

Course Code &Name: C201 - (ME8353 Transforms and Partial Differential Equations)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C201.1	U	Understand the partial differential equations of homogenous and non-homogenous equations.
C201.2	AP	Solve differential equations using Fourier series
C201.3	AP	Apply Fourier series techniques to solve one and two dimensional heat flow and wave phenomena
C201.4	AL	Solve the mathematical principles of Fourier transforms.
C201.5	AL	Apply z-transform techniques in partial differential equations.

Course Code	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
C201.1	3	3	3	-	-	-	-	-	-	-	-	3	-	3
C201.2	3	3	3	-	-	-	-	-	-	-	-	3	-	3
C201.3	3	3	3	-	-	-	-	-	-	-	-	3	-	3
C201.4	3	3	3	-	-	-	-	-	-	-	-	3	-	3
C201.5	3	3	3	-	-	-	-	-	-	-	-	3	-	3
C201	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00

Course Code &Name: C202 - (ME8391Engineering Thermodynamics)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C202.1	U	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions
C202.2	U	Apply second law of Thermodynamics to closed system and open systems
C202.3	AL	Analyze Rankine vapour power cycle and modifications to improve its performance
C202.4	U	Explain simple thermodynamic relations for ideal and real gases
C202.5	AL	Identify the properties of gas mixtures and moist air and its use in psychometric processes

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C202.1	3	3	2	-	-	-	-	-	-	-	-	-	3	3
C202.2	3	3	2	-	-	-	-	-	-	-	-	2	3	3
C202.3	3	3	3	-	-	-	-	-	-	2	-	2	3	3
C202.4	3	3	2	-	-	-	-	-	-	-	-	-	3	3
C202.5	3	3	3	-	-	-	-	-	-	2	-	3	3	3
C202	3.00	3.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	3.00	3.00

Course Code &Name: C203 - (CE8394Fluid Mechanics And Machinery)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C203.1	U	Summarize the properties and characteristics of a fluid.
C203.2	U	Compare laminar and turbulent fluid flow with various losses
C203.3	U	Analyze different fluid properties by using Rayleigh's and Buckingham's Pi theorems.
C203.4	U	Classify different types of pumps and evaluate its performance.
C203.5	U	Examine different types of turbines and analyze its performance.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C203.1	3	2	-	-	-	-	-	-	-	-	-	2	3	3
C203.2	3	3	3	-	-	-	-	-	-	-	-	2	3	3
C203.3	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C203.4	3	3	3	-	-	-	-	-	-	2	-	-	3	3
C203.5	3	3	3	-	-	-	-	-	-	2	-	-	3	3
C203	3.00	2.80	3.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	3.00	3.00

Course Code &Name: C204 - (ME8351Manufacturing Technology-I)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C204.1	U	List out the different metal casting processes, associated defects, merits and demerits
C204.2	U	Compare different metal joining processes.
C204.3	U	Classify various hot working and cold working methods of metals.
C204.4	U	Explain various sheet metal making processes.
C204.5	U	Distinguish various methods of manufacturing plastic components.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C204.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
C204.2	3	-	-	-	3	-	-	-	-	-	-	3	3	3
C204.3	3	-	-	-	-	-	-	-	-	-	-	-	3	3
C204.4	3	-	-	-	-	-	-	-	-	-	-	-	3	3
C204.5	3	-	-	-	3	-	-	-	-	-	-	3	3	3
C204	3.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00

Course Code &Name: C205 - (EE8353Electrical Drives and Controls)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C205.1	AP	Illustrate the rating and classes of duty of machines for electrical drives.
C205.2	U	Identify the mechanical & electrical characteristics and braking of DC and AC machines.
C205.3	U	Choose the method of starting in DC and AC machines.
C205.4	U	Utilize conventional and solid state speed control of DC drives.
C205.5	AL	Demonstrate the speed control of AC drive by conventional and solid state

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C205.1	3	3	-	-	-	-	-	-	-	3	-	-	3	2
C205.2	3	3	-	-	-	-	-	2	-	3	-	-	3	2
C205.3	3	3	-	-	-	-	-	3	-	3	-	-	3	2
C205.4	3	3	-	-	-	-	-	3	-	3	-	2	3	2
C205.5	3	3	-	-	-	-	-	3	-	3	-	2	3	2
C205	3.00	3.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	3.00	0.00	2.00	3.00	2.00

Course Code &Name: C206 - (ME8361Manufacturing Technology Laboratory-I)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C206.1	U	Develop the basic Shapes using lathe Machine.
C206.2	AP	Develop Different Shapes using Shaper and Milling Machine.
C206.3	AL	Develop different Welding joints.
C206.4	AL	Experiment with Green Sand Moulding.
C206.5	AL	Develop different Models using Sheet Metals.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C206.1	3	-	-	-	-	-	-	3	3	-	-	-	3	3
C206.2	3	3	3	-	-	-	-	3	3	3	-	-	3	3
C206.3	3	3	3	-	-	-	-	3	3	3	-	2	3	3
C206.4	3	3	3	-	-	-	-	3	3	3	-	-	3	3
C206.5	3	-	-	-	-	-	-	3	3	-	-	3	3	3
C206	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	0.00	2.50	3.00	3.00

Course Code &Name: C207 - (ME8381Computer Aided Machine Drawing)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C207.1	AL	Create curves and splines by using drafting and modeling software.
C207.2	AP	Develop orthographic projections of solids
C207.3	AL	Build the plan for residential building
C207.4	AP	Design the simple steel truss and sectional view of solids
C207.5	AP	Create isometric projection of objects and 3-D modeling.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C207.1	3	2	3	-	3	-	-	3	-	3	-	3	3	3
C207.2	3	2	3	-	3	-	-	3	-	3	-	3	3	3
C207.3	3	2	3	-	3	-	-	3	-	3	-	3	3	3
C207.4	3	2	3	-	3	-	-	3	-	3	-	3	3	3
C207.5	3	2	3	-	3	-	-	3	-	3	-	3	3	3
C207	3.00	2.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C208 - (EE8361Electrical Engineering Laboratory)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C208.1	AL	Determine the load and speed characteristics of DC and AC motors.
C208.2	U	Examine the characteristics of DC and AC generators.
C208.3	AP	Inspect the characteristics of single phase transformer.
C208.4	AP	Construct the V curve and inverted V curve of synchronous motor.
C208.5	AL	Analyze the method of starting of DC and AC motor using starters.

Course Code	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C208.1	3	3	-	-	-	-	-	3	3	3	-	3	3	2
C208.2	3	3	-	-	-	-	-	3	3	3	-	3	3	2
C208.3	3	3	-	-	-	-	-	3	3	3	-	3	3	2
C208.4	3	3	-	-	-	-	-	3	3	3	-	3	3	2
C208.5	3	3	-	-	-	-	-	3	3	3	-	3	3	2
C208	3.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	2.00

Course Code &Name: C209 - (HS8361 Interpersonal Skills / Listening & Speaking)

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C209.1	U	Listen and Respond to everyday topics with reasonable accuracy
C209.2	U	Introduce themselves and their friends and Take part effectively in informal conversations in English.
C209.3	U	Develop conversations and short talks in English.
C209.4	U	Make effective presentations and Participate in GD.
C209.5	U	Participate confidently and appropriately in conversations both formal and informal.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C209.1	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C209.2	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C209.3	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C209.4	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C209.5	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C209	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	0.00	2.00	0.00	0.00

Course Code &Name: C210 - (MA8452 Statistics And Numerical Methods)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C210.1	U	Identify small, large samples and apply testing of hypothesis.
C210.2	AP	Apply ANOVA technique for design of experiments.
C210.3	AL	Determine the solution of algebraic and transcendental system of linear Equations.
C210.4	AP	Interpret the values of unknown functions using Newton's Formula.
C210.5	AP	Estimate the numerical values of the derivatives and integrals of unknown function difference Equations.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C210.1	3	3	3	-	-	-	-	-	-	2	-	2	3	2
C210.2	3	3	3	2	-	-	-	2	-	2	-	2	3	2
C210.3	3	2	3	-	-	-	-	-	-	-	-	-	3	2
C210.4	3	3	3	-	-	-	-	-	-	-	-	-	3	2
C210.5	3	3	3	-	-	-	-	-	2	-	-	-	3	2
C210	3.00	2.80	3.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	3.00	3.00

Course Code &Name: C211 - (ME8492 Kinematics of Machinery)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C211.1	U	Identify the kinematic concepts and definitions of mechanisms.
C211.2	AL	Analyze the assembly with respect to the displacement, velocity and acceleration at any point in a link mechanism.
C211.3	AL	Construct the CAM profile for specified output motions.
C211.4	AP	Apply the concepts of toothed gearing and kinematics of gear trains.
C211.5	AP	Construct the effects of friction in transmission and machine components.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C211.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
C211.2	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C211.3	3	3	3	-	-	-	-	-	-	3	-	-	3	3
C211.4	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C211.5	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C211	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	3.00	3.00

Course Code &Name: C212 - (ME8451 Manufacturing Technology II)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C212.1	U	Explain the metal removing process and cutting tools.
C212.2	AP	Demonstrate the operations and functions of turning machines
C212.3	U	Summarize the constructional and operational features of special machines.
C212.4	U	Classify the types of grinding and other finishing processes
C212.5	AP	Develop manual part programming using modern CNC machines

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C212.1	3	2	-	-	-	-	-	2	-	-	-	-	3	3
C212.2	3	2	-	-	-	-	-	2	-	-	-	-	3	3
C212.3	3	2	-	-	-	-	-	2	-	-	-	3	3	3
C212.4	3	-	-	-	-	-	-	2	-	-	-	3	3	3
C212.5	3	3	3	-	3	-	-	2	-	3	-	3	3	3
C212	3.00	2.25	3.00	0.00	3.00	0.00	0.00	2.00	0.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C213 - (ME8491 Engineering Metallurgy)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C213.1	U	Explain the alloys and its compositions and phase diagrams.
C213.2	AP	Illustrate isothermal transformation curves, continuous cooling curves and various heat treatment processes.
C213.3	U	Identify the effect of alloying elements on ferrous and non-ferrous metals
C213.4	U	Examine the properties and applications of non metallic materials
C213.5	AL	Analyze the mechanical properties and its deformation behavior of various metals

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C213.1	3	3	-	-	-	-	-	-	-	3	-	-	3	3
C213.2	3	3	-	-	-	-	-	-	-	3	-	-	3	3
C213.3	3	-	-	-	-	2	-	-	-	-	-	3	3	3
C213.4	3	-	-	-	-	2	-	-	-	-	-	3	3	3
C213.5	3	3	-	-	-	2	-	-	-	-	-	3	3	3
C213	3.00	3.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C214 - (CE8395 Strength of Materials for Mechanical Engineers)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C214.1	AL	Explain the stresses and strains in simple and compound bars
C214.2	AL	Analyze the different type of loading on beams and draw shear force and bending moment distribution curves.
C214.3	AP	Apply simple torsion equations in designing of shafts and helical springs
C214.4	AP	Compare various theorems to find out the deflection and strain energy acting on the beams.
C214.5	AL	Analyze the internal and external pressures and stresses in cylinders and spherical shells.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C214.1	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C214.2	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C214.3	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C214.4	3	3	3	-	-	-	-	3	3	3	-	-	3	3
C214.5	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C214	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	0.00	2.00	3.00	3.00

Course Code &Name: C215 - (ME8493 Thermal Engineering-I)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C215.1	AP	Apply thermodynamic concepts to different gas and steam power system
C215.2	AL	Analyze single state and multistage air compressor
C215.3	U	Examine the components of IC engine and its combustion phenomena
C215.4	U	Identify the IC engine performance and different ignition system
C215.5	AL	Analyze the gas turbine cycles and its important

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C215.1	3	3	3	-	-	-	-	-	-	3	-	2	3	3
C215.2	3	3	3	-	-	-	-	-	-	3	-	2	3	3
C215.3	3	3	0	-	-	-	-	-	-	3	-	2	3	3
C215.4	3	3	3	-	-	-	-	-	-	3	-	2	3	3
C215.5	3	3	3	-	-	-	-	-	-	3	-	2	3	3
C215	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	2.00	3.00	3.00

Course Code &Name: C216 - (ME8462 Manufacturing Technology Laboratory-II)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C216.1	U	Experiment with the different operations using Special Purpose Machines.
C216.2	AP	Develop gears using Hobbing, Shaping and Milling Machines.
C216.3	AP	Develop Surface finish and Tool angles using Grinding Machines.
C216.4	U	Identify the different forces in Milling and Lathe Machines using Force Measuring Dynamometer.
C216.5	AL	Develop CNC Part Programming using G&M - Codes.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C216.1	3	-	-	-	-	-	-	3	3	-	-	2	3	3
C216.2	3	3	3	2	-	-	-	3	3	3	-	2	3	3
C216.3	3	3	3	-	-	-	-	3	3	3	-	-	3	3
C216.4	3	3	3	-	2	-	-	3	3	3	-	-	3	3
C216.5	3	3	3	-	3	-	-	3	3	3	-	3	3	3
C216	3.00	3.00	3.00	2.00	3.00	0.00	0.00	3.00	3.00	3.00	0.00	2.50	3.00	3.00

Course Code &Name: C217 - (CE8381 Strength of Materials and Fluid Mechanics and Machinery Laboratory)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C217.1	AL	Test on solid materials under Tension, Torsion, Hardness, Compression and Deformation.
C217.2	AP	Perform solid materials under Effect of Hardening.
C217.3	U	Identify the Flow Measurement.
C217.4	AP	Examine the Performance Characteristics of Various Pumps.
C217.5	AL	Experiment with Turbines to find the Performance Characteristics.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C217.1	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C217.2	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C217.3	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C217.4	3	3	3	-	-	-	-	3	3	3	-	-	3	3
C217.5	3	3	3	3	-	-	-	3	3	3	-	2	3	3
C217	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	0.00	2.00	3.00	3.00

Course Code &Name: C218 - (HS8461 Advanced Reading and Writing)

REGULATION: R2017

YEAR/SEM: II/ IV

COURSE OUTCOMES

C218.1	U	Read and evaluate texts critically.
C218.2	U	Display critical thinking in various professional contexts.
C218.3	U	Develop writing skills in different type of essays and speak appropriately.
C218.4	U	Write winning job applications and project proposals.
C218.5	U	Improve the reading and writing skills with specific reference to technical writing.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C218.1	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C218.2	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C218.3	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C218.4	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C218.5	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C218	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	0.00	2.00	0.00	0.00

Course Code &Name: C301 - (ME6501 Computer Aided Design)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C301.1	AP	Apply 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics
C301.2	AP	Develop the parametric curves, surface and Solid modeling
C301.3	U	Examine the surface and solid removal method for visual realism
C301.4	U	Identify the tolerances, Mass property and interference checking in components.
C301.5	U	Compare the different types of Standard systems used in CAD

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C301.1	3	3	-	-	-	-	-	-	-	3	-	3	3	3
C301.2	3	3	-	-	-	-	-	-	-	3	-	3	3	3
C301.3	3	3	-	-	-	-	-	-	-	3	-	3	3	3
C301.4	3	3	-	-	-	-	-	-	-	3	-	3	3	3
C301.5	3	3	-	-	-	-	-	3	-	3	-	3	3	3
C301	3.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C302 - (ME6502 Heat and Mass Transfer)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C302.1	AP	Explain heat conduction on different surfaces under steady state and transient conditions
C302.2	AL	Utilize free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations.
C302.3	AL	Analyze boiling and condensation thermal analysis on different types of heat exchangers
C302.4	U	Examine the laws of Radiation and radiative heat transfer between different types of surfaces
C302.5	U	Develop diffusive and convective mass transfer equations and its correlations

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C302.1	3	3	3	-	-	-	-	-	-	2	-	2	3	3
C302.2	3	3	3	-	-	-	-	-	-	2	-	2	3	3
C302.3	3	3	3	-	-	-	-	-	-	2	-	2	3	3
C302.4	3	3	3	-	-	-	-	-	-	2	-	2	3	3
C302.5	3	3	3	-	-	-	-	-	-	2	-	2	3	3
C302	3.00	3.00	3.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	3.00	3.00

Course Code &Name: C303 - (ME6503 Design of machine elements)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C303.1	U	Identify the influence of steady and variable stresses in machine component design.
C303.2	AP	Analyze the design concepts of shafts, keys and couplings.
C303.3	AP	Examine the design concepts of temporary and permanent joints
C303.4	AL	List the various energy storing elements and engine components
C303.5	U	Select the suitable contact bearings and apply the design concepts to journal bearings.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C303.1	3	3	3	-	-	-	-	3	-	3	-	2	3	3
C303.2	3	3	3	-	-	-	-	3	-	3	-	2	3	3
C303.3	3	3	3	-	-	-	-	3	-	3	-	2	3	3
C303.4	3	3	3	-	-	-	-	3	-	-	-	2	3	3
C303.5	3	3	3	-	-	-	-	3	-	-	-	2	3	3
C303	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00	0.00	2.00	3.00	3.00

Course Code &Name: C304 - (ME6504 Metrology and Measurements)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C304.1	U	Explain the concepts of measurements in various metrological instruments
C304.2	U	Summarize the different linear and angular measurement methods.
C304.3	AL	Analyze the coordinate measuring machines and laser metrology
C304.4	AP	Examine the techniques of measuring the geometrical dimensions
C304.5	U	Utilize the different strategies for power, flow and temperature measurements.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C304.1	3	-	-	-	-	-	-	3	-	-	-	2	3	3
C304.2	3	2	-	-	-	-	-	3	-	-	-	2	3	3
C304.3	3	-	-	-	-	-	-	3	-	-	-	2	3	3
C304.4	3	2	-	-	-	-	-	3	-	-	-	2	3	3
C304.5	3	2	-	-	-	-	-	3	-	-	-	2	3	3
C304	3.00	2.67	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	2.00	3.00	3.00

Course Code &Name: C305 - (ME6505 Dynamics of Machines)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C305.1	U	Examine static and dynamic forces of mechanisms.
C305.2	AP	Solve the balancing masses and their locations of reciprocating and rotating masses
C305.3	AP	Examine various types of free vibrations.
C305.4	AL	Analyze the frequency of forced vibration and damping coefficient.
C305.5	U	Inspect the speed and lift of the governor and gyroscopic effect on automobiles, ships and airplanes.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C305.1	3	3	2	-	-	-	-	-	-	-	-	-	3	3
C305.2	3	3	2	-	-	-	-	-	-	3	-	-	3	3
C305.3	3	3	2	-	-	-	-	-	-	-	-	2	3	3
C305.4	3	3	2	-	-	-	-	-	-	-	-	2	3	3
C305.5	3	3	2	-	-	-	-	-	-	-	-	3	3	3
C305	3.00	3.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	2.33	3.00	3.00

Course Code &Name: C306 - (GE6075 Professional Ethics in Engineering)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C306.1	U	Explain human ethics and values.
C306.2	U	Identify the moral issues in engineering and professional roles.
C306.3	AL	Analyze the human experimentation and code of ethics for engineers in society.
C306.4	U	Interpret employee's rights, occupational crimes and safety.
C306.5	U	Assess moral leadership ethics for MNC's.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C306.1	-	-	-	-	-	-	-	3	-	2	-	2	3	2
C306.2	-	-	-	-	-	2	2	3	-	-	-	3	3	2
C306.3	-	-	-	-	-	2	2	3	-	-	-	3	3	2
C306.4	-	-	-	-	-	3	2	3	-	-	-	3	3	2
C306.5	-	-	-	-	-	-	2	3	-	-	-	3	3	2
C306	0.00	0.00	0.00	0.00	0.00	2.33	2.00	3.00	0.00	2.00	0.00	2.80	3.00	2.00

Course Code &Name: C307 - (ME6511 Dynamics Laboratory)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C307.1	AP	Inspect mass moment of inertia by using different apparatus
C307.2	AL	Examine the range and sensitivity of different governors
C307.3	AP	Inspect the gyroscopic effect and its impact on couple.
C307.4	AL	Evaluate the critical speed of shaft and transmissibility ratio of various vibration systems
C307.5	AL	Analyze the cam jump phenomena effect

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C307.1	3	3	2	-	-	-	-	3	3	3	-	-	3	3
C307.2	3	3	2	-	-	-	-	3	3	3	-	3	3	3
C307.3	3	3	2	-	-	-	-	3	3	3	-	3	3	3
C307.4	3	3	2	-	-	-	-	3	3	3	-	3	3	3
C307.5	3	3	2	-	-	-	-	3	3	3	-	-	3	3
C307	3.00	3.00	2.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C308 - (ME6512 Thermal Engineering Laboratory-II)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C308.1	AL	Analyze Stefan Boltzmann constant and emissivity of radiative heat transfer apparatus
C308.2	AP	Examine the heat transfer coefficient of tube and cylinder by natural and forced circulation.
C308.3	AP	Inspect thermal conductivity of composite wall and insulating powder.
C308.4	AL	Survey the effectiveness of parallel flow and counter flow heat exchanger.
C308.5	AP	Test the performance of reciprocating air compressor and HC refrigeration system.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C308.1	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C308.2	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C308.3	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C308.4	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C308.5	3	3	3	2	-	2	2	3	3	3	-	3	3	3
C308	3.00	3.00	3.00	2.00	0.00	2.00	2.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C309 - (ME6513 Metrology and Measurements laboratory)

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C309.1	AL	Test for linear dimensions using Vernier caliper and Micrometer and angular dimensions using sine bar.
C309.2	AP	Inspect the force, torque and temperature using microcontroller devices.
C309.3	AP	Examine the different measurement techniques by using floating carriage micrometer and tool maker's microscope
C309.4	AL	Analyze the straightness and irregularities of surfaces using Autocollimator and surface measuring equipment's.
C309.5	AL	Inspect bore diameter using bore gauge and telescope gauge. Also explain the applications of Coordinate Measuring Machine and comparator.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C309.1	3	3	-	-	-	-	-	3	3	3	-	-	3	3
C309.2	3	3	-	-	-	-	-	3	3	3	-	-	3	3
C309.3	3	3	-	-	-	-	-	3	3	3	-	-	3	3
C309.4	3	3	-	-	-	-	-	3	3	3	-	-	3	3
C309.5	3	3	-	-	2	-	-	3	3	3	-	-	3	3
C309	3.00	3.00	0.00	0.00	2.00	0.00	0.00	3.00	3.00	3.00	0.00	0.00	3.00	3.00

Course Code &Name: C310 - (ME6601Design of Transmission Systems)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C310.1	AL	Examine the concepts of design for belts, chains and rope drives.
C310.2	AL	Analyze the concepts of design to spur, helical gears
C310.3	AP	Develop the concepts of design to worm and bevel gears
C310.4	AP	Construct gear box using design concepts.
C310.5	AP	Develop the concepts of design to cams, brakes and clutches

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C310.1	3	3	3	2	-	-	-	2	-	2	-	2	3	3
C310.2	3	3	3	2	-	-	-	2	-	2	-	2	3	3
C310.3	3	3	3	2	-	-	-	2	-	2	-	2	3	3
C310.4	3	3	3	2	-	-	-	2	-	2	-	2	3	3
C310.5	3	3	3	2	-	-	-	2	-	2	-	2	3	3
C310	3.00	3.00	3.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	2.00	3.00	3.00

Course Code &Name: C311 - (MG6851 Principles of Management)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C311.1	U	Outline the evolution of management & managerial roles in local and global organization
C311.2	U	Develop planning methodology using process planning tools and techniques under different conditions
C311.3	U	Identify staff selection and career development concepts in management.
C311.4	U	Illustrate behavior, motivation techniques, leadership and effective communication in an organization.
C311.5	U	Summarize the process of controlling techniques to enrich management qualities.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C311.1	-	-	-	-	-	-	-	3	-	-	3	3	3	2
C311.2	-	-	-	-	-	-	-	3	2	-	3	3	3	2
C311.3	-	-	-	-	-	-	-	3	2	-	3	3	3	2
C311.4	-	-	-	-	-	-	-	3	2	3	3	3	3	2
C311.5	-	-	-	-	-	-	-	3	2	-	3	3	3	2
C311	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	2.00	3.00	3.00	3.00	3.00	2.00

Course Code &Name: C312 - (ME6602 Automobile Engineering)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C312.1	U	Explain vehicle structure and working principle of IC engines.
C312.2	U	Examine the fuel injection and ignition systems and vehicle emission norms.
C312.3	AL	Analyze various transmissions and drive systems.
C312.4	U	Examine the principles of steering, brakes and suspension system.
C312.5	U	Select possible alternate sources of energy for IC Engines.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C312.1	3	2	3	-	-	3	2	-	-	-	-	3	3	3
C312.2	3	1	2	-	-	3	2	3	-	-	-	3	3	3
C312.3	3	2	3	-	-	3	2	-	-	-	-	3	3	3
C312.4	3	2	3	-	-	3	2	-	-	-	-	3	3	3
C312.5	3	2	3	-	-	3	2	-	-	-	-	3	3	3
C312	3.00	1.80	2.80	2.80	2.00	3.00	2.00	3.00	0.00	0.00	1.00	3.00	3.00	3.00

Course Code &Name: C313 - (ME6602 Automobile Engineering)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C313.1	U	Summarize the basics of finite element formulation.
C313.2	U	Develop finite element formulations to solve one dimensional Problem.
C313.3	AP	Examine finite element analysis in two dimensional scalar problems.
C313.4	AL	Identify body forces, elasticity and axisymmetric two dimensional vector problems
C313.5	AL	Apply finite element method to solve problems on iso-parametric element and dynamic Problems.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C313.1	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C313.2	3	3	3	3	3	-	-	-	-	2	-	3	3	3
C313.3	3	3	3	3	3	-	-	-	-	2	-	3	3	3
C313.4	3	3	3	3	3	-	-	-	-	2	-	3	3	3
C313.5	3	3	3	3	3	-	-	-	-	2	-	3	3	3
C313	3.00	3.00	3.00	2.80	3.00	0.00	0.00	0.00	0.00	2.00	0.00	3.00	3.00	3.00

Course Code &Name: C314 - (ME6604 Gas Dynamics and Jet Propulsion)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C314.1	AP	Apply the isentropic flow on nozzle and diffuser.
C314.2	AL	Examine Fanno and Rayleigh flow through constant area ducts
C314.3	AP	Compare the variation of flow parameters across the normal and oblique shock.
C314.4	AP	Summarize principles of jet propulsion and its performance.
C314.5	U	Explain the space propulsion and rocket engines

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C314.1	3	3	3	-	-	-	-	-	-	-	-	2	3	3
C314.2	3	3	3	-	-	-	-	-	-	-	-	2	3	3
C314.3	3	3	3	-	-	-	-	-	-	-	-	2	3	3
C314.4	3	3	3	-	-	-	-	-	-	-	-	3	3	3
C314.5	3	3	2	-	-	-	-	-	-	-	-	3	3	3
C314	3.00	3.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.40	3.00	3.00

Course Code &Name: C315 - (Unconventional Machining Processes)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C315.1	U	Summarize the importance of Unconventional machining Process and their classifications.
C315.2	U	Explain the modern tools in Mechanical Energy based processes.
C315.3	U	Select the modern tools in Electrical Energy based processes.
C315.4	U	Utilize the modern tools in Chemical and Electrochemical Energy based processes.
C315.5	U	Identify the modern tools in Thermal Energy based processes.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C315.1	3	-	-	-	-	-	-	3	-	-	-	-	3	3
C315.2	3	2	-	-	-	-	-	3	-	-	-	3	3	3
C315.3	3	2	-	-	-	-	-	3	-	-	-	3	3	3
C315.4	3	2	-	-	-	-	-	3	-	-	-	3	3	3
C315.5	3	2	-	-	-	-	-	3	-	-	-	3	3	3
C315	3.00	0.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00

Course Code &Name: C316 - (ME6611 CAD CAM LAB)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C316.1	AL	Analyze 2D drafting and 3D models
C316.2	U	Identify modeling software tools and techniques
C316.3	AL	Develop 2D and 3D assembly models using modeling software
C316.4	AL	Develop manual part programming using G and M codes
C316.5	U	List the applications of CAPP in machining and turning centre

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C316.1	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C316.2	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C316.3	3	3	3	3	3	-	-	3	3	3	-	3	3	3
C316.4	3	3	3	3	3	-	-	3	3	3	-	3	3	3
C316.5	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C316	3.00	3.00	3.00	2.40	3.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C318 - (GE6563 Communication Skills)

REGULATION: R2013

YEAR/SEM: III/ VI

COURSE OUTCOMES

C318.1	U	Develop communicative competence in English with specific reference to listening and speaking.
C318.2	U	Evaluate learners' ability in reading and writing to communicate effectively.
C318.3	U	Improve the prospects of the learners for success in competitive examinations.
C318.4	U	Examine the learners' ability clearly to shine in the interviews.
C318.5	U	Improve soft skills, creative thinking, team work and sustainability in workplace.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C318.1	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C318.2	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C318.3	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C318.4	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C318.5	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C318	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	3.00	0.00	2.00	0.00	0.00

Course Code &Name: C401 - (ME6701 Power Plant Engineering)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C 401.1	AL	Analyze Rankine cycle and working principle of coal based power plant.
C 401.2	AP	Explain the construction and working principles of Diesel, Gas and Combined cycle power plants.
C 401.3	U	Classify different nuclear power plants and its safety measures
C 401.4	U	Demonstrate Renewable Energy sources and its applications
C 401.5	U	Interpret the Pollution control technologies involved in Power Plants.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 401.1	3	3	-	-	-	-	-	-	-	2	-	2	3	3
C 401.2	3	3	-	-	-	-	-	-	-	2	-	2	3	3
C 401.3	3	-	-	-	-	-	2	3	-	-	-	3	3	3
C 401.4	3	-	-	3	-	2	3	-	-	-	-	3	3	3
C 401.5	3	-	-	3	-	2	3	3	-	-	-	3	3	3
C401	3.00	3.00	0.00	3.00	0.00	2.00	2.67	3.00	0.00	2.00	0.00	2.60	3.00	3.00

Course Code &Name: C402 - (ME6702 Mechatronics)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C 402.1	U	Explain the real time applications of sensors and transducers
C 402.2	AP	Construct the architecture of Microprocessor and Microcontroller.
C 402.3	AP	Construct the architecture of 8255 PPI and various device interfacing
C 402.4	U	Develop the architecture and programming of PLC
C 402.5	AP	Discover various Actuators and motors in the Mechatronics system.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 402.1	3	2	-	-	-	-	-	-	-	-	-	3	3	3
C 402.2	3	3	-	-	-	-	-	-	-	3	-	3	3	3
C 402.3	3	3	-	-	-	-	-	-	-	3	-	3	3	3
C 402.4	3	3	2	-	3	-	-	-	-	3	-	3	3	3
C 402.5	3	3	3	-	-	-	-	2	-	3	-	3	3	3
C402	3.00	2.80	2.50	2.33	3.00	0.00	0.00	2.00	0.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C403 - (ME6703 Computer Integrated Manufacturing)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C 403.1	U	Interpret the concepts of CAD, CAM and computer integrated manufacturing systems
C 403.2	U	Illustrate the production planning and control activities and computerized process planning.
C 403.3	AL	Analyze the different coding systems used in group technology and cellular manufacturing
C 403.4	U	Examine Flexible Manufacturing Systems and Automated Guided Vehicle Systems.
C 403.5	AP	Examine the operation and Functions of Industrial Robotics.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 403.1	3	-	-	-	-	-	-	-	-	-	-	3	3	3
C 403.2	3	2	-	-	2	-	-	2	-	2	-	3	3	3
C 403.3	3	3	-	-	2	-	-	2	-	2	-	3	3	3
C 403.4	3	2	2	-	2	-	-	2	-	2	-	3	3	3
C 403.5	3	-	2	-	2	-	-	2	-	-	-	3	3	3
C403	3.00	2.33	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00	3.00	3.00	3.00

Course Code &Name: C404 - (GE6757 Total Quality Management)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C404.1	U	Explain basic concepts of total quality management and customer satisfaction
C404.2	U	Interpret quality policy principles of Deming's ,Juran and Crosby.
C404.3	U	Illustrate the continuous improvement techniques
C404.4	U	Construct the control charts and Taguchi loss of production techniques
C404.5	U	Explain the quality standards of ISO 9000- 14000

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C404.1	2	-	-	-	-	-	2	3	-	-	-	3	3	2
C404.2	3	-	-	-	-	-	-	3	-	-	-	2	3	2
C404.3	3	3	-	-	-	-	-	3	-	3	-	2	3	2
C404.4	3	3	2	-	-	-	-	3	-	3	-	2	3	2
C404.5	2	-	-	-	-	3	-	3	-	-	-	-	3	2
C404	2.60	3.00	2.00	0.00	0.00	3.00	2.00	3.00	0.00	3.00	0.00	2.25	3.00	2.00

Course Code &Name: C405 - (Process Planning and Cost Estimation)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C405.1	U	Interpret the solutions for design and development of various process, equipments and tools related to industrial products.
C405.2	AL	Analyze project management and finance of process planning activities.
C405.3	U	Examine the concepts of cost estimation related with project management and finance
C405.4	AP	Solve complex problems and investigate the job order cost for forging welding and foundry.
C405.5	AP	Develop the solutions of optimum machining time for various machining operations

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C405.1	3	-	-	-	-	2	-	2	-	-	2	3	3	3
C405.2	3	2	-	-	-	2	-	2	-	2	3	3	3	3
C405.3	3	3	1	2	-	2	-	2	-	-	3	3	3	3
C405.4	3	3	1	2	-	2	-	2	-	-	3	3	3	3
C405.5	3	3	1	2	-	2	-	2	-	-	3	3	3	3
C405	3.00	2.75	1.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	2.80	3.00	3.00	3.00

Course Code &Name: C406 - (Maintenance Engineering)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C 406.1	U	Explain the principles of maintenance towards the attainment of business goals
C 406.2	U	Identify the preventive maintenance to improve the maintenance activities.
C 406.3	U	Select the key elements of condition monitoring and related instruments
C 406.4	AL	Analyze the repair methods for basic machine elements
C 406.5	U	Categorize the repair methods for material handling equipment and CMMS

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 406.1	3	-	-	-	-	3	2	2	-	-	-	-	3	3
C 406.2	3	2	-	-	-	3	2	3	-	-	-	3	3	3
C 406.3	3	2	-	-	-	3	2	3	-	2	-	3	3	3
C 406.4	3	2	-	-	-	3	2	3	-	-	-	3	3	3
C 406.5	3	2	-	-	3	3	2	3	-	-	-	2	3	3
C406	3.00	2.00	0.00	0.00	3.00	3.00	2.00	2.80	0.00	2.00	0.00	2.75	3.00	3.00

Course Code &Name: C407 - (ME6711 Simulation and Analysis Lab)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C 407.1	AL	Analyze the various vibration related problems using MATLAB.
C 407.2	AP	Inspect the natural frequency and mode shape analysis of beams.
C 407.3	AL	Analyze the various stresses and deflections of the beams using ANSYS.
C 407.4	AP	Examine the different heat transfer analysis on plates and shells using ANSYS.
C 407.5	U	Identify the various failure parameters involving vibrations.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 407.1	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C 407.2	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C 407.3	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C 407.4	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C 407.5	3	3	3	2	3	-	-	3	3	3	-	3	3	3
C407	3.00	3.00	3.00	2.00	3.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C408 - (ME6712 Mechatronics Lab)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C 408.1	AP	Construct the assembly language program using 8085 microprocessor.
C 408.2	AP	Experiment with stepper motor interface using 8051 microcontroller.
C 408.3	AP	Develop traffic light interface using 8085 microprocessor.
C 408.4	AP	Develop the pneumatic circuits using software with PLC
C 408.5	AL	Analyze the speed control of DC motor

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 408.1	3	3	3	2	-	3	-	3	3	3	-	3	3	3
C 408.2	3	3	3	3	-	3	-	3	3	3	-	3	3	3
C 408.3	3	3	3	3	-	3	-	3	3	3	-	3	3	3
C 408.4	3	3	3	3	3	3	-	3	3	3	-	3	3	3
C 408.5	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C408	3.00	3.00	3.00	2.75	3.00	3.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C409 - (ME6713 Comprehension)

REGULATION: R2013

YEAR/SEM: IV/ VII

COURSE OUTCOMES

C 409.1	U	Understand and comprehend any given problem related to mechanical engineering field.
---------	---	---

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 409.1	3	3	2	2	2	2	2	3	3	3	1	3	3	3
C409	3.00	3.00	2.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	1.00	3.00	3.00	3.00

Course Code &Name: C410 - (MG6863 Engineering Economics)

REGULATION: R2013

YEAR/SEM: IV/ VIII

COURSE OUTCOMES

C 410.1	AL	Analyze the elements of cost, break-even analysis and process planning techniques
C 410.2	U	Compare different methods of value engineering for better decision making
C 410.3	U	Examine suitable cash flow methods for different Situations
C 410.4	AP	Apply the concept of replacement and maintenance in industries.
C 410.5	U	Compare different depreciation methods for Individual/Industrial/Public Alternatives

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C 410.1	3	2	2	-	-	2	-	2	-	3	2	2	3	3
C 410.2	3	2	-	-	-	2	-	3	-	2	3	3	3	3
C 410.3	3	3	3	-	-	2	-	2	-	3	3	3	3	3
C 410.4	3	2	-	-	-	2	2	3	-	2	3	3	3	3
C 410.5	3	3	3	-	-	2	2	2	-	2	3	3	3	3
C410	2.50	2.40	2.67	0.00	0.00	2.00	2.00	2.40	0.00	2.40	2.00	2.60	3.00	3.00

Course Code &Name: C411 - (Production Planning and Control)

REGULATION: R2013

YEAR/SEM: IV/ VIII

COURSE OUTCOMES

C411.1	AL	Analyze the elements of cost, break-even analysis and process planning techniques
C411.2	U	Compare different methods of value engineering for better decision making
C411.3	U	Examine suitable cash flow methods for different Situations
C411.4	AP	Apply the concept of replacement and maintenance in industries.
C411.5	U	Compare different depreciation methods for Individual/Industrial/Public Alternatives

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C411.1	3	-	-	-	-	-	-	-	-	3	-	2	3	3
C411.2	3	2	-	-	-	-	-	-	-	3	-	2	3	3
C411.3	3	-	-	-	-	-	-	-	-	3	-	2	3	3
C411.4	3	2	-	-	2	-	-	3	-	3	-	2	3	3
C411.5	3	-	-	-	3	-	-	3	-	3	-	2	3	3
C411	3.00	2.00	0.00	0.00	2.50	0.00	0.00	3.00	0.00	3.00	0.00	2.00	3.00	3.00

Course Code &Name: C412 - (Advanced IC Engines)

REGULATION: R2013

YEAR/SEM: IV/ VIII

COURSE OUTCOMES

C412.1	U	Explain fuel injection systems in SI engine, types of combustion chamber and combustion process
C412.2	U	Classify different types of fuel injection system and combustion chambers of CI engine.
C412.3	U	Examine the mechanism of pollution formation and emission norms.
C412.4	U	Compare the properties of various alternative fuels, engine modifications required and emission characteristics of alternative fuels
C412.5	U	List out various ignition methods used in I.C engine and electronic engine management system.

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C412.1	3	-	-	-	-	-	-	2	-	3	-	3	3	3
C412.2	3	-	-	-	-	-	-	2	-	3	-	3	3	3
C412.3	3	1	1	2	-	3	3	3	-	-	-	3	3	3
C412.4	3	1	1	2	2	3	3	2	-	-	-	3	3	3
C412.5	3	-	-	-	2	-	-	-	-	-	-	3	3	3
C412	3.00	1.00	1.00	2.00	2.00	3.00	3.00	2.25	0.00	3.00	0.00	3.00	3.00	3.00

Course Code &Name: C413 - (ME6811 Project Work)


REGULATION: R2013

YEAR/SEM: IV/ VIII

COURSE OUTCOMES

C413.1	AL	Develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same
--------	----	---

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO 1	PSO 2
C413.1	3	3	3	3	3	3	2	3	3	3	3	3	3	3
C413	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00


PRINCIPAL
GNANAMANI COLLEGE OF TECHNOLOGY,
NH-7, A.K. Samuthiram,
Pachal (Po), Namakkal-637 018

**M.E. INDUSTRIAL ENGINEERING
R 2017 (CBCS)**

YEAR /SEM	COURSE NAME	COURSE CODE	COURSE OUTCOME
I/I	Applied Probability and Statistics	C101.1	Apply various methods in probability and random variables
		C101.2	Explain Functions of two dimensional random variables
		C101.3	Apply consistency, efficiency and unbiasedness of estimators, method of maximum likelihood estimation and Central Limit Theorem.
		C101.4	Develop statistical tests in testing hypotheses on data.
		C101.5	Analyze of multivariate data, such as multivariate normal density, calculating descriptive statistics, testing for multivariate normality
I/I	Work System Design	C102.1	Understand the concept of work system method study
		C102.2	Explain the method of work measurement
		C102.3	Discuss the applied work measurement
		C102.4	Explain the physical ergonomics
		C102.5	Outline of the environmental factors like noise - vibration, lighting, temperature, etc.,
I/I	Operations research	C103.1	Summarize the fundamentals of linear programming
		C103.2	Explain the primal dual relationships, sensitivity analysis, Data Envelopment Analysis.
		C103.3	Identify the Networks of operations research
		C103.4	Explain the Dynamic Programming Concepts, formulation, recursive approach
		C103.5	Summarize Queuing characteristics and terminology - poison and non-poison models.
I/I	Operations Management	C104.1	Identify the production management and process planning
		C104.2	Interpret the development of production planning control and forecasting techniques.
		C104.3	Classify the types of inventory and control systems.
		C104.4	Examine economic order quantity, economic lot size in inventory control, MRP-II and ERP
		C104.5	Discuss production control activities

I/I	Facilities Design	C105.1	Analyze of plant location and warehouse location problems
		C105.2	Explain the facilities requirement and types of layout
		C105.3	Identify design cycle and computerized layout planning procedure
		C105.4	Construct the group technology and line balancing system
		C105.5	Explain the materials handling system
I/I	Productivity management and Re-Engineering	C106.1	Organize to measure and evaluate productivity
		C106.2	Explain the methodology and application to approach productivity measurement
		C106.3	Summarize the principles of organizational transformation
		C106.4	Demonstrate the Re-engineer the process for improving productivity
		C106.5	Demonstrate the BPR tools for improving productivity
I/I	Work System Design Lab	C107.1	Conduct graphic tools for method study and performance rating exercise
		C107.2	Organize the stop watch time study and peg board experiments
		C107.3	Utilize the lab for work sampling and MTM practice
		C107.4	Explain the physical performance using trend mill ergo cycle with fitness testing.
		C107.5	Plan to perform experiments using sound level lux meters and ergonomics software
I/I	Technical Seminar - I	C108.1	Identify and compare technical and practical issues related to cause-and-effect of specific phenomena related to the area of course specialization.
		C108.2	Outline annotated bibliography of research with clearly identified research question demonstrating scholarly skills, technical writing and correct source citation format.
		C108.3	Explain a well-organized report employing elements of good writing and critical thinking
		C108.4	Demonstrate the ability to describe, interpret and analyze technical issues from historical and contemporary perspectives and develop competence in writing, speaking and presenting.
		C108.5	Demonstrate the ability in problem solving and to communicate effectively
I/II	Manufacturing systems and models	C108.1	Interpret of manufacturing systems and performance measures
		C108.2	Illustrate the process planning, design and control
		C108.3	Construct the lean systems for services and manufacturing

		C108.4	Explain queuing models of manufacturing
		C108.5	Outline of markov and petrinet models of manufacturing
I/II	Systems and simulation	C109.1	Summarize general systems theory, concept of simulation
		C109.2	Compare random numbers and variates
		C109.3	Explain the design of simulation experiments
		C109.4	Construct the selection of simulation languages
		C109.5	Develop of simulation models using the simulation language

YEAR /SEM	COURSE NAME	COURSE CODE	COURSE OUTCOME
I/II	Statistical Quality Control	C110.1	Discuss the fundamentals of quality control
		C110.2	Identify to control the quality of processes using control charts for variables in manufacturing industries.
		C110.3	Identify to control the quality of processes using control charts for attributes in manufacturing industries.
		C110.4	Explain the process and measurement system capability
		C110.5	Classify the various types of acceptance sampling
I/II	Logistics And Supply Chain Management	C111.1	Construct of logistics and supply chain management
		C111.2	Outline for logistics management like modes of transportation and routing and scheduling etc.,
		C111.3	Explain the Network Design in Supply Chain process
		C111.4	Analyze of sourcing and revenue management in supply chain
		C111.5	Compare coordination and information technology in supply chain
I/II	Industrial Automation	C113.1	Select automated equipment based on break-even quantity and compute cost per component
		C113.2	Analyze an automated flow line with buffer for its performance measures..
		C113.3	Identify the elements of manufacturing automation; these include CNC, Robotics, automated assembly and material handling.
		C113.4	Explain the various automated material handling systems
		C113.5	Summarize the computer based support systems in manufacturing

I/II	Optimization techniques	C114.1	Summarize the basic concepts, design and optimization techniques
		C114.2	Explain the various types of design analysis techniques
		C114.3	Demonstrate the optimizations of non-linear and multi-objective problems
		C114.4	Contrast the various optimization techniques under the category of non-traditional optimization - 1
		C114.5	Contrast the various optimization techniques under the category of non-traditional optimization - 2
I/II	Computer Applications Laboratory	C115.1	Develop of Simple Programs for Statistical analysis
		C115.2	Construct of Initial solution of Transportation Problems, Net Works etc
		C115.3	Solving optimization problems using software packages
		C115.4	Identify Random and Non-uniform Random varieties generation and testing.
		C115.5	Develop the simulation of single server queueing system
I/II	TECHNICAL SEMINAR - II	C201.1	Identify and compare technical and practical issues related to cause-and-effect of specific phenomena related to the area of course specialization.
		C201.2	Outline annotated bibliography of research with clearly identified research question demonstrating scholarly skills, technical writing and correct source citation format.
		C201.3	Explain a well-organized report employing elements of good writing and critical thinking
		C201.4	Demonstrate the ability to describe, interpret and analyze technical issues from historical and contemporary perspectives and develop competence in writing, speaking and presenting.
		C201.5	Demonstrate the ability in problem solving and to communicate effectively
II/III	Design of Experiments and taguchi methods	C201.1	Summarize the importance, strategies, principles, and terminology in experimental design fundamentals
		C201.2	Organize the design and analysis in single factor experiments.
		C201.3	Organize the design and analysis in multi factor experiments.
		C201.4	Conduct design experiments to a problem situation using special experimental designs
		C201.5	Conduct design experiments to a problem situation using Taguchi methods
II/III	Industrial safety and hygiene	C202.1	Build the basics to control of major industrial hazards as in safety in various operations
		C202.2	Identify the awareness on safety appraisal and analysis techniques in industries

		C202.3	Identify the awareness on safety appraisal and analysis techniques in industries. regulations and issues in occupational health and safety manager practices in industries
		C202.4	Identify the awareness, regulations and issues in occupational health and safety manager practices in industries
		C202.5	Identify the awareness on health and safety manager practices in industries
II/III	Services Operations management	C203.1	Identify the effective decision making in the management of a service organization.
		C203.2	Explain the types of services, outsourcing and issues in globalization.
		C203.3	Organize the methods of operation issues in management.
		C203.4	Summarize the importance and quality in service and productivity.
		C203.5	Demonstrate the various tools for services in the management of a service organization.
II/III	Project work phase – I	C204.1	Design engineering solutions to complex problems utilising a systems approach.
		C204.2	Demonstrate a sound technical knowledge of their selected project topic
		C204.3	Identify problem identification, formulation and solution.
		C204.4	Evaluate with engineers and the community at large in written an oral forms.
		C204.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
I/III	Project work phase – II	C205.1	Design engineering solutions to complex problems utilising a systems approach.
		C205.2	Demonstrate a sound technical knowledge of their selected project topic
		C205.3	Identify problem identification, formulation and solution.
		C205.4	Evaluate with engineers and the community at large in written an oral forms.
		C205.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

		C105	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	
I/I	Productivity management and Re-Engineering	C106.1	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C106.2	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C106.3	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C106.4	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C106.5	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C106	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/I	Work System Design Lab	C107.1	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C107.2	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C107.3	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C107.4	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C107.5	3	-	-	-	-	-	-	-	-	-	-	-	2	3	3
		C107	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
YEAR /SEM	COURSE NAME	Course Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
I/I	Technical Seminar - I	C108.1	3	3	3	-	-	-	-	-	-	3	-	2	3	3	
		C108.2	3	3	3	-	-	-	-	-	-	3	-	2	3	3	
		C108.3	3	3	3	-	-	-	-	-	-	3	-	2	3	3	
		C108.4	3	3	3	-	-	-	-	-	-	3	-	2	3	3	
		C108.5	3	3	3	-	-	-	-	-	-	3	-	2	3	3	
		C108	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	2.00	3.00	3.00
I/II	Manufacturing systems and models	C109.1	-	-	-	-	-	-	-	-	-	-	-	-	3	3	
		C109.2	3	-	-	-	-	-	-	-	-	-	-	2	3	3	
		C109.3	3	-	-	-	-	-	-	-	-	-	-	2	3	3	
		C109.4	3	-	-	-	-	-	-	-	-	-	-	2	3	3	
		C109.5	3	-	-	-	-	-	-	-	-	-	-	2	3	3	
		C109	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00
I/II	Systems and simulation	C110.1	-	-	-	-	-	-	-	-	-	-	-	-	3	3	
		C110.2	3	-	3	-	3	-	-	-	-	-	-	2	3	3	
		C110.3	3	-	3	-	3	-	-	-	-	-	-	2	3	3	
		C110.4	3	-	3	-	3	-	-	-	-	-	-	2	3	3	
		C110.5	3	-	3	-	3	-	-	-	-	-	-	2	3	3	
		C110	3.00	0.00	3.00	0.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00

I/II	Statistical Quality Control	C111.1	3	-	-	-	-	-	-	-	-	-	-	3	3	
		C111.2	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C111.3	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C111.4	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C111.5	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C111	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/II	Logistics And Supply Chain Management	C112.1	-	-	-	-	-	-	-	-	-	-	-	3	3	
		C112.2	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C112.3	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C112.4	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C112.5	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C112	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/II	Industrial Automation	C113.1	3	-	-	-	-	-	-	-	-	-	2	3	3	
		C113.2	3	-	-	-	-	-	-	-	-	-	2	3	3	
		C113.3	3	-	-	-	-	-	-	-	-	-	2	3	3	
		C113.4	3	-	-	-	-	-	-	-	-	-	2	3	3	
		C113.5	3	-	-	-	-	-	-	-	-	-	2	3	3	
		C113	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00
I/II	Optimization techniques	C114.1	3	3	3	-	3	-	-	-	-	-	2	3	3	
		C114.2	3	3	3	-	3	-	-	-	-	-	2	3	3	
		C114.3	3	3	3	-	3	-	-	-	-	-	2	3	3	
		C114.4	3	3	3	-	3	-	-	-	-	-	2	3	3	
		C114.5	3	3	3	-	3	-	-	-	-	-	2	3	3	
		C114	3.00	3.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00

YEAR /SEM	COURSE NAME	Course Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
I/II	Computer Applications Laboratory	C115.1	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C115.2	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C115.3	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C115.4	3	-	-	2	-	-	-	-	-	-	-	2	3	3
		C115.5	3	-	-	2	-	-	-	-	-	-	-	2	3	3
		C115	3.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/II	Technical Seminar - II	C116.1	3	3	3	-	-	-	-	-	-	3	-	2	3	3
		C116.2	3	3	3	-	-	-	-	-	-	3	-	2	3	3
		C116.3	3	3	3	-	-	-	-	-	-	3	-	2	3	3
		C116.4	3	3	3	-	-	-	-	-	-	3	-	2	3	3
		C116.5	3	3	3	-	-	-	-	-	-	3	-	2	3	3
		C116	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	2.00	3.00
II/III	Design of Experiments and taguchi methods	C201.1	-	-	-	-	-	-	-	-	-	-	-	-	3	3
		C201.2	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C201.3	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C201.4	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C201.5	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C201	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
II/III	Industrial safety and hygiene	C202.1	3	-	-	-	-	-	-	3	-	-	-	-	3	3
		C202.2	3	-	-	-	-	-	-	3	-	-	-	2	3	3
		C202.3	3	-	-	-	-	-	-	3	-	-	-	2	3	3
		C202.4	3	-	-	-	-	-	-	3	-	-	-	2	3	3
		C202.5	3	-	-	-	-	-	-	3	-	-	-	2	3	3
		C202	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	2.00	3.00
II/III	Services Operations management	C203.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C203.2	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C203.3	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C203.4	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C203.5	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C203	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00

II/III	Project work phase – I	C204.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C204.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C204.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C204.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C204.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C204	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
II/IV	Project work phase – II	C205.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00


PRINCIPAL
ANAMANI COLLEGE OF TECHNOLOGY,
NH-7, A.K. Samuthirem,
Pochal (Po), Namakkal-637 018

**COURSE OUT COME FOR M.E. ENGINEERING DESIGN
R 2017 (CBCS)**

YEAR /SEM	COURSE NAME	COURSE CODE	COURSE OUTCOME
I/I	Applied Mathematics for Engineers	C101.1	Apply various methods in matrix theory to solve system of linear equations.
		C101.2	Maximizing and minimizing the functional that occur in various branches of engineering disciplines
		C101.3	Demonstrate the computation of probability and moments, standard distributions of discrete and continuous random variables and functions of a random variable
		C101.4	Apply the Laplace transforms to initial value, initial–boundary value and boundary value problems in Partial Differential Equations.
		C101.5	Apply the Fourier transforms to initial value, initial–boundary value and boundary value problems in Partial Differential Equations
I/I	Engineering Fracture Mechanics	C102.1	Understand the concept of elements of solid Mechanics
		C102.2	Design of components that contain crack under static load condition.
		C102.3	Explain the energy balance and crack growth
		C102.4	Explain the fatigue crack growth curve
		C102.5	Summarize the applications of fracture mechanics
I/I	Computer Applications in Design	C103.1	Summarize the fundamentals of computer graphics
		C103.2	Explain the various types of curves and surfaces for modeling
		C103.3	Identify the basics of NURBS and solid modeling
		C103.4	Explain the importance of visual realism in design application
		C103.5	Summarize the assemble modeling and data exchange standards
I/I	Quality concepts in design	C104.1	Build the basics of design fundamentals , methods and material selection
		C104.2	Identify the various concepts in design for quality
		C104.3	Explain the design and principles of failure mode effect analysis and uphold the status of six sigma of a product
		C104.4	Explain the various strategies of designing experiment of a product
		C104.5	Build the concepts to improve the reliability of a product

I/I	Advanced Finite Element Analysis	C105.1	Summarize the finite element formulation of plate and shell elements with their applications
		C105.2	Demonstrate the knowledge in material and geometric non-and plasticity
		C105.3	Solve problems under dynamic conditions by applying various techniques
		C105.4	Apply the methods and techniques to solve fluid mechanics and heat transfer problems
		C105.5	Summarize the knowledge in error norms, convergence rates and refinement.
I/I	Design of material handling Equipment's	C106.1	Summarize the types, selection and applications of material handling equipment's
		C106.2	Recall the design of hoists and its related mechanical elements.
		C106.3	Explain the suitable selection of motors, gears and mechanism to drive hoists
		C106.4	Summarize the types, selection and applications of conveyors.
		C106.5	Contrast the types and design of elevators and fork lift trucks.
I/I	CAD Laboratory	C107.1	Draw complex geometries of machine components in sketcher mode.
		C107.2	Write programs to generate analytical and synthetic curves used in engineering practice
		C107.3	Generate freeform shapes in part mode to visualize components.
		C107.4	Generate freeform shapes in part mode to visualize components.
		C107.5	Develop G and M codes for turning and milling components.
I/I	Advanced analysis and simulation laboratory	C108.1	Determine the force, stress and deflection in links and beams
		C108.2	Evaluate stress analysis of plate plates, simple shells and of axi-symmetric components
		C108.3	Estimate heat transfer analysis in plates and thermal stress in plates and cylindrical shells
		C108.4	Examine vibration analysis of spring-mass systems
		C108.5	Appraise harmonic, transient and spectrum analysis in simple systems

YEAR /SEM	COURSE NAME	COURSE CODE	COURSE OUTCOME
I/II	Mechanism design and simulation	C109.1	Summarize the fundamentals of kinematics, components and classification of mechanisms
		C109.2	Explain the kinematic analysis in various types of linkages and complex mechanisms.
		C109.3	Make use of path curvature theory and couple curve in design of mechanisms
		C109.4	Apply the concept of synthesis of four bar mechanisms
		C109.5	Utilize the concept of synthesis of coupler curve and cam mechanisms to design and fabricate a mechanism model
I/II	Mechanical Behavior of Materials	C110.1	Establish basic concepts in Mechanical behavior of different materials
		C110.2	Identify the material behavior under different loading with design approaches.
		C110.3	Select the suitable material for different design of engineering structures.
		C110.4	Summarize the mechanical behavior of modern metallic materials under different loading and temperature conditions.
		C110.5	Summarize the mechanical behavior of modern non-metallic materials under different loading and temperature conditions.
I/II	Integrated Mechanical Design	C111.1	Contrast the fundamentals , design and analysis of procedure for shafts
		C111.2	Select the design procedure for various types of gears and gear boxes
		C111.3	Choose the various types of design procedure for brakes and clutches.
		C111.4	Identify the various integrated design procedure for shafts, gears, gear boxes, fly wheels and machine tools
		C111.5	Summarize the mechanical behavior of modern non-metallic materials under different loading and temperature conditions.
I/II	Vibration Analysis and Control	C112.1	Explain the causes and effects of vibration in mechanical systems and their classification.
		C112.2	Explain various types of vibration with two degrees of freedom.
		C112.3	Summarize various types of vibration with multi degree freedom system and continuous system
		C112.4	Outline the working operations of different types of vibration control systems
		C112.5	Explain the experimental methods of various vibration analysis techniques

I/II	Advanced Metal Forming Techniques	C113.1	Explain the basics and types of theory of plasticity and forming
		C113.2	Demonstrate the techniques in bulk forming processes with FEM applications
		C113.3	Contrast latest metal forming techniques and applications in sheet metal forming
		C113.4	Summarize the various techniques and applications in powder metallurgy special forming processes.
		C113.5	Infer the techniques electromagnetic forming and its applications.
I/II	Surface Engineering	C114.1	Explain various types of friction on the surface in different materials.
		C114.2	Contrast various types of wear on the surface in different materials.
		C114.3	Summarize various types of corrosion on the surface in different materials.
		C114.4	Demonstrate various theories and practice in surface modification methods using surface treatments
		C114.5	Make use of various engineering materials in surface engineering
I/II	Vibration Laboratory	C115.1	Explain the forced vibration of the beam for different damping
		C115.2	Define the radius of gyration in compound pendulum, trifilar and bifilar suspensions
		C115.3	Summarize the basic concepts of vibration analysis in single degree of freedom systems
		C115.4	Summarize the basic concepts of vibration analysis in multi degree of freedom systems
		C115.5	Decide the frequency of damped force and undamped free vibration of spring mass systems.
I/II	Design Project	C116.1	Develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same
		C116.2	Demonstrate a sound technical knowledge of their selected project topic
		C116.3	Identify problem identification, formulation and solution.
		C116.4	Evaluate with engineers and the community at large in written an oral forms.
		C116.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

YEAR /SEM	COURSE NAME	COURSE CODE	COURSE OUTCOME
II/III	Product lifecycle management	C201.1	Summarize product data, information, structures and PLM concepts.
		C201.2	Apply the functions and features of PLM/PDM in management.
		C201.3	Apply PLM/PDM concepts in various case studies
		C201.4	Identify the role of implementation approaches in industries
		C201.5	Contrast the methods of integration of PDM/PLM software
II/III	Design of Hydraulic and Pneumatic Systems	C202.1	Explain the methodology of basic and advanced design of hydraulic oil systems and actuators
		C202.2	Summarize the regulation elements and control systems.
		C202.3	Contrast the various circuit corresponding to various machines in hydraulic systems.
		C202.4	Explain the methodology of basic and advanced design of pneumatic systems and circuits
		C202.5	Demonstrate the control of pneumatic and hydraulic circuits using electromagnetic electronic devices.
II/III	Design of manufacture, assembly and environments	C203.1	Summarize the concept of general design for manufacturing, assembly and environments
		C203.2	Choose factors influencing in welding, forgings and castings to form design
		C203.3	Explain the component design for various machining operations considerations
		C203.4	Explain the component design for various casting operations considerations
		C203.5	Contrast and design the environmental issues in design of manufacturing and assembly
II/III	Project work phase – I	C204.1	Design engineering solutions to complex problems utilising a systems approach.
		C204.2	Demonstrate a sound technical knowledge of their selected project topic
		C204.3	Identify problem identification, formulation and solution.
		C204.4	Evaluate with engineers and the community at large in written an oral forms.


		C103.5	3	3	3	-	2	-	-	-	-	-	-	2	3	3
		C103	3.00	3.00	3.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00
I/I	Quality concepts in design	C104.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C104.2	3	-	3	-	-	-	-	-	-	-	-	2	3	3
		C104.3	3	-	3	-	-	-	-	-	-	-	-	2	3	3
		C104.4	3	-	3	-	-	-	-	-	-	-	-	2	3	3
		C104.5	3	-	3	-	-	-	-	-	-	-	-	2	3	3
		C104	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/I	Advanced Finite Element Analysis	C105.1	3	3	2	-	-	-	-	-	-	-	-	-	3	3
		C105.2	3	3	2	-	-	-	-	-	-	-	-	-	3	3
		C105.3	3	3	2	-	-	-	-	-	-	-	-	-	3	3
		C105.4	3	3	2	-	-	-	-	-	-	-	-	-	3	3
		C105.5	3	3	2	-	-	-	-	-	-	-	-	-	3	3
		C105	3.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
I/I	Design of material handling equipments	C106.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C106.2	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C106.3	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C106.4	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C106.5	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C106	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
I/I	CAD laboratory	C107.1	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C107.2	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C107.3	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C107.4	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C107.5	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C107	3.00	0.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/II	Advanced analysis and simulation laboratory	C108.1	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C108.2	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C108.3	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C108.4	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C108.5	3	-	3	-	3	-	-	-	-	-	-	2	3	3
		C108	3.00	0.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00

I/II	Mechanisms design and simulation	C109.1	3	-	-	-	-	-	-	-	-	-	-	3	3	
		C109.2	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C109.3	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C109.4	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C109.5	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C109	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/II	Mechanical behavior of materials	C110.1	3	-	-	-	-	-	-	-	-	-	-	3	2	
		C110.2	3	-	-	-	-	-	-	-	-	-	-	3	3	2
		C110.3	3	-	-	-	-	-	-	-	-	-	-	3	3	2
		C110.4	3	-	-	-	-	-	-	-	-	-	-	3	3	2
		C110.5	3	-	-	-	-	-	-	-	-	-	-	3	3	2
		C110	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00
I/II	Integrated mechanical design	C111.1	3	-	-	-	-	-	-	-	-	-	-	3	3	
		C111.2	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C111.3	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C111.4	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C111.5	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C111	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/II	Vibration analysis control	C112.1	3	-	-	-	-	-	-	-	-	-	-	3	3	
		C112.2	3	3	-	-	-	-	-	-	-	-	-	3	3	
		C112.3	3	3	-	-	-	-	-	-	-	-	-	3	3	
		C112.4	3	3	-	-	-	-	-	-	-	-	-	3	3	
		C112.5	3	3	-	-	-	-	-	-	-	-	-	3	3	
		C112	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00
I/II	Advanced Metal forming techniques	C113.1	3	-	-	-	-	-	-	-	-	-	-	3	3	
		C113.2	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C113.3	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C113.4	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C113.5	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C113	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I/II	Surface Engineering	C114.1	3	-	-	-	-	-	-	-	-	-	-	3	3	
		C114.2	3	-	-	-	-	-	-	-	-	-	-	2	3	3

		C114.3	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C114.4	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C114.5	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		C114	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00
I / II	Vibration laboratory	C115.1	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C115.2	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C115.3	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C115.4	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C115.5	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C115	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
I / II	Design Project	C116.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C116.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C116.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C116.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C116.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		C116	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

YEAR / SEM	COURSE NAME	Course Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
II / III	Product lifecycle management	C201.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C201.2	3	-	-	-	-	-	-	2	-	-	-	2	3	3
		C201.3	3	-	-	-	-	-	-	2	-	-	-	2	3	3
		C201.4	3	-	-	-	-	-	-	2	-	-	-	2	3	3
		C201.5	3	-	-	-	-	-	-	2	-	-	-	2	3	3
		C201	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	3.00
II / III	Design of hydraulic and pneumatic systems	C202.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
		C202.2	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C202.3	3	3	3	-	-	-	-	-	-	-	-	2	3	3
		C202.4	3	3	3	-	-	-	-	-	-	-	-	2	3	3

		C202.5	3	3	3	-	-	-	-	-	-	-	-	2	3	3	
		C202	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00	
II / III	Design for manufacture, assembly and environments	C203.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3	
		C203.2	3	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C203.3	3	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C203.4	3	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C203.5	3	3	3	-	-	-	-	-	-	-	-	-	2	3	3
		C203	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	3.00
II/III	Project work Phase - I	C204.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C204.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C204.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C204.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C204.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C204	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
II/IV	Project work Phase - II	C205.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		C205	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00


PRINCIPAL
GHANAMANI COLLEGE OF TECHNOLOGY,
NH-7, A.K. Samuthiram,
Pachal (Po), Namakkal-637 018