Course Outcomes (COs)

and Mapping with

Program Outcomes (POs)

("2", "1" and "blank" indicate strong (above40%) moderate (below 40%) and no correlation respectively.)

Program Outcomes (POs):B. Tech-Mechanical Engineering: I, II, III & IV years												
B. Tech I Semester I												
Subject Name:- Engineering Physics ; Subject Code:- KAS101T												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. To solve the classical and wave mechanics problems.	1	2	1	2		1						1
CO2. To develop the understanding of laws of thermodynamics and their application in various processes.2	2	1	1	1	2	1						
CO3. To formulate and solve the engineering problems on Electromagnetism & Electromagnetic Field Theory.	2	1				1						
CO4. To aware of limits of classical physics & to apply the ideas in solving the problems in their parent streams.	2	2		2				1		1		
Subject Name:- Engineering Mathematics-I; Subject Code:- KAS103T												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Remember the concept of matrices and apply for solving linear Simultaneous equations.	2	2	2	2	2	2	2		2	1	2	2
CO2. Understand the concept of limit , continuity and differentiability and apply in the study of Rolle,s , Lagrange,s and Cauchy mean value theorem and Leibnitz theorems.	2	2	1	2	1		1					2
CO3. Identify the application of partial differentiation and apply for evaluating maxima, minima, series and Jacobians.	2	2	2	2	1		1				2	2
CO4. Illustrate the working methods of multiple integral and apply for finding area, volume, centre of mass and centre of gravity.	2	2	1	1		1	1				2	2
CO5. Remember the concept of vector and apply for directional derivatives, tangent and normal planes. Also evaluate line, surfaceand volume integrals.	2	1	1		1		1				1	1
Subject Name:- Basic Electrical Engineering; Subject Code:- KEE101T												

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}
CO1. Apply the concepts of KVL/KCL and network theorems in solving DC circuits.	2	2	2			1						2
CO2. Analyze the steady state behavior of single phase and three phase AC electrical circuits.	2	2	2									
CO3. Identify the application areas of a single phase two winding transformer as well as an auto transformer and calculate their efficiency. Also identify the connections of a three phase transformer.	2	1		2	1							2
CO4. Illustrate the working principles of induction motor, synchronous machine as well as DC machine and employ them in different area of applications.	2	1	2			1						
CO5. Describe the components of low voltage electrical installations and perform elementary calculations for energy consumption.	2	1		2								1

Subject Name:- Programming for Problem Solving; Subject Code:- KCS101T

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}
CO1. To develop simple algorithms for arithmetic and logical problems.	2	2	2						2		1	2
CO2. To translate the algorithms to programs & execution (in C language).	2	2	2						2		1	2
CO3. To implement conditional branching, iteration and recursion.	2	2	2						2			
CO4. To decompose a problem into functions and synthesize a complete program using divide and conquer approach.	2	2	2						2			
CO5. To use arrays, pointers and structures to develop algorithms and programs.	2	2	2						2			2

Subject Name:- Engineering Physics Lab; Subject Code:- KAS151P

Courese Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}
CO1. To determine the wavelength of sodium light by Newton‟s ring experiment.	1	2	1	2		1				1		1
CO2. To determine the wavelength of sodium light with the help of Fresnel‟s	2	1	1	1	2	1			1			

bi-prism.												
CO3. To determine the variation of magnetic field with the distance along the axis of a current carrying coil and estimate the radius of the coil.	2	1				1						
CO4. To draw hysteresis (B-H curve) of a specimen in the form of a transformer and to determine its hysteresis loss.	2	2		2				1		1		
Subject Name:- Basic Electrical Engineering Lab; Subject Code:- KEE151P												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Conduct experiments illustrating the application of KVL/KCL and network theorems to DC electrical circuits.	1	2	2			1		1				2
CO2. Demonstrate the behavior of AC circuits connected to single phase AC supply and measure power in single phase as well as three phase electrical circuits.	2	2	1									
CO3. Perform experiment illustrating BH curve of magnetic materials.	2	1		2	1							2
CO4. Calculate efficiency of a single phase transformer and DC machine.	2	1	2			1						
CO5. Perform experiments on speed measurement and reversal of direction of three phase induction motor and Identify the type of DC and AC machines based on their construction.	2	1		2								1
Subject Name:- Programming for Problem Solving Lab; Subject Code:- KCS151P												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Able to implement the algorithms and draw flowcharts for solvingMathematical and Engineering problems.	2	2	2	1	2	1			2			2
CO2. Demonstrate an understanding of computer programming language concepts.	2	2	2		2				2			2
CO3. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.	2	2	2	1	2	1			2			2

CO4. Able to define data types and use them in simple data processing applications also he/she must be able to use theconcept of array of structures.	2	2	2	2	2				2			2
CO5. Develop confidence for self education and ability for life-longlearning needed for Computer language.	2	2	2					2	2		1	2
Subject Name:- Engineering Graphics and Design Lab ; Subject Code:- KCE151P												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understanding of the visual aspects of engineering design.	2				2	1				2		1
CO2. Understanding of engineering graphics standards and solid modeling.	2	2			1							
CO3. Effective communication through graphics.	2	2			1					2		
CO4. Applying modern engineering tools necessary for engineering practice.	2	2			2							
CO5. Appling computer-aided geometric design.	2	2	2							2		
CO6. Analysis of Isometric views.	2	2								2		1
CO7. Creating working drawings.	2		2							2		2
Subject Name:- AI For Engineering ; Subject Code:- KMC101												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the evolution and various approaches of AI.	2	2	2	2	1						1	2
CO2. Understand data storage, processing, visualization, and its usein regression, clustering etc.	2		1		2					2	1	
CO3. Understand natural language processing and chatbots.	2	2	2									1
CO4. Understand the concepts of neural networks.	2		1		2					1		
CO5. Understand the concepts of face, object, speech recognition andRobots.	2	2										1
Subject Name:- Soft Skills-I ; Subject Code:- KNC101												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Students will be enabled to understand the correct usage of grammar.	2	2	2	2	1						2	2

CO2. Students will apply the fundamental inputs of communication skills in making speech delivery, individual conference, and group communication.	2		1		2		1			2	1	
CO3. Students will evaluate the impact of interpersonal communication on their performance as a professional and in obtaining professional excellence at the workplace.	2	2	2				2					1
CO4. Skills and techniques of persuasion and negotiation would enhance the level of students at multifarious administrative and managerial platforms.	2		1		2					1		
CO5. Student will be able to equip with basics of communication skills and will apply it for practical and oral purposes by being honed up in presentation skills and voice-dynamics.	2	2					2					1
B. Tech I Semester II												
Subject Name:- Engineering Chemistry ; Subject Code:- KAS202T												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Use of different analytical instruments.	2	2		2	2	2	2	2		2	1	2
CO2. Measure molecular/ system properties such as surface tension, viscosity, conductance of solution, chloride and iron content in water.	2	1	1					2	2		1	2
CO3. Measure hardness of water.	2	2	2	2	2	2		1	2	2	2	2
CO4. Estimate the rate constant of reaction.	2	1	2	2				2		1	1	1
Subject Name:- Engineering Mathematics-II ; Subject Code:- KAS203T												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. The effective mathematical tools for the solutions of differential equations that model physical processes.	2	2	2	2	2	2	2		2	2	2	2
CO2. To apply integral calculus in various field of engineering. Apart from some other applications students will	2	2	2								2	2

have a basic understanding of Beta and Gamma functions.												
CO3. The tool of Fourier series for learning advanced Engineering Mathematics.	2	2	2								2	2
CO4. The tools of differentiation of functions of complex variables that are used in various techniques dealing with engineering problems.	2	2	2		2						2	2
CO5. The tools of integration of functions of complex variables that are used in various techniques dealing with engineering problems.	2	2	2		2						2	2
Subject Name:- Emerging Domain in Electronics Engineering ; Subject Code:- KEC201T												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the concept of PN Junction and devices	2	2	1									
CO2. Understand the concept of BJT, FET and MOFET.	2	2										
CO3. Understand the concept of Operational amplifier	2	2	2						1			
CO4. Understand the concept of measurement instrument.	2	2			1							
CO5. Understand the working principle of different type of sensor and their uses.	2	2										
CO6. Understand the concept of IoT system & Understand the component of IoT system.	2	2			2					2		
Subject Name:- Fundamentals of Mechanical Engineering and Mechatronics; Subject Code:- KME201T												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the concept of stress and strain, factor of safety, beams.	2	2		2		2				2		1
CO2. Understand the basic component and working of internal combustion engines, electric and hybrid vehicles, refrigerator and heat pump, air conditioning.	2	2		2	2	1	1		1			2
CO3. Understand fluid properties, conservation laws, hydraulic machinery used in real life.	2			2		2				2		1
CO4. Understand the working principle of different measuring instrument with the knowledge of accuracy, error and calibration, limit, fit, tolerance and control	2	2		2	2	2			1			2

system.												
CO5. Understand concept of mechatronics with their advantages, scope and Industrial application, the different types of mechanical actuation system, the different types of hydraulic and pneumatic systems.	2	2	2	2	1	2			1			1
CO6. Apply concepts of strength of material for safe design, refrigeration for calculation of COP, concepts of fluid mechanics in real life.	2	2	2			1				1		1
Subject Name:- Engineering Chemistry Lab ; Subject Code:- KAS252P												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Use of different analytical instruments.	2	2				2		1	2	2	2	2
CO2. Measure molecular/system properties such as surface tension, viscosity etc.	2		2		1	2		1	2			
CO3. Measure conductance of solution, chloride and iron content in water, hardness of water.	2		2		2	2		2			2	
CO4. Estimate the rate constant of reaction.	2	2	1		1	2	2	1	2		2	2
Subject Name:- Electronics Engineering Lab ; Subject Code:- KEC251P												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Distinguish between analog and digital systems.		2			1					1		
CO2. Identify the various digital ICs and understand their operation.		2		1			2		1			
CO3. Apply Boolean laws to simplify the digital circuits.		2		2								
CO4. Design simple logic circuits.		2					1				1	
Subject Name:- English Language Lab ; Subject Code:- KAS254P												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. To facilitate software based learning to provide the required English Language proficiency to students.		2		1			2	1				2
CO2. To acquaint students with specific dimensions of communication skills i.e. Reading,Writing, Listening, Thinking and							2	1				2

Speaking.												
CO3. To train students to use the correct and error-free writing by being well versed in rules of English grammar.		1		1			2					1
CO4. To cultivate relevant technical style of communication and presentation at their work place and also for academic uses.							1	1				2
CO5. To enable students to apply it for practical and oral presentation purposes by being honed up in presentation skills and voice-dynamics.	1	2					1					2
Subject Name:- Mechanical Workshop Lab; Subject Code:- KWS251P												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Use various engineering materials, tools, machines and measuring equipments.	2			2	2							2
CO2. Perform machine operations in lathe and CNC machine.	2			2	2	1			2	1		
CO3. Perform manufacturing operations on components in fitting and carpentry shop.	2		2	2	2	1			2	2		1
CO4. Perform operations in welding, moulding, casting and gas cutting.	2		2	2	2	2						1
CO5. Fabricate a job by 3D printing manufacturing technique.	2	2	2	2		2			1	2	1	2
Subject Name:- Emerging Technology for Engineering ; Subject Code:- KMC202												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the concepts of internet of things, smart cities and industrial internet of things.	2	2				2				2	2	1
CO2. Understand the concepts of cloud computing.	2	2	2	2								
CO3. Understand the concepts of block chain, cryptocurrencies, smart contracts.												
CO4. Understand design principles, tools, trends in 3 D printing and drones.	2	2	2	2	2	2			2	2		1
CO5. Understand augmented reality (AR), virtual reality (VR), 5G technology, brain computer interface and human brain.	2	2	2	2	2				2	1	2	1

Subject Name:- Soft Skill II; Subject Code:- KNC201												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Students will be able to converse well with effective LSRW skills in English.	2	2		2	1						2	2
CO2. Students will evaluate the importance of conversation in their personal and professional domain and apply it for extending their professional frontiers.	2		1		2		1			2	1	
CO3. Students will learn to apply motivation skills for their individual and professional excellence.	2	2	2				2					1
CO4. Students will utilize their teamwork and their interpersonal communication skills to survive and excel at their work-place.			1		2					1		
CO5. Students will learn to evaluate creativity for their professional innovation and critical thinking for their competence.	2	2					2					1

B. Tech II Semester III												
Subject Name:- Thermodynamics ; Subject Code:- KME301												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. The students will be able to apply energy balance to systems and control volumes, in situations involving heat and work interactions.	2	2	2	2	2	2	2		2		2	
CO2. Students can evaluate changes in thermodynamic properties of substances.	2	2	2	2		1	1		2			2
CO3. The students will be able to evaluate the performance of energy conversion devices.	2	2	2	2								
CO4. The students will be able to differentiate between high grade and low-grade energies.	2	2	1	2		2						
Subject Name:- Fluid Mechanics & Fluid Machines ; Subject Code:- KME302												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**

CO1. The students will be able to mathematically analyze simple flow situations.	2	2			1					1		2
CO2. They will be able to evaluate the performance of pumps and turbines.	2	2	2	2	2	2						2
Subject Name:- Materials Engineering; Subject Code:- KME303												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Student will be able to identify crystal structures for various materials and understand the defects in such structures.	2	2		2	2	1				2		2
CO2. Understand how to tailor material properties of ferrous and non-ferrous alloys.	2	2			2	1						2
CO3. How to quantify mechanical integrity and failure in materials.	2	2		2	2	2	2	2	2	1	1	1

Subject Name:- Fluid Mechanics Lab ; Subject Code:- KME351												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. The students who have undergone the course will be able to measure various properties of fluids.	2	2			2	1	2		1	2	1	
CO2. Characterize the performance of fluid/thermal machinery.	2	2	2	2	2	2	1					1
Subject Name:- Material Testing Lab; Subject Code:- KME352												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. The students who have undergone the course will be able to measure various properties of materials.	2			2	2	2		2		2	2	1
Subject Name:- Computer Aided Machine Drawing-I Lab; Subject Code:- KME353												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Upon completion of this course, the students can use computer and CAD software for modeling mechanical components.	2	2	2	2	2	2			2	2		2
Subject Name:- Mini Project or Internship Assessment; Subject Code:- KME354												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**

CO1. Be acquainted with appropriate utility.	2	2										
CO2. Apply fundamental principles of science and engineering to design and fabricate models for diversified applications.	2		2	2					2	2		
CO3. To enhance team spirit and improve the ability of students to work together for solution of common engineering problem.	2	2	2						2	2		
CO4. To improve ability of students for the selection of material and manufacturing process and approach for solving an engineering problem with minimum cost.	2	2		2		1						1
CO5. To inculcate the habit of observing social problems and searching for a possible sustainable eco friendly solution.	1	2				2	2			2		1
Subject Name:- Python Programming ; Subject Code:- KNC302												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. To read and write simple Python programs.	1		1	2	2		2		2			
CO2. To develop Python programs with conditionals and loops.	1	1	2	1	2	1	2				2	2
CO3. To define Python functions and to use Python data structures – lists, tuples, dictionaries	1	2	1	2	1	2				2	2	
CO4. To do input/output with files in Python.	1	1	2	1	2	1	2				2	2
CO5. To do searching, sorting and merging in Python.	2	2	1	2	1	2				2	2	
B. Tech II Semester IV												
Subject Name:- Applied Thermodynamics; Subject Code:- KME401												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. After completing this course, the students will get a good understanding of various practical power cycles and heat pump cycles.	2	2	2	2		2						
CO2. They will be able to analyze energy conversion in various thermal devices such as combustors, air coolers, nozzles, diffusers, steam turbines and reciprocating compressors.	2	2		2		2			1			2
CO3. They will be able to understand phenomena occurring in high speed compressible flows.	2	2		1								2

Subject Name:- Engineering Mechanics; Subject Code:- KME402												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. After completing this course, the students should be able to understand the various effect of force and motion on the engineering design structures.	2	2	2	2		2				2		2
Subject Name:- Manufacturing Processes; Subject Code:- KME403												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Upon completion of this course, students will be able to understand the different conventional and unconventional manufacturing methods employed for making different products.	2	2	2	2	2	2					2	
Subject Name:- Applied Thermodynamics Lab; Subject Code:- KME451												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. The students who have undergone the course will be able to identify various properties of system.	2	2	2			2						
Subject Name:- Manufacturing Processes Lab; Subject Code:- KME452												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Upon completion of this course, students will be able to understand the different conventional and unconventional manufacturing methods employed for making different products.	2	2	2	2	2	2			1			
Subject Name:- Computer Aided Machine Drawing-II Lab; Subject Code:- KME453												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Upon completion of this course, the students can use computer and CAD software for modelling mechanical components.	2	2	2	1		1			1	2		1

Subject Name:- Computer System Security; Subject Code:- KNC401												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats.	1		1	2	2		2		2			
CO2. To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats.	1	1	2	1	2	1	2				2	2
CO3. To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.	1	2	1	2	1	2				2	2	
CO4. To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios.	1	1	2	1	2	1	2				2	2
CO5. To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques.	2	2	1	2	1	2				2	2	

B. Tech II Semester V

Subject Name:- Heat and Mass Transfer; Subject Code:- KME501												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the fundamentals of heat and mass transfer.	2	1	2	2	1	2	1					1
CO2. Apply the concept of steady and transient heat conduction.	2	2	2	1						1		
CO3. Apply the concept of thermal behavior of fins.	2	2	2	1		2				1		
CO4. Apply the concept of forced and free convection.	2	2	2			2				1		
CO5. Apply the concept of radiation for black and non-black bodies.	2	2	2	1		2				1		
CO6. Conduct thermal analysis of heat exchangers.	2	2	2	2		2				1		

Subject Name:- Strength of Material ; Subject Code:- KME502												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the concept of stress and strain under different conditions of loading.	2	2	2	2	2	2						
CO2. Determine the principal stresses and strains in structural members.	2		2	2	1					2	1	
CO3. Determine the stresses and strains in the	2	2	2									

members subjected to axial, bending and torsional loads.												
CO4. Apply the concepts of stresses and strain in solving problems related to springs, column and pressure vessels.	2	2	2	2		2						
CO5. Calculate the slope, deflection and buckling of loaded members.	2	2	2	2		1						
CO6. Analyze the stresses developed in straight and curved beams of different cross sections.	2	2	2	2		2			1			
Subject Name:- Industrial Engineering; Subject Code:- KME503												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the concept of production system, productivity, facility and process planning in various industries.	1		1	2	2		2		2			
CO2. Apply the various forecasting and project management techniques.	1	1	2	1	2	1	2				2	2
CO3. Apply the concept of break-even analysis, inventory control and resource utilization using queuing theory	1	2	1	2	1	2				2	2	
CO4. Apply principles of work study and ergonomics for design of work systems.	1	1	2	1	2	1	2				2	2
CO5. Formulate mathematical models for optimal solution of industrial problems using linear programming approach.	2	2	1	2	1	2				2	2	
Subject Name:- I C Engine Fuel and Lubrication; Subject Code:- KME054												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Explain the working principle, performance parameters and testing of IC Engine.	2	2		2	1	2	1		1		2	
CO2. Understand the combustion phenomena in SI and CI engines and factors influencing combustion chamber design.	2	1	2	2		2	2		1	2	2	
CO3. Understand the essential systems of IC engine and latest trends and developments in IC Engines.	2	2	2	2		2					2	2
CO4. Understand the effect of engine emissions on environment and human health and methods of reducing it.	2			2		2	2		1		2	1
CO5. Apply the concepts of thermodynamics to air standard cycle in IC Engines.	2	2	2	2								

CO6. Analyze the effect of various operating parameters on IC engine performance.	2	2		2		2	2					
Subject Name:- Advance welding; Subject Code:- KME055												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the physics of arc welding process and various operating characteristics of welding power source.	2			2		2	2					
CO2. Analyze various welding processes and their applications.	2	2	2			2					2	
CO3. Apply the knowledge of welding for repair & maintenance, along with the weldability of different materials.	2			2	2				1		1	
CO4. Apply the concept of quality control and testing of weldments in industrial environment.	2	2		2	2	2	2	2	1		2	
CO5. Evaluate heat flow in welding and physical metallurgy of weldments.	2	2	2	2		2						
Subject Name:- Heat and Mass Transfer Lab; Subject Code:- KME551												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Apply the concept of conductive heat transfer.	2	2	2	2			2			2		1
CO2. Apply empirical correlations for both forced and free convection to determine the value of convection heat transfer coefficient.	2	2		2								1
CO3. Apply the concept of radiation heat transfer for black and grey body.	2	2	2		2							
CO4. Analyze the thermal behaviour of parallel or counter flow heat exchangers.	2	2	1	1		2				1	1	
CO5. Conduct thermal analysis of a heat pipe.	2	2	1	1	1	1				1	1	
Subject Name:- Python Lab; Subject Code:- KME552												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Apply conditional statement, loops condition and functions in python program.	1		1	2	2		2		2			
CO2. Solve mathematical and mechanical problems using python program.	1	1	2	1	2	1	2				2	2
CO3. Plot various type of chart using python program.	1	2	1	2	1	2				2	2	

CO4. Analyze the mechanical problem using python program.	1	1	2	1	2	1	2				2	2

Subject Name:- Internet of Things Lab; Subject Code:- KME553												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand Internet of Things and its hardware and software components.	1		1	2	2		2		2			
CO2. Interface I/O devices, sensors & communication modules.	1	1	2	1	2	1	2				2	2
CO3. Remotely monitor data and control devices.	1	2	1	2	1	2				2	2	
CO4. Design prototype of IoT based smart system.	1	1	2	1	2	1	2				2	2
CO5. Develop IoT based projects for real life problem.	2	2	1	2	1	2				2	2	

Subject Name:- Mini Project or Internship Assessment; Subject Code:- KME554												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Identify an engineering problem, devise a means of solving and exhibit the ability to execute the solution	2	2	2		2	2						
CO2. Demonstrate knowledge of professional and ethical responsibilities.	2					2		2		2		
CO3. Show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues.	2				2	2						
CO4. Communicate effectively in both verbal and written form.	2									2		
CO5. Develop confidence for self-education and ability for lifelong learning.	1	2							2	1		2

Subject Name:- Constitution of India, Law and Engineering; Subject Code:- KNC501												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Identify and explore the basic features and modalities about Indian constitution.	2					2		2	1	2		
CO2. Differentiate and relate the functioning of Indian parliamentary system at the center and state level.	2			2		1		2		2		1
CO3. Differentiate different aspects of Indian Legal System and its related bodies.	1					2		2	1	2		
CO4. Discover and apply different laws and regulations related to engineering practices.	2			2		2			1			1

CO5. Correlate role of engineers with different organizations and governance models.	1			1			1	1		2		

B. Tech III Semester VI

Subject Name:- Refrigeration and Conditioning; Subject Code:- KME601

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}
CO1. Understand the basics concepts of Refrigeration & Air-Conditioning and its future prospects.	2	2		2	2	2	2					1
CO2. Explain the construction and working of various components in Refrigeration & Air-Conditioning systems.	2		2	2	2				2	2	2	
CO3. Understand the different types of RAC systems with their respective applications.	2	2				2					2	1
CO4. Apply the basic laws to the thermodynamic analysis of different processes involved in Refrigeration and Air-Conditioning.	2	2					2					1
CO5. Apply the basic concepts to calculate the COP and other performance parameters for different RAC systems.	2	2			2	2						2
CO6. Analyze the effects of performance parameters on COP.	2	2										

Subject Name:- Machine Design; Subject Code:- KME602

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}
CO1. Recall the basic concepts of Solid Mechanics to understand the subject.	2	2										
CO2. Classify various machine elements based on their functions and applications.	2	2				2						
CO3. Apply the principles of solid mechanics to machine elements subjected to static and fluctuating loads.	2	2	2									1
CO4. Analyze forces, bending moments, twisting moments and failure causes in various machine elements to be designed.	2	2	2	2		2		2	2	2		2
CO5. Design the machine elements to meet the required specification.	2		2	2						2		

Subject Name:- Theory of Machines; Subject Code:- KME603

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}

CO1. Understand the principles of kinematics and dynamics of machines.	2	2										2
CO2. Calculate the velocity and acceleration for 4-bar and slider crank mechanism.	2									2		1
CO3. Develop cam profile for followers executing various types of motions.	2	2	2	2		2			1	2	1	2
CO4. Apply the concept of gear, gear train and flywheel for power transmission.	2	2	2	2								2
CO5. Apply dynamic force analysis for slider crank mechanism and balance rotating & reciprocating masses in machines.	2	2	2	2		2				2		
CO6. Apply the concepts of gyroscope, governors in fluctuation of load and brake & dynamometer in power transmission.	2	2	2	2		2				2		

Subject Name:- Non destructive Testing; Subject Code:- KME061

Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Understand the concept of destructive and Non-destructive testing methods.	2	2		2	2	2				2		
CO2. Explain the working principle and application of die penetrant test and magnetic particle inspection.	2	2		2	2	2				2		2
CO3. Understand the working principle of eddy current inspection.	2	2		2	2	2	1		2			
CO4. Apply radiographic techniques for testing.	2	2		2	2	2						1
CO5. Apply the principle of Ultrasonic testing and applications in medical and engineering areas.	2	2		2	2	2						2

Subject Name:- Software Project Management; Subject Code:- KOE068

Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Identify project planning objectives, along with various cost/effort estimation models.	2					2		2	1	2		
CO2. Organize & schedule project activities to compute critical path for risk analysis.	2			2		1		2		2		1
CO3. Monitor and control project activities.	1					2		2	1	2		
CO4. Formulate testing objectives and test plan to ensure good software quality	2			2		2			1			1

under SEI-CMM												
CO5. Configure changes and manage risks using project management tools.	1			1			1	1		2		
Subject Name:- Refrigeration and Air Conditioning Lab; Subject Code:- KME651												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Determine the performance of different refrigeration and air-conditioning systems.	2	2	1	1	2	2	1		1		2	
CO2. Apply the concept of psychrometry on different air cooling systems.	2	2	2	2			2					
CO3. Interpret the use of different components, control systems and tools used in RAC systems.	2	2		2	2	1	1				2	
CO4. Demonstrate the working of practical applications of RAC systems.	2	2				2				2		2
Subject Name:- Machine Design Lab; Subject Code:- KME652												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Apply the principles of solid mechanics to design various machine Elements subjected to static and fluctuating loads.	2	2	2	2		2			2			
CO2. Write computer programs and validate it for the design of different machine elements.	2	2	2							2		
CO3. Evaluate designed machine elements to check their safety.	2		2	2			2					
Subject Name:- Theory of Machine Lab; Subject Code:- KME653												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Demonstrate various mechanisms, their inversions and brake and clutches in automobiles.	2	2	2	2						2		1
CO2. Apply cam-follower mechanism to get desired motion of follower.	2	2	2	2		2			1	2		
CO3. Apply the concepts of gears and gear train to get desired velocity ratio for power transmission.	2	2	2	2								2
CO4. Apply the concept of governors to control the fuel supply in engine.	2	2		2		2						1
CO5. Determine the balancing load in static and dynamic balancing problem.	2	2	2	2								

Subject Name:- Indian Tradition, Culture and Society; Subject Code:- KME KNC602												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Ability to understand, connect up and explain basics of Indian Traditional knowledge modern scientific perspective.	2	2			1					2		2
B. Tech IV Semester VII												
Subject Name:- Understanding the human being Comprehensively Human Aspiration audits fulfillment; Subject Code:- ROE074												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Help the students having the clarity about human aspirations, goal, activities and purpose of life.	2	1	2	2	2	1	1	1	1	1		
CO2. Facilitate the competence to understand the harmony in nature/existence and participation of human being in the nature/existence.	1	2	2	2	1	1	1	1	1		1	1
CO3. Help the students to develop the understanding of human tradition and its various components.	1	1	1	1	2		1	2	2		2	
Subject Name:- Power Plant Engineering ; Subject Code:- RME071												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Basic knowledge of Different types of Power Plants, site selection criteria of each one of them.	2	2		2		1	2				2	2
CO2. Understanding of Thermal Power Plant Operation, turbine governing, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems.	2			2	1	2	2					
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO3. Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design.	2	2	2	2						2	2	2
CO4. Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor.	2		2			1	2					
CO5. Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc.	2	2				2						

Subject Name:- Automation & Robotics; Subject Code:- RME078												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. To describe the fundamental theory and concepts of the Automation & Robotics.	2				2	2						1
CO2. Develop the design and manufacturing skills.	2		2			2			2			
CO3. Compare the different types of modeling techniques and explain the central role solid models play in the successful completion of Automation-based product development.	2	2	2	2								
CO4. Explain the basic concepts of CNC programming and machining.	2									2		
CO5. Describe the principles of Computer Aided Designing systems and the concepts of Geometric modeling, solid modeling, and feature-based design modeling.	2	2	2	2						2		2
Subject Name:- CAD/CAM; Subject Code:- RME701												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. To describe the fundamental theory and concepts of the CAD/CAM.	2	2	2							2		2
CO2. Develop the design and manufacturing skills.	2	2	2	2						2		
CO3. Compare the different types of modeling techniques and explain the central role solid models play in the successful completion of CAD/CAM-based product development	2	2	2							2		
CO4. Explain the basic concepts of CNC programming and machining.	2	2								2		1
CO5. Describe the principles of Computer Aided Designing systems and the concepts of Geometric modeling, solid modeling, and feature-based design modeling.	2	2	2	2						2		2
Subject Name:- Automobile Engineering; Subject Code:- RME702												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Identify the different parts of the automobile.	2									1		
CO2. Describe how the steering and the suspension systems operate.	2	2		2		2				2		
CO3. Understand the environmental implications of automobile emissions.	2			2		2	2				1	1
CO4. Understand power train function and the translation of torques and speeds throughout.	2	2			2							

CO5. Explain the working of various parts like engine, transmission, clutch, brakes.	2		2			1				2		
Subject Name:- CAD/CAM Lab; Subject Code:- RME751												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Sketch, construct and simulate the mechanical engineering parts and components which include shaft coupling, bearings, automobile parts, machine tool parts along with their assembly drawing in a CAD package.	2	2	2	2		1				2		1
Subject Name:- IC Engine & Automobile Lab; Subject Code:- RME752												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Differentiate the internal combustion engines based on the classification parameters.	2	2				1						
CO2. Analyze the internal combustion engine cycles and performance parameters.	2	2		2		2	1					1
CO3. Describe, explain and demonstrate the various aspects of automobile components and system which include engine components, fuel and ignition systems, transmission systems and steering systems, suspension and braking systems and electrical and electronics system.	2	2	2	2	2					2		
Subject Name:- Industrial Training; Subject Code:- RME753												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. An ability to work in actual working environment.	2	2	2	2								
CO2. An ability to utilize technical resources.	2	2	2	2								
CO3. An ability to write technical documents and give oral presentations related to the work completed.	2	2	2	2						2		
Subject Name:- PROJECT-1; Subject Code:- RME754												
Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Identify real world problems of mechanical engineering and related systems.	2	2	2	2								

CO2. Interpret the working of mechanical engineering systems.	2	2	2	2								
CO3. Apply the principles of mechanical engineering in real world systems.	2	2	2	2								

B. Tech IV Semester VIII

Subject Name:- Renewable Energy Resources; Subject Code:- ROE086

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}
CO1. Understanding of non-conventional energy resources and its relation to other disciplines.	2	2										1
CO2. Ability to list non-conventional energy resources processes, units, and the corresponding power plants.	2	2	2	2								1
CO3. Awareness of career options, potential job functions, contemporary and professional issues.	2	1				2						1
CO4. Familiarity with power plants applications in various industries.	2	2										1
CO5. It gives the deep knowledge about the Geo-thermal, wind, tide, solar etc. power plants.	2	2		2								1

Subject Name:- Advance welding; Subject Code:- RME081

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}
CO1. Understand the physics of arc welding process and various operating characteristics of welding power source.	2	2		2								1
CO2. Analyze various welding processes and their applications.	2	2	1	2		2						
CO3. Apply the knowledge of welding for repair & maintenance, along with the weldability of different materials.	2	2	2	2		1						
CO4. Apply the concept of quality control and testing of weldments in industrial environment.	2	2		2								
CO5. Evaluate heat flow in welding and physical metallurgy of weldments.	2	2		2		2						

Subject Name:- Total Quality Management; Subject Code:- RME085

Course Outcomes	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_{10}	PO_{11}	PO_{12}

CO1. Implement the principles and concepts inherent in a Total Quality Management (TQM) approach to managing a manufacturing or service organization.	2					2		2	1	2		
CO2. Understanding of the statistically control of process and failure mode of process.	2			2		1		2		2		1
CO3. Successfully implement process improvement teams trained to use the various quality tools for identifying appropriate process improvements.	1					2		2	1	2		
CO4. To implement the quality tools like 3-sigma, 6-sigma in a better way in any organization.	2			2		2			1			1
CO5. Assess exactly where an organization stands on quality management with respect to the ISO 9000 quality management standard.	1			1			1	1		2		

Subject Name:- Seminar; Subject Code:- RME851

Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Select a technical topic related to mechanical engineering, study, analyse and summarize the topic.	2	2	2	2								
CO2. Prepare a report and make a presentation on the selected topic.	2	2	2	2						2		
CO3. Demonstrate the understanding of impact of engineering solutions on the society.	2	2	2	2						2		
CO4. Demonstrate the knowledge of professional and ethical responsibilities.	2	2						2		2		

Subject Name:- Project-2; Subject Code:- RME852

Course Outcomes	**PO_1**	**PO_2**	**PO_3**	**PO_4**	**PO_5**	**PO_6**	**PO_7**	**PO_8**	**PO_9**	**PO_{10}**	**PO_{11}**	**PO_{12}**
CO1. Criticize and experiment to arrive at solutions for real world mechanical engineering problems.	2	2	2	2		1						
CO2. Analyse and evaluate to obtain solution for problems in mechanical engineering systems.	2	2	2	2								
CO3. Demonstrate effective project execution and control techniques that result in successful projects.	2	2	2	2						2		
CO4. Conduct project closure activities and obtain formal project acceptance.	2	2	2	2							2	

PROGRAM OUTCOMES (POs)

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.