BLDCs, SRM, and other special machines in the area of the various industrial and domestic as well as commercial applications of various fractional kilowatt machines.	2	2	2	3									3	2
	Target Outcome (Average) PO	2	2.5	2.5	2.25									3	2

	KEE062 : Electrical Machine Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Classify insulating materials for electrical machines and calculate mmf and magnetizing current	3	2	3	3	3								3	2
CO2	Design the core, yoke, windings and the cooling system of a transformer	3	2	3	3	3								3	2
CO3	Illustrate the core and armature design of DC and 3-phase synchronous machine. Design of three phase induction motors, field system of DC machine and synchronous machines	3	3	3	2	3								3	2
CO4	Analyse computer aided design approaches and apply the concepts of optimization for the design of transformer, dc machine, three phase induction and synchronous machines	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	2.5	3	2.75	3								3	2

	KEE063 : Digital Control System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Represent discrete time systems under the form of z-domain transfer functions and state-space models	3	3	3	3	3								3	2
CO2	Obtain the model of discrete-time systems by pulse transfer function	3	3	3	3	3								3	2
CO3	Analyze stability, transient response and steady state behaviour of linear discretetime systems, analytically and numerically using tools such as MATLAB and Simulink	3	2	3	2	2								3	2
CO4	Design sampled data control systems	3	3	3	3	3								3	2
CO5	Describe Discrete state space model and test controllability and observability of systems	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	2.8	3	2.8	2.8								3	2

	KEE064 : Electrical and Hybrid Vehicles	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Choose a suitable drive scheme for developing an electric hybrid vehicle depending on resources	3	3	3	3									3	2
CO2	Design and develop basic schemes of electric vehicles and hybrid electric vehicles	3	3	3	3									3	2
CO3	Choose proper energy storage systems for vehicle applications	3	2	2	3									2	2
CO5	Identify various communication protocols and technologies used in vehicle networks	3	3	3	3									3	2
	Target Outcome (Average) PO	3	2.75	2.75	3									2.75	2

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	KEE651 : Power System-II Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Test various relays for different characteristics and compare with the performance characteristics provided by manufacturers		2	3	3	3				2				2	2
CO2	Select the power system data for load-flow and fault studies and to develop a program to solve power flow problem using NR and GS methods		3	2	3	3				2				3	2
CO3	Analyze various types of short circuit faults		3	3	3	2				2				3	2
CO4	Demonstrate different numerical integration methods and factors influencing transient stability		3	3	2	3				2				2	2
CO5	Determine the effect of load in long transmission line		3	2	3	3				2				3	2
	Target Outcome (Average) PO		2.8	2.6	2.8	2.8				2				2.6	2

	KEE652 : Microprocessor and Microcontroller Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Study of microprocessor system		3	3	3	3				2				3	2
CO2	Development of flow chart for understanding the data flow		3	2	2	3				2				3	2
CO3	Learning assembly language to program microprocessor-based system		3	3	3	2				2				3	2
CO4	Interfacing different peripheral devices with the microprocessor		3	3	3	3				2				3	2
CO5	Building logic for microprocessor-based system		3	3	2	3				2				3	2
	Target Outcome (Average) PO		3	2.8	2.6	2.8				2				3	2

	KEE653 : Power Electronics Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate the characteristics and triggering of IGBT, MOSFET, Power transistor and SCR		3	3	3	3				2				3	2
CO2	Analyze the performance of single phase fully controlled bridge rectifiers under different loading conditions		3	3	3	3				2				2	2
CO3	Develop simulation models of power electronic circuits		3	3	3	2				2				3	2
	Target Outcome (Average) PO		3	3	3	2.7				2				2.7	2

	KNC601 : Constitution of India, Law and Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify and explore the basic features and modalities about Indian constitution.						2	1	2				2		
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.						2	1	2				2		
CO3	Differentiate different aspects of Indian Legal System and its related bodies						2	1	2				2		
CO4	Discover and apply different laws and regulations related to engineering practices						2	1	2				2		
CO5	Correlate role of engineers with different organizations and governance models						2	1	2				2		
	Target Outcome (Average) PO						2	1	2				2		

	KNC602 : Indian Tradition, Cultural and Society	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Get basic principles of thought process, reasoning and inference to identify the roots and details of contemporary issues faced by our nation and try to locate possible solutions						2	1	2				2		
CO2	Understand the importance of our surroundings and encourage the students to contribute towards sustainable development						2	1	2				2		
CO3	Sensitize towards issues related to 'Indian' culture, tradition and its composite character						2	1	2				2		
CO4	Aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions						2	1	2				2		
CO5	Acquaint with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system						2	1	2				2		
	Target Outcome (Average) PO						2	1	2				2		

	KOE060 : Idea to Business Model	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Enhance creative knowledge of students regarding selection of a business idea and it's implementation process									2		2	2		
CO2	Acquire knowledge on entrepreneurship development, its Pro's and con's									2		2	2		
CO3	Acquire basic knowledge on how to become an entrepreneur									2		2	2		
CO4	Develop knowledge on Production systems and it's sustainability through production, planning and control (PPC)									2		2	2		
CO5	Develop appropriate business model and apply in a better way									2		2	2		
	Target Outcome (Average) PO									2		2	2		

	KOE061 : Real Time Systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

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CO1	Describe concepts of Real-Time systems and modeling	3	3	3	3	3								3	2
CO2	Recognize the characteristics of a real-time system in context with real time scheduling	3	2	2	3	3								3	2
CO3	Classify various resource sharing mechanisms and their related protocols	2	3	3	2	3								2	2
CO4	Interpret the basics of real time communication by the knowledge of real time models and protocols	3	3	2	3	3								3	2
CO5	Apply the basics of RTOS in interpretation of real time systems	3	3	3	3	3								3	2
	Target Outcome (Average) PO	2.8	2.8	2.6	2.8	3								2.8	2

	KOE062 : Embedded System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the basics of embedded system and its structural units	3	2	3	3									3	2
CO2	Analyze the embedded system specification and develop software programs	2	3	3	3									3	2
CO3	Evaluate the requirements of the programming embedded systems, related software architecture	3	3	2	3									3	2
CO4	Understand the RTOS based embedded system design	2	2	3	2									3	2
CO5	Understand all the applications of the embedded system and designing issues	3	3	3	3									2	2
	Target Outcome (Average) PO	2.6	2.6	2.8	2.8									2.8	2

	KOE063 : Introduction to MEMS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the Basic concept of MEMS Fabrication Technologies, Piezoresistance Effect, Piezoelectricity, Piezoresistive Sensor	3	3	3	3	3								3	2
CO2	Explain Mechanics of Beam and Diaphragm Structures	3	2	3	2	3								3	2
CO3	Understand the Basic concept of Air Damping and Basic Equations for Slide-film Air Damping, Couette-flow Model, Stokes-flow Model	2	3	3	3	3								2	2
CO4	Know the concept of Electrostatic Actuation	3	3	2	3	2								3	2
CO5	Understand the applications of MEMS in RF	3	3	3	3	3								3	2
	Target Outcome (Average) PO	2.8	2.8	2.8	2.8	2.8								2.8	2

	KOE064 : Object Oriented Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the Basic concept of Object Orientation, object identity and Encapsulation	2	3	3	3	3								3	2
CO2	Understand the Basic concept of Basic Structural Modeling	3	3	3	3	3								3	2
CO3	Know the knowledge of Object-oriented design, Object design	3	2	2	3	3								3	2
CO4	Know the knowledge of C++ Basics	2	3	3	3	3								3	2
CO5	Understand the Basics of object and class in C++	2	3	3	2	3								3	2
	Target Outcome (Average) PO	2.4	2.8	2.8	2.8	3								3	2

	KOE065 : Computer based Numerical Techniques	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the concept of errors to evaluate approximate roots of several types of equations	3	3	3	3	3								2	2
CO2	Analyze the problem and evaluate data by different interpolation methods and creating interpolating graphs	2	3	3	2	2								3	2
CO3	Understand the concept of interpolation to analyze and evaluate the numerical differentiation and integration	3	3	2	3	3								3	2
CO4	Remember the concept of formula based the solution of ordinary differential equations to evaluate differential equations withy initial conditions	2	3	3	2	2								2	2
CO5	Apply the concept of partial differential equation to evaluate the partial differential equations	3	3	2	3	3								3	2
	Target Outcome (Average) PO	2.6	3	2.6	2.6	2.6								2.6	2

	KOE066 : GIS & Remote Sensing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand about the principles of Remote Sensing and its advantages and limitations	3	3	2	3									3	2
CO2	Retrieve the information content of remotely sensed data	3	3	3	3									3	2
CO3	Apply problem specific remote sensing data for engineering applications	2	3	2	3									3	2
CO4	Analyze spatial and attribute data for solving spatial problems	3	3	3	3									2	2
CO5	Create GIS and cartographic outputs for presentation	3	3	3	3									3	2
	Target Outcome (Average) PO	2.8	3	2.6	3									2.8	2

	KOE067 : Basics of Data Base Management System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the features of a database system and its application and compare various types of data models	2	3	3	3							2		3	2
CO2	Construct an ER Model for a given problem and transform it into a relation database schema	3	2	3	3							2		3	2

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CO3	Formulate solution to a query problem using SQL Commands, relational algebra, tuple calculus and domain calculus	2	2	2	2							2		3	2
CO4	Explain the need of normalization and normalize a given relation to the desired normal form	3	3	3	3							2		2	2
CO5	Explain different approaches of transaction processing and concurrency control	2	3	3	2							2		3	2
	Target Outcome (Average) PO	2.4	2.6	2.8	2.6							2		2.8	2

	KOE068 : Software Project Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify project planning objectives, along with various cost/effort estimation models	2	2	3	3	3	2			1		3	1	3	2
CO2	Organize & schedule project activities to compute critical path for risk analysis	3	3	2	3	3	2			1		3	1	3	2
CO3	Monitor and control project activities	2	2	3	3	3	2			1		3	1	3	2
CO4	Formulate testing objectives and test plan to ensure good software quality under SEI-CMM	3	3	2	2	3	2			1		3	1	3	2
CO5	Configure changes and manage risks using project management tools	2	3	3	3	3	2			1		3	1	3	2
	Target Outcome (Average) PO	2.4	2.6	2.6	2.8	3	2			1		3	1	3	2

	KOE069 : Understanding the Human Being Comprehensively – Human Aspirations and Its Fulfillment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Have clarity about human aspirations, goal, activities and purpose of life						2	1	3	1			1		
CO2	Understand the harmony in nature/existence and participation of human being in the nature/existence.						2	1	3	2			1		
CO3	Understand the human tradition and its various components						2	1	3	1			1		
CO4	Understand co-existence with other orders						2	1	3	2			1		
CO5	Live with harmony from self to entire existence						2	1	3	2			1		
CO6	Have clarity about human aspirations, goal, activities and purpose of life						2	1	3	1			1		
	Target Outcome (Average) PO						2	1	3	1.5			1		

	KHU701 : Rural Development: Administration and Planning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the definitions, concepts and components of Rural Development						2	2	1				1		
CO2	Know the importance, structure, significance, resources of Indian rural economy						2	2	1				1		
CO3	Have a clear idea about the area development programmes and its impact						2	2	1				1		
CO4	Able to acquire knowledge about rural entrepreneurship						2	2	1				1		
CO5	Able to understand about the using of different methods for human resource planning						2	2	1				1		
	Target Outcome (Average) PO						2	2	1				1		

	KHU702 : Project Management & Entrepreneurship	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand need, scope, entrepreneurial competencies & traits						1	1		2		3	2	3	2
CO2	Entrepreneurial idea and innovation						1	1		2		3	2	3	2
CO3	Understand project appraisal: Preparation of a real time project feasibility report containing technical appraisal						1	1		2		3	2	3	2
CO4	Understand project financing						1	1		2		3	2	2	2
CO5	Understand social entrepreneurship						1	1		2		3	2	3	2
	Target Outcome (Average) PO						1	1		2		3	2	2.8	2

	KEE070 : Advanced Micro processors & Micro Controllers	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain the Architecture of 8086, memory segmentation and its mode	3	3	2	3									3	2
CO2	Describe the Instruction set of 8086, and develop various type of programs	2	3	3	3									3	2
CO3	Illustrate memory interfacing diagram, and explain various type of interfacing	3	2	2	3									2	2
CO4	Illustrate various modes of processor	3	3	3	3									3	2
CO5	Explain the architecture of MSP430 and Develop GPIO controlling Program	2	2	3	2									3	2
	Target Outcome (Average) PO	2.6	2.6	2.6	2.8									2.8	2

	KEE071 : Energy Conservation and Auditing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify and assess the energy conservation/saving opportunities in different electric system and understand related legislations	3	3	3	3		2	2						3	2
CO2	Identify and assess the energy saving behavior of utilities through implementation of DSM and EMIS	2	2	2	3		2	2						2	2
CO3	Explain energy audit & management and to prepare energy audit report for different energy conservation instances	3	3	3	3		2	2						3	2

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CO4	Illustrate the energy audit for Mechanical Utilities	3	2	3	2		2	2						3	2
CO5	Describe cost-effective measures towards improving energy efficiency and energy conservation by implementation of energy efficient technologies	2	3	3	2		2	2						3	2
	Target Outcome (Average) PO	2.6	2.6	2.8	2.6		2	2						2.8	2

	KEE072 : HVDC & AC Transmission	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the comparison of EHVAC and HVDC transmission while understanding various issues related to transmission	3	3	3	2									3	2
CO2	Calculate and study the corona loss and its impacts. Cite examples of the causes of switching overvoltage, Ferro-resonance	2	2	2	3									3	2
CO3	Explain the generation and measurement circuits for impulse, high DC & AC voltages	3	3	3	3									3	2
CO4	Classify the DC links and choice of converter configuration to investigate the impact of inductance on operation of converters and identify different control schemes as well as starting and stopping methods of DC links	3	3	2	3									2	2
CO5	Describe the converter faults, protections including MTDC types and applications	3	2	3	2									3	2
	Target Outcome (Average) PO	2.8	2.6	2.6	2.6									2.8	2

	KEE073 : High Voltage Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe conduction and breakdown phenomenon in gases, liquid dielectrics and solid dielectrics	3	3	3	3									3	2
CO2	Explain generation of high voltages and currents	3	3	3	3									2	2
CO3	Explain measurement techniques for high voltages and currents	3	3	3	2									3	2
CO4	Describe overvoltage phenomenon and insulation coordination in electric power systems	3	3	3	3									3	2
CO5	Describe non-destructive testing of materials and electric apparatus and high-voltage testing of electric apparatus	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	2.8									2.8	2

	KEE074 : Power Quality and Facts	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Classify the power quality issues in electrical distribution network	3	3	3	2									3	2
CO2	Describe the sources of voltage sag and protective devices including voltage regulators, active series compensator and UPS	3	2	3	3									3	2
CO3	Describe the different phenomenon causing electrical transients and devices for over voltage protection	3	3	2	3									2	2
CO4	Explain the working and application of different type of FACT devices like SSC, SVC, TSC, SSS, TCSC, UPFC	3	2	3	2									2	2
CO5	Explain the causes of harmonics, its effect on motor ,capacitor, cables and mitigation techniques	3	3	3	3									3	2
	Target Outcome (Average) PO	3	2.6	2.8	2.6									2.6	2

	KEE075 : Electric Drives	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the operation of electric drives and its classification	3	3	3	3									3	2
CO2	Explain the electric drive stability and selection of motor power rating	3	3	2	2									3	2
CO3	Illustrate electric braking and its dynamics	3	3	2	2									3	2
CO4	Describe the types of DC drives and its control	3	3	3	3									3	2
CO5	Describe the types of AC drives and its control	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	2.6	2.6									3	2

	KEE076 : Power System Dynamics and Control	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain the fundamental dynamic behavior and controls of power systems to perform basic stability analysis	2	3	3	3									3	2
CO2	Describe modeling of Synchronous Machine and per unit quantities-Equivalent circuits	3	2	2	2									2	2
CO3	Describe modeling of main power system components, such as synchronous machines, excitation systems and calculation of Initial conditions	2	3	3	2									2	2
CO4	Illustrate Small signal analysis, synchronizing and damping torque analysis	3	3	2	3									3	2
CO5	Explain the concept of Power System Stabilizers, Structure & tuning and dynamic compensator analysis	3	3	3	2									2	2
	Target Outcome (Average) PO	2.6	2.8	2.6	2.4									2.4	2

	KEE077 : Power System Protection	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the relays and different protective schemes	3	3	3	2									3	2
CO2	Explain Relay types and its application	3	2	3	3									3	2

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CO3	Describe types of faults and protection scheme for major components of power system	2	3	2	3									2	2
CO4	Describe the circuit breaker operation, testing and types.	3	3	3	2									3	2
CO5	Explain the electronic relay, microprocessor and computer based protection schemes	3	3	3	3									3	2
	Target Outcome (Average) PO	2.8	2.8	2.8	2.6									2.8	2

	KEE078 : Deregulated Power System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the deregulation, unbundling of electric utilities and its benefits	3	3	3	3									3	2
CO2	Explain the operational planning activities of independent system operator in pool & bilateral markets and describe competitive bidding	3	3	3	3									3	2
CO3	Explain the open access of transmission line and management of security & congestion in deregulation	3	3	3	3									3	2
CO4	Describe the different types of Electric traction, system of track electrification and its related mechanics	2	3	3	3									3	2
CO5	Illustrate the Reliability Analysis of Generation, transmission and distribution and the regulation of the market	2	3	3	3									3	2
	Target Outcome (Average) PO	2.6	3	3	3									3	2

	KEE079 : Utilization of Electrical Energy & Electric Traction	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the methods of electric heating and their advantages	3	3	3	3									3	2
CO2	Explain the types of Electric welding and the principle of Electro-deposition, laws of electrolysis and its applications	2	3	3	2									2	2
CO3	Explain the laws of illumination and explain the principle of refrigeration and air-conditioning	3	2	3	2									3	2
CO4	Describe the different types of Electric traction, system of track electrification and its related mechanics	3	3	2	3									3	2
CO5	Describe the salient features of traction drive and concept of energy saving using power electronic control of AC and DC drives	3	3	3	3									2	2
	Target Outcome (Average) PO	2.8	2.8	2.8	2.6									2.6	2

	KEE751 : Industrial Automation & PLC Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand automation, its importance, expectations from automation andapplications in industry.		3	3	3	3								3	2
CO2	Understand and analyze the concept of design of PLC based application by proper selectionand sizing criteria, developing GUI and ladder program.		3	2	2	2								3	2
CO3	Understand the Ladder program for DOL starter, timers, and counters		3	3	3	3								3	2
CO4	Understand evolution and architecture of DCS, hierarchical control in DCS, programming DCS		3	3	3	3								3	2
CO5	Explain the concept of basic digital electronics and data manipulation, basic PLC circuits for entry-level PLC applications		3	3	3	3								3	2
	Target Outcome (Average) PO		3	2.8	2.8	2.8								3	2

	KEE752 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Developing a technical artifact requiring new technical skills and effectively utilizing a new software tool to complete a task		3	3	3	2				2		3	1	3	2
CO2	Writing requirements documentation, selecting appropriate technologies, identifying and creating appropriate test cases for systems		3	3	3	3				2		3	1	3	2
CO3	Demonstrating understanding of professional customs & practices and working with professional standards		3	3	3	3				2		3	1	3	2
CO4	Improving problem-solving, critical thinking skills and report writing		2	2	3	3				2		3	1	3	2
CO5	Learning professional skills like exercising leadership, behaving professionally, behaving ethically, listening effectively, participating as a member of a team, developing appropriate workplace attitudes		2	2	3	3				2		3	1	2	2
	Target Outcome (Average) PO		2.6	2.6	3	2.8				2		3	1	2.8	2

	KEE753 : Project-I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate a sound technical knowledge of their selected project topic		3	3	3	3				2		3	1	3	2
CO2	Identification of problem, interpretation and solution		3	3	3	2				2		3	1	3	2
CO3	Formulate engineering solutions to complex problems utilizing a systems approach		1	3	3	3				2		3	1	3	2
CO4	Design and develop an engineering project and communicate with engineers and the community at large in written an oral forms		3	2	3	3				2		3	1	2	2
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer		3	3	3	3				2		3	1	3	2
	Target Outcome (Average) PO		2.6	2.8	3	2.8				2		3		2.8	2

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	KOE071 : Filter Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Choose an appropriate transform for the given signal.	3	3	3	3									3	2
CO2	Choose appropriate decimation and interpolation factors for high performance filters.	1	3	3	3									3	2
CO3	Model and design an AR system	3	3	3	3									2	2
CO4	Implement filter algorithms on a given DSP processor platform.	1	1	3	3									3	2
	Target Outcome (Average) PO	2	2.5	3	3									2.75	2

	KOE072 : Bioeconomics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand basic concept of Bioeconomics, challenges, opportunities& regulations	3	3	3	3									3	2
CO2	Understand development and innovation in terms of bioeconomy towards sustainable development	1	3	3	3									3	2
CO3	Understand Inter- and transdisciplinarity in bioeconomy &research approaches	3	3	3	3									3	2
CO4	Explain biobased resources, value chain, innovative use of biomass and biological knowledge to provide food, feed, industrial products	1	3	3	3									2	2
CO5	Know importance of bioeconomy related concepts in public, scientific, and political discourse	1	3	3	3									3	2
	Target Outcome (Average) PO	1.8	3	3	3									2.8	2

	KOE073 : Machine Learning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the need for machine learning for various problem solving	3	3	3	1									3	2
CO2	Understand a wide variety of learning algorithms and how to evaluate models generated from data	1	3	3	3									3	2
CO3	Understand the latest trends in machine learning	3	3	1	3									2	2
CO4	Design appropriate machine learning algorithms and apply the algorithms to a real-world problems	1	3	3	3									3	2
CO5	Optimize the models learned and report on the expected accuracy that can be achieved by applying the models	3	3	3	3									3	2
	Target Outcome (Average) PO	2.2	3	2.6	2.6									2.8	2

	KOE077 : Design Thinking	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Develop a strong understanding of the design process and apply it in a variety of business settings		3	3	3									3	2
CO2	Analyze self, culture, teamwork to work in a multidisciplinary environment and exhibit empathetic behavior		3	3	3									2	2
CO3	Formulate specific problem statements of real time issues and generate innovative ideas using design tools		3	3	3									3	2
CO4	Apply critical thinking skills in order to arrive at the root cause from a set of likely causes		3	3	3									3	2
CO5	Demonstrate an enhanced ability to apply design thinking skills for evaluation of claims and arguments		3	3	3									2	2
	Target Outcome (Average) PO		3	3	3									2.6	2

	KHU801 : Rural Development: Administration and Planning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the definitions, concepts and components of Rural Development						2	1	2				2	3	2
CO2	Know the importance, structure, significance, resources of Indian rural economy						2	1	2				2	3	2
CO3	Have a clear idea about the area development programmes and its impact						2	1	2				2	2	2
CO4	Able to acquire knowledge about rural entrepreneurship						2	1	2				2	3	2
CO5	Able to understand about the using of different methods for human resource planning						2	1	2				2	3	2
	Target Outcome (Average) PO						2	1	2				2	2.8	2

	KHU802 : Project Management & Entrepreneurship	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand need, scope, entrepreneurial competencies & traits		3	3	3	3				2		3	2	3	2
CO2	Entrepreneurial idea and innovation		2	3	2	3				2		3	2	3	2
CO3	Understand project appraisal: Preparation of a real time project feasibility report containing technical appraisal		3	3	3	3				2		3	2	2	2
CO4	Understand project financing		3	3	2	3				2		3	2	3	2
CO5	Understand social entrepreneurship		3	3	3	3				2		3	2	3	2
	Target Outcome (Average) PO		2.8	3	2.6					2		3	2	2.8	2

	KOE080 : Fundamentals Of Drone Technology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Design UAV drone system	3	3	3	3	3								3	2
CO2	Understand working of different types of engines and its area of applications	3	2	3	3	3								3	2
CO3	Understand static and dynamic stability dynamic instability and control concepts	3	3	3	2	3								3	2
CO4	Know the loads taken by aircraft and type of construction and also construction materials in them	3	3	3	3	3								3	2

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	Target Outcome (Average) PO	3	2.75	3	2.75	3								3	2

	KOE085 : Quality Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Know details of Quality Concept, Quality control evaluation		3	3	3							1	1	3	2
CO2	Know the insights of quality management		3	3	3							1	1	3	2
CO3	Know the details of Control Charts		3	3	2							1	1	3	2
CO4	Know the Defects Diagnosis and Prevention		3	3	3							1	1	3	2
CO5	Know the detailed standards to maintain quality		3	3	3							1	1	3	2
	Target Outcome (Average) PO		3	3	2.8							1	1	3	2

	KEE851 : Project II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate a sound technical knowledge of their selected project topic		2	3	3	3				2		3	2	3	2
CO2	Identification of problem, interpretation and solution		2	3	3	3				2		3	2	3	2
CO3	Formulate engineering solutions to complex problems utilizing a systems approach		3	3	2	3				2		3	2	3	2
CO4	Design and develop an engineering project and communicate with engineers and thecommunity at large in written an oral forms		3	2	3	3				2		3	2	3	2
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer		3	3	3	2				2		3	2	3	2
	Target Outcome (Average) PO		2.6	2.8	2.8	2.8				2		3	2	3	2

Overall Average PO	2.4	2.73	2.76	2.74	2.9	2	1	2.1	1.9	3	2.6	1.5	–	–
∑(PO)	686	1065	1078	1069	743	132	66	118	166	30	145	229	–	–
Overall Average PSO	–	–	–	–	–	–	–	–	–	–	–	–	2.81	1.96
∑(PSO)	–	–	–	–	–	–	–	–	–	–	–	–	1127	755

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