Course Outcomes

DEPARTMENT OF MECHANICAL ENGINEERING

S.No	Sem	Course Code	Course Name
1.	I	HS8151	Communicative English
2	I	MA8151	Engineering Mathematics
3	I	PH8151	Engineering Physics
4	I	CY8151	Engineering Chemistry
5	I	GE8151	Problem Solving and Python Programming
6	I	GE8152	Engineering Graphics
7	I	GE 8161	Problem Solving and Python Programming Laboratory
8	I	BS8161	Physics and Chemistry Laboratory (Group A)
9	I	BS8161	Physics and Chemistry Laboratory (Group B)
10	II	HS8251	Technical English
11	II	MA8251	Engineering Mathematics -II
12	II	PH8252	Material Science
13	II	BE8253	Basic Electrical, Electronics and Instrumentation Engineering
14	II	GE8291	Environmental Science and Engineering
15	II	GE8292	Engineering Mechanics
16	II	GE8261	Engineering Practices Laboratory (Group A)
17	II	GE8261	Engineering Practices Laboratory (Group B)
18	II	BE8261	Basic Electrical, Electronics and Instrumentation Engineering Laboratory
19	III	MA8353	Transforms and Partial Differential Equations
20	III	ME8391	Engineering Thermodynamics
21	III	CE8394	Fluid Mechanics and Machinery
22	III	ME8351	Manufacturing Technology - I
23	III	EE8353	Electrical Drives and Controls
24	III	ME8361	Manufacturing Technology Laboratory - I
25	III	ME8381	Computer Aided Machine Drawing
26	III	EE8361	Electrical Engineering Laboratory

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27	III	HS8381	Interpersonal Skills / Listening & Speaking
28	IV	MA8452	Statistics and Numerical Methods
29	IV	ME8492	Kinematics of Machinery
30	IV	ME8451	Manufacturing Technology – II
31	IV	ME8491	Engineering Metallurgy
32	IV	CE8395	Strength of Materials for Mechanical Engineers
33	IV	ME8493	Thermal Engineering – I
34	IV	ME8462	Manufacturing Technology Laboratory – II
35	IV	CE8381	Strength of Materials and Fluid Mechanics and Machinery Laboratory
36	IV	HS8461	Advanced Reading and Writing
37	V	ME8595	Thermal Engineering- II
38	V	ME8593	Design of Machine Elements
39	V	ME8501	Metrology and Measurements
40	V	ME8594	Dynamics of Machines
41	V	ORO551	Renewable Energy Sources
42	V	ME8511	Kinematics and Dynamics Laboratory
43	V	ME8512	Thermal Engineering Laboratory
44	V	ME8513	Metrology and Measurements Laboratory
45	VI	ME8651	Design of Transmission Systems
46	VI	ME8691	Computer Aided Design and Manufacturing
47	VI	ME8693	Heat and Mass Transfer
48	VI	ME8692	Finite Element Analysis
49	VI	ME8694	Hydraulics and Pneumatics
50	VI	PR8592	Welding Technology
51	VI	ME8681	CAD / CAM Laboratory
52	VI	ME8682	Design and Fabrication Project
53	VI	HS8581	Professional Communication

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54	VII	ME8792	Power Plant Engineering
55	VII	ME8793	Process Planning and Cost Estimation
56	VII	ME8791	Mechatronics
57	VII	OML751	Testing of Materials
58	VII	ME8073	Unconventional Machining Processes
59	VII	ME8099	Robotics
60	VII	ME8711	Simulation and Analysis Laboratory
61	VII	ME8781	Mechatronics Laboratory
62	VII	ME8712	Technical Seminar
63	VIII	MG8591	Principles of Management
64	VIII	IE8693	Production Planning and Control
65	VIII	ME8811	Project Work

Course Code & Course Name: PH8151-ENGINEERING PHYSICS

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	The students will gain knowledge on the basics of properties of matter and its applications,
CO2	The Students Will Acquire Knowledge On The Concepts Of Waves And Optical Devices And Their Applications in fibre optics,
CO3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,
C04	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
CO5	The students will understand the basics of crystals, their structures and different crystal growth techniques

Course Code & Course Name:CY8151 Engineering
Chemistry

COURSE OUTCOMES (COs)

List of Course Outcomes

DEPARTMENT OF MECHANICAL ENGINEERING

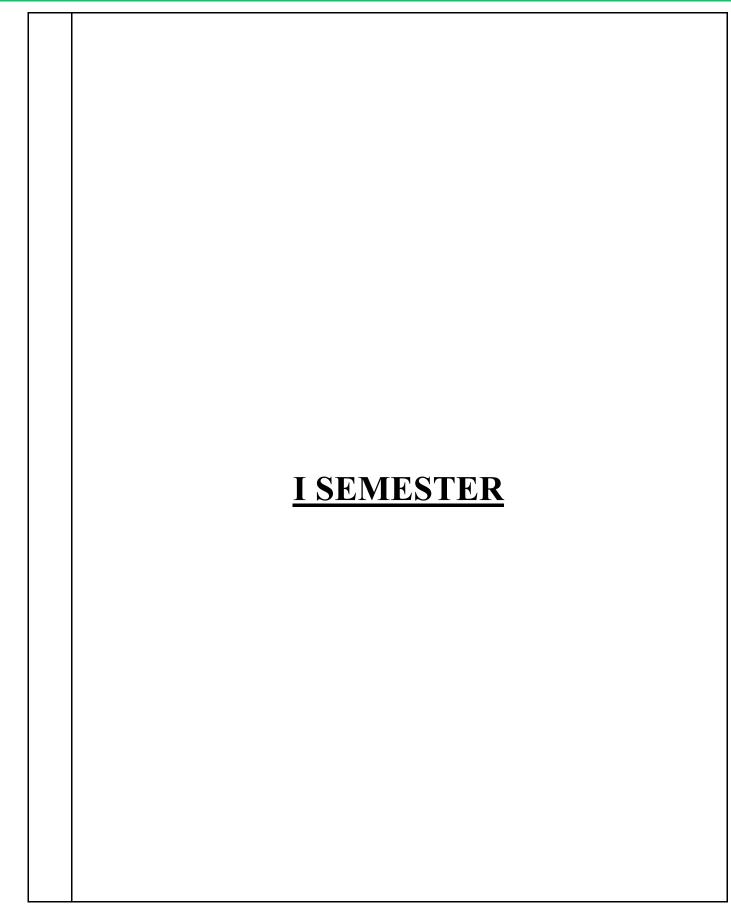|		
CO1		The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning. **PROGRAM OUTCOMES (POs)** **List of Program Outcomes**
	PO1	Apply the knowledge of mathematics, science, engineering fundamentals and engineering specialization to the solution for complex engineering problems.
	PO2	Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
	PO3	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.
	PO4	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.
	PO5	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 their limitations.
	PO6	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.
	PO7	Understand the impact of professional engineering solutions in societal and environmental contexts and to demonstrate the knowledge and need for sustainable development.
	PO8	Apply ethical principles and commit to professional ethics, responsibilities and norms of the engineering practice.
	PO9	Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
	PO10	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 and to make effective presentations and to give and receive clear instructions.
	PO11	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 in multidisciplinary environments.

PO12	Recognize the need for preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

List of Program Specific Outcomes

PSO1	Our graduate engineers will apply all the basic principles of mechanical engineering required in both private and public sector organizations.
PSO2	We produce graduate engineers specialized in Thermal, Manufacturing, Computer Aided Design and Computer Aided Engineering tools to design and analyze the products and process related to Mechanical Engineering systems.
PSO3	Our students are well equipped with industrial management skills, and interdisciplinary technologies.

I SEMESTER

Course Code & Course Name: HS8151 – Communicative English

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To develop the basic reading and writing skills of first year engineering and technology students.
CO2	To help learners develop their listening skills, which will, enable them listen to lectures and comprehend them by asking questions
CO3	To help learners develop their speaking skills and speak fluently in real contexts.
CO4	To help learners develop vocabulary of a general kind by developing their reading skills

Course Code & Course Name: MA8151-ENGINEERING MATHEMATICS 1

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use both the limit definition and rules of differentiation to differentiate functions.
CO2	Apply differentiation to solve maxima and minima problems.
CO3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
C04	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
CO6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
CO7	Apply various techniques in solving differential equations

PROGRAM OUTCOMES (POs)

List of Program Outcomes

PO1	**Engineering Knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals and engineering specialization to the solution for complex engineering problems. **[PO1]**
PO2	**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. **[PO2]**
PO3	**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. **[PO3]**
PO4	**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. **[PO4]**
PO5	**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 their limitations. **[PO5]**
PO6	**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. **[PO6]**
PO7	**Environment and Sustainability**: Understand the impact of professional engineering solutions in societal and environmental contexts and to demonstrate the knowledge and need for sustainable development. **[PO7]**
PO8	**Ethics**: Apply ethical principles and commit to professional ethics, responsibilities and norms of the engineering practice. **[PO8]**

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PO9	**Individual and Team Work**: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings. **[PO9]**
PO10	**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 and to make effective presentations and to give and receive clear instructions. **[PO10]**
PO11	**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 in multidisciplinary environments. **[PO11]**
PO12	**Life-Long Learning**: Recognize the need for preparation and ability to engage in independent and life-long learning in the broadest context of technological change. **[PO12]**

Program Specific Outcomes (PSOs)

List of Program Specific Outcomes

PSO1	Our graduate engineers will apply all the basic principles of Mechanical Engineering required in both private and public sector organizations. [**PSO1**]
PSO2	We produce graduate engineers specialized in Thermal, Manufacturing, Computer Aided Design and Computer Aided Engineering tools to design and analyze the products and process related to Mechanical Engineering systems. **[PSO2]**
PSO3	Our students are well equipped with excellent industrial management skills, and interdisciplinary technologies. **[PSO3]**

III SEMESTER

Course Code & Course Name :MA8353 - Transforms and Partial Differential Equations

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand how to solve the given standard partial differential equations.
CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
CO4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
CO5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Course Code & Course Name :ME8391 - Engineering Thermodynamics

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Applythefirstlawofthermodynamicsforsimpleopenandclosedsystemsundersteadyandunsteadyconditions.
CO2	Applysecondlawofthermodynamicstoopenandclosedsystemsandcalculateentropyandavailability.
CO3	ApplyRankinecycletosteampowerplantandcomparefewcycleimprovementmethods
CO4	Derivesimplethermodynamicrelationsof idealandrealgases
CO5	Calculatethepropertiesofgasmixturesandmoistairanditsuseinpsychometricprocesses

Course Code & Course Name :CE8394 - Fluid Mechanics and Machinery

COURSE OUTCOMES (COs)

DEPARTMENT OF MECHANICAL ENGINEERING

List of Course Outcomes

CO1	Applymathematicalknowledgetopredict thepropertiesandcharacteristics ofafluid.
CO2	Cananalyseandcalculatemajorandminorlossesassociatedwithpipeflowinpipingnetworks.
CO3	Can mathematicallypredictthenatureofphysicalquantities
CO4	Cancriticallyanalysetheperformanceof pumps
CO5	Can criticallyanalysethe performanceofturbines.

Course Code & Course Name :ME8351 - Manufacturing Technology - I
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explain different metal casting processes, associated defects, merits and demerits
CO2	Compare differentmetal joiningprocesses.
CO3	Summarize various hot working and cold working methods of metals.
CO4	Explainvarioussheetmetalmakingprocesses.
CO5	Distinguishvariousmethods ofmanufacturingplastic components.

Course Code & Course Name :EE8353 - Electrical Drives and Controls
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Discuss the essentials of electric circuits and analysis.
CO2	Discuss the basic operation of electric machines and transformers.
CO3	Introduction of renewable sources and common domestic loads.
CO4	Introduction to measurement and metering for electric circuits.
CO5	Choose appropriate instruments for electrical measurement for a specific application.

Course Code & Course Name :ME8361 - Manufacturing Technology Laboratory - I
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Demonstrate the safety precautions exercised in the mechanical workshop.
CO2	Makethework pieceaspergivenshapeandsizeusingLathe.

CO3	Jointwo metalsusingarc welding.
CO4	Usesheetmetalfabricationtoolsandmake simpletrayand funnel.
CO5	Usedifferent mouldingtools,patternsandprepare sandmoulds.

Course Code & Course Name :ME8381 - Computer Aided Machine Drawing
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Follow the drawing standards, Fits and Tolerances
CO2	To prepare assembly drawings both manually and using standard CAD packages.
CO3	Re-create part drawings, sectional views and assembly drawings as per standards

Course Code & Course Name :EE8361 - Electrical Engineering Laboratory
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Ability to perform speed characteristic of different electrical machine.
CO2	Ability to design simple circuits involving diodes and transistors.
CO3	Ability to use operational amplifiers.
CO4	Understand the concepts of AC circuits.
CO5	Choose appropriate instruments for electrical measurement for a specific application.

Course Code & Course Name :HS8381 - Interpersonal Skills / Listening & Speaking
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Listen and respond appropriately
CO2	Participate in group discussions.
CO3	Make effective presentations.
CO4	Participate confidently and appropriately in conversations both formal and informal.

IV SEMESTER

Course Code & Course Name :MA8452 - Statistics and Numerical Methods

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications

Course Code & Course Name :**ME8492 - Kinematics of Machinery**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Discussthebasicsof mechanism
CO2	Calculate velocity and acceleration in simple mechanisms
CO3	DevelopCAM profiles
CO4	Solveproblemson gears and geartrains
CO5	Examinefrictionin machineelements

Course Code & Course Name :ME8451 - Manufacturing Technology – II

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explainthemechanismofmaterial removal processes.
CO2	Describe the constructional and operational features of centre lathe and other specialpurposelathes.
CO3	Describe the constructional and operational features of shaper, planner, milling, drilling,sawingandbroachingmachines.
CO4	Explain thetypesof grindingandother superfinishingprocessesapartfrom gearmanufacturingprocesses.
CO5	Summarize numerical control ofmachinetoolsand writeapartprogram.

Course Code & Course Name :ME8491 - Engineering Metallurgy
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explainall of sandphasediagram, Iron-Ironcarbondiagram andsteelclassification.
CO2	Explain isothermal transformation, continuous cooling diagrams and different heattreatmentprocesses.
CO3	Clarifytheeffectofalloyingelementsonferrous andnon-ferrousmetals
CO4	Summarize thepropertiesandapplicationsofnonmetallicmaterials.
CO5	Explain thetestingofmechanical properties.

Course Code & Course Name :CE8395 - Strength of Materials for Mechanical Engineers
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Understandtheconceptsofstressandstraininsimpleandcompoundbars,theimportanceofprincipalstressesandp
CO2	Understandtheloadtransferringmechanisminbeamsandstressdistributionduetoshearing force andbendingm
CO3	Applybasic equationofsimple torsion indesigning ofshaftsand helicalspring
CO4	Calculatetheslopeanddeflectioninbeamsusingdifferentmethods.
CO5	Analyzeanddesign thinandthickshells for theappliedinternal andexternal pressures.

Course Code & Course Name :ME8493 – Thermal Engineering – I
COURSE OUTCOMES (COs)
List of Course Outcomes

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CO1	Applythermodynamicconceptsto different airstandardcyclesandsolveproblems.
CO2	Solveproblem in singlestageand multistageaircompressors
CO3	Explain the functioning and features of IC engines, components and auxiliaries.
CO4	CalculateperformanceparametersofICEngines.
CO5	Explainthe flowinGas turbinesand solveproblems.

Course Code & Course Name :ME8462 - Manufacturing Technology Laboratory – II
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Usedifferentmachine toolstomanufacturing gears
CO2	Ability to use different machine tools to manufacturing gears.
CO3	Ability to use different machine tools for finishing operations
CO4	Ability to manufacturetoolsusingcuttergrinder
CO5	DevelopCNCpartprogramming

Course Code & Course Name :CE8381 - Strength of Materials and Fluid Mechanics and Machinery Laboratory
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solidmaterials.
CO2	PerformTension,Torsion,Hardness,Compression, andDeformationtestonSolidmaterials.
CO3	Usethemeasurementequipmentsforflowmeasurement.
CO4	Perform test ondifferentfluidmachinery.

Course Code & Course Name :HS8461 - Advanced Reading and Writing
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Write different types of essays

CO2	Write job applications
CO3	Read and evaluate texts critically
CO4	Display critical thinking in various professional contexts

V SEMESTER

Course Code & Course Name :ME8595 - Thermal Engineering- II
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Solve problems in Steam Nozzle
CO2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters.
CO3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.
CO4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers
CO5	Solve problems using refrigerant table/ charts and psychrometric charts

Course Code & Course Name :ME8593 - Design of Machine Elements
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explain the influence of steady and variable stresses in machine component design.
CO2	Apply the concepts of design to shafts, keys and couplings.
CO3	Apply the concepts of design to temporary and permanent joints.
CO4	Apply the concepts of design to energy absorbing members, connecting rod and crank shaft.
CO5	Apply the concepts of design to bearings.

Course Code & Course Name :ME8501 - Metrology and Measurements
COURSE OUTCOMES (COs)

DEPARTMENT OF MECHANICAL ENGINEERING

List of Course Outcomes

CO1	Describe the concepts of measurements to apply in various metrological instruments
CO2	Outline the principles of linear and angular measurement tools used for industrial applications
CO3	Explain the procedure for conducting computer aided inspection
CO4	Demonstrate the techniques of form measurement used for industrial components
CO5	Discuss the various measuring techniques of mechanical properties in industrial applications

Course Code & Course Name :ME8594 - Dynamics of Machines
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Calculate static and dynamic forces of mechanisms.
CO2	Calculate the balancing masses and their locations of reciprocating and rotating masses.
CO3	Compute the frequency of free vibration.
CO4	Compute the frequency of forced vibration and damping coefficient.
CO5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles ,ships and airplanes.

Course Code & Course Name :ORO551 Renewable Energy Sources
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Understanding the physics of solar radiation.
CO2	Ability to classify the solar energy collectors and methodologies of storing solar energy.
CO3	Knowledge in applying solar energy in a useful way.
CO4	Knowledge in wind energy and biomass with its economic aspects.
CO5	Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal

Course Code & Course Name :ME8511 - Kinematics and Dynamics Laboratory
COURSE OUTCOMES (COs)
List of Course Outcomes

DEPARTMENT OF MECHANICAL ENGINEERING

CO1	To Explain gear parameters
CO2	To Explain kinematics of mechanisms
CO3	To Explain gyroscopic effect
CO4	To Explain working of lab equipments.
CO5	To Determine mass moment of inertia of mechanical element, governor effort and range sensitivity, natural frequency and damping coefficient, torsional frequency, critical speeds of shafts, balancing mass of rotating and reciprocating masses, and transmissibility ratio.

Course Code & Course Name :ME8512 - Thermal Engineering Laboratory
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials.
CO2	Conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.
CO3	Conduct tests on radioactive heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity.
CO4	Conduct tests to evaluatetheperformanceofparallel/counterflowheatexchangerapparatus and reciprocating air compressor.
CO5	Conductteststoevaluatetheperformanceofrefrigerationandairconditioning test rigs.

Course Code & Course Name :ME8513 - Metrology and Measurements Laboratory
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters.
CO2	Measure temperature using thermocouple, force, displacement, torque and vibration.
CO3	Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection.

VI SEMESTER

Course Code & Course Name :ME8651 - Design of Transmission Systems
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Applytheconceptsofdesigntobelts, chainsandropedrives.
CO2	Apply theconceptsofdesign tospur,helicalgears.
CO3	Applytheconceptsofdesigntowormandbevelgears.
CO4	Apply theconceptsofdesign togearboxes.
CO5	Apply theconceptsofdesign to cams,brakes and clutches

Course Code & Course Name :ME8691 - Computer Aided Design and Manufacturing
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explain the2Dand3Dtransformations,clippingalgorithm, Manufacturingmodels andMetrics
CO2	Explain thefundamentals ofparametriccurves,surfacesandSolids
CO3	SummarizethedifferenttypesofStandard systemsusedInCAD
CO4	ApplyNC&CNCprogrammingconceptstodeveloppartprogrammeforLathe&MillingMachines
CO5	Summarize the differenttypes oftechniquesusedin CellularManufacturing andFMS

Course Code & Course Name :ME8693 - Heat and Mass Transfer
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Apply heatconduction equations to different surface configurations understeadystate andtransientconditionsandsolveproblems
CO2	Apply free and forced convective heat transfer correlations to internal and externalflowsthrough/overvarioussurface configuration sandsolveproblems
CO3	Explain the phenomena of boiling and condensation, apply LMTD and NTU methodsof thermal analysis to different types of heat exchanger configurations and solveproblems

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CO4	Explain basic laws for Radiation and apply these principles to radiative heat transferbetweendifferenttypesofsurfacetosolveproblems
CO5	Apply diffusive and convective mass transfer equations and correlations to solveproblems fordifferentapplications

Course Code & Course Name :ME8692 - Finite Element Analysis
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Summarize thebasicsoffiniteelementformulation.
CO2	Applyfiniteelementformulationstosolve onedimensional Problems.
CO3	Apply finite element formulations to solve two dimensional scalar Problems.
CO4	Applyfiniteelementmethodtosolvetwodimensional Vectorproblems.
CO5	Applyfiniteelement methodtosolve problemsonisoparametricelementanddynamicProblems.

Course Code & Course Name :ME8694 - Hydraulics and Pneumatics
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explain the Fluid power and operation ofdifferent types ofpumps.
CO2	SummarizethefeaturesandfunctionsofHydraulicmotors,actuatorsandFlowcontrolvalves
CO3	Explainthedifferent typesofHydrauliccircuits andsystems
CO4	Explain the working ofdifferentpneumaticcircuitsand systems
CO5	Summarizethevarioustroubleshootingmethodsandapplicationsofhydraulicandpneumaticsystems.

Course Code & Course Name :PR8592 - Welding Technology
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Understand the construction and working principles of gas and arc welding process.
CO2	Understand the construction and working principles of resistance welding process
CO3	Understand the construction and working principles of various solid state welding process
CO4	Understand the construction and working principles of various special welding processes

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CO5	Understand the concepts on weld joint design, weldability and testing of weldments

Course Code & Course Name :ME8681 - CAD / CAM Laboratory
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	To acquaint the skills and practical experience in handling 2D drafting and 3D modelling software systems.
CO2	Draw 3D and Assembly drawing using CAD software.
CO3	Demonstrate manual part programming with G and M codes using CAM.

Course Code & Course Name :ME8682 - Design and Fabrication Project
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Designand Fabricate the machine elementorthemechanicalproduct.
CO2	Demonstrate theworkingmodelofthe machine elementorthemechanicalproduct.
CO3	
CO4	
CO5	

Course Code & Course Name :HS8581 - Professional Communication
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Enhance the Employability and Career Skills of students
CO2	Orient the students towards grooming as a professional
CO3	Make them Employability Graduates

CO4	Develop their confidence and help them attend interviews successfully.

VII SEMESTER

Course Code & Course Name :ME8792 - Power Plant Engineering
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explain the layout, construction and working of the components inside a thermal powerplant.
CO2	Explain the layout,construction and workingofthe components inside aDiesel,GasandCombinedcyclepowerplants.
CO3	Explain the layout, construction and working of the components inside nuclear powerplants.
CO4	Explainthelayout,constructionandworkingofthecomponentsinsideRenewableenergy powerplants.
CO5	Explain the applications of power plants while extend their knowledge to power planteconomicsandenvironmentalhazardsandestimatethecostsofelectricalenergyproduction.

Course Code & Course Name :ME8793 - Process Planning and Cost Estimation
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Selecttheprocess,equipment andtoolsfor variousindustrial products.
CO2	Prepare processsplanningactivitychart.
CO3	Explain the concept ofcostestimation.
CO4	Computethejobordercostfordifferenttypeofshopfloor.
CO5	Calculate themachining timeforvariousmachining operations.

Course Code & Course Name :ME8791 - Mechatronics
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	DiscusstheinterdisciplinaryapplicationsofElectronics, Electrical,MechanicalandComputerSystemsfortheControlofMechanical, ElectronicSystemsandsensortechnology.
CO2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram,

	AddressingModesofMicroprocessorandMicrocontroller.
CO3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various deviceinterfacing
CO4	Explain the architecture, programmingand application ofprogrammable logic controllerstoproblems andchallengesintheareasofMechatronicengineering.
CO5	Discuss various ActuatorsandMechatronics systemusingthe knowledgeandskillsacquired throughthecourseandalsofromthegivencasestudies

Course Code & Course Name :OML751 - Testing of Materials
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	DiscusstheinterdisciplinaryapplicationsofElectronics,Electrical,MechanicalandComputerSystemsfortheC
CO2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, AddressingModesofMicro
CO3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various deviceinterfacing
CO4	Explain the architecture, programmingand application ofprogrammable logic controllerstoproblems andc
CO5	DiscussvariousActuatorsandMechatronics systemusingthe knowledgeandskillsacquired throughthecourse

Course Code & Course Name :ME8073 - Unconventional Machining Processes
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explain theneedforunconventional machiningprocessesanditsclassification
CO2	Comparevariousthermalenergyandelectricalenergybasedunconventionalmachiningprocesses.
CO3	Summarizevariouschemicalandelectro-chemicalenergybasedunconventionalmachiningprocesses.
CO4	Explain variousnanoabrasivesbasedunconventional machiningprocesses.
CO5	Distinguish variousrecenttrendsbasedunconventionalmachiningprocesses.

Course Code & Course Name :ME8099 - Robotics
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Explaintheconceptsofindustrialrobots,classification,specificationsandcoordinatesystems. Alsosummarizethe needand applicationofrobotsindifferentsectors.
CO2	Illustratethe differenttypes ofrobotdrive systemsas well as robotendeffectors.

CO3	Applythedifferentsensorsandimageprocessingtechniquesinroboticstoimprovetheability ofrobots.
CO4	Developroboticprogramsfordifferenttasksandfamiliarizewiththekinematicsmotionsofrobot.
CO5	Examinetheimplementationofrobotsinvariousindustrialsectorsandinterpolate theeconomicanalysisofrobots.

Course Code & Course Name :ME8711 - Simulation and Analysis Laboratory

COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	To analyzing the force and stress in mechanical components.
CO2	To analyzing deflection in mechanical components.
CO3	To analyzing thermal stress of mechanical components.
CO4	To analyzing heat transfer in mechanical components
CO5	To analyzing the vibration of mechanical components

Course Code & Course Name :ME8781 - Mechatronics Laboratory
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	The students will be able to demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.
CO2	The students will be able to demonstrate the functioning of control systems with the help of PLC
CO3	The students will be able to demonstrate the functioning of control systems with the help of microcontrollers.

Course Code & Course Name :ME8712 - Technical Seminar
COURSE OUTCOMES (COs)
List of Course Outcomes

CO1	Recall the foundation courses in engineering program
CO2	Analyze basic mechanical engineering problems analytically
CO3	Develop real time application based on engineering concept
CO4	Adapt managerial principles and professional ethics in engineering

| CO5 | Discover the impact of environment and sustainability in product development |

VIII SEMESTER

DEPARTMENT OF MECHANICAL ENGINEERING

Course Code & Course Name :MG8591 - Principles of Management

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Identify the human skills and conceptual skills as per industry requirements about basic management skills
CO2	Illustrate the management concepts of planning
CO3	Describe the management concepts of Organizing
CO4	Diagnose various styles and qualities of efficient leadership
CO5	Demonstrate the management concepts of Controlling

Course Code & Course Name :IE8693 - Production Planning and Control

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the production planning process to convert the raw material into finished product.
CO2	Prepare the production planning activities charts for work study to reduce the production time.
CO3	Improve the market sale of existing product by changing the product planning. Select the suitable process planning for manufacturing of a product.
CO4	Analyze the production schedule for the given product.
CO5	Analyze the inventory for a new product with help of latest software.

Course Code & Course Name :ME8811 - Project Work

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Demonstrate a sound technical knowledge of their selected project topic.
CO2	Undertake problem identification, formulation and solution.
CO3	Design engineering solutions to complex problems utilizing a systems approach
CO4	Communicate with engineers and the community at large in written and oral forms

| CO5 | Conduct an engineering project |