

**DEPARTMENT
OF
MECHANICAL
ENGINEERING**

2017 REGULATION

DEPARTMENT OF MECHANICAL ENGINEERING

2017 REGULATION

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1	Have a successful career in Mechanical Engineering and allied industries.
PEO2	Have expertise in the areas of Design, Thermal, Materials and Manufacturing
PEO3	Contribute towards technological development through academic research and industrial practices.
PEO4	Practice their profession with good communication, leadership, ethics and social responsibility
PEO5	Graduates will adapt to evolving technologies through life-long Learning.

PROGRAM OUT COMES (POs)

PO1	An ability to apply knowledge of mathematics and engineering sciences to develop mathematical models for industrial problems
PO2	An ability to identify, formulates, and solve complex engineering problems. With high degree of competence.
PO3	An ability to design and conduct experiments, as well as to analyze and interpret data obtained through those experiments.
PO4	An ability to design mechanical systems, component, or a process to meet desired needs within the realistic constraints such as environmental, social, political and economic sustainability.
PO5	An ability to use modern tools, software and equipment to analyze multidisciplinary problems.
PO6	An ability to demonstrate on professional and ethical responsibilities
PO7	An ability to communicate, write reports and express research findings in a scientific community
PO8	An ability to adapt quickly to the global changes and contemporary practices.
PO9	An ability to engage in life-long learning.

LIST OF COURSES

REGULATION2017

MECHANICALENGINEERING		
SEMESTER I		
S.NO.	COURSE CODE	COURSE TITLE
THEORY		
1	HS8151	Communicative English
2	MA8151	Engineering Mathematics -I
3	PH8151	Engineering Physics
4	CY8151	Engineering Chemistry
5	GE8151	Problem Solving and Python Programming
6	GE8152	Engineering Graphics
PRACTICALS		
7	GE8161	Problem Solving and Python Programming Laboratory
8	BS8161	Physics and Chemistry Laboratory
SEMESTER II		
S.NO.	COURSE CODE	COURSE TITLE
THEORY		
1	HS8251	Technical English
2	MA8251	Engineering Mathematics-II
3	PH8251	Materials Science
4	BE8253	Basic Electrical ,Electronics and Instrumentation Engineering
5	GE8291	Environmental Science and Engineering
6	GE8292	Engineering Mechanics
PRACTICALS		
7	GE8261	Engineering Practices Laboratory
8	BE8261	Basic Electrical ,Electronics and Instrumentation Engineering Laboratory
SEMESTER III		
S.NO	COURSE CODE	COURSE TITLE
THEORY		
1	MA8353	Transforms and Partial Differential Equations
2	ME8391	Engineering Thermodynamics
3	CE8394	Fluid Mechanics and Machinery
4	ME8351	Manufacturing Technology-I
5	EE8353	Electrical Drives and Controls
PRACTICALS		
6	ME8361	Manufacturing Technology Laboratory-I
7	ME8381	Computer Aided Machine Drawing

8	EE8361	Electrical Engineering Laboratory
9	HS8381	Interpersonal Skills/Listening & Speaking
SEMESTER IV		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	MA8452	Statistics and Numerical Methods
2	ME8492	Kinematics of Machinery
3	ME8451	Manufacturing Technology–II
4	ME8491	Engineering Metallurgy
5	CE8395	Strength of Materials for Mechanical Engineers
6	ME8493	Thermal Engineering-I
PRACTICALS		
7	ME8462	Manufacturing Technology Laboratory–II
8	CE8381	Strength of Materials and Fluid Mechanics and Machinery Laboratory
9	HS8461	Advanced Reading and Writing
SEMESTER V		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	ME8595	Thermal Engineering-II
2	ME8593	Design of Machine Elements
3	ME8501	Metrology and Measurements
4	ME8594	Dynamics of Machines
5	ORO552	Lean Manufacturing
PRACTICALS		
6	ME8511	Kinematics and Dynamics Laboratory
7	ME8512	Thermal Engineering Laboratory
8	ME8513	Metrology and Measurements Laboratory
SEMESTER VI		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	ME8651	Design of Transmission Systems
2	ME8691	Computer Aided Design and Manufacturing
3	ME8693	Heat and Mass Transfer
4	ME8692	Finite Element Analysis
5	ME8694	Hydraulics and Pneumatics
6	PR8592	Welding Technology
PRACTICALS		
7	ME8681	CAD/ CAM Laboratory
8	ME8682	Design and Fabrication Project

9	HS8581	Professional Communication
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SEMESTER VII

S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	ME8792	Power Plant Engineering
2	ME8793	Process Planning and Cost Estimation
3	ME8791	Mechatronics
4	OIE 751	Robotics
5	ME8073	Unconventional Machining Processes
6	GE8074	Human Writes
7	ME8097	Non Destructive Testing and Evaluation
PRACTICALS		
8	ME8711	Simulation and Analysis Laboratory
9	ME8781	Mechatronics Laboratory
10	ME8712	Technical Seminar

SEMESTER VIII

S. NO.	COURSE CODE	COURSE TITLE
PRACTICALS		
1	MG8591	Principles of Management
2	IE8693	Production Planning and Control
PRACTICALS		
3	ME8811	Project Work

COURSE OUTCOME FOR MECHANICAL ENGINEERING

DEGREE	U.G
PROGRAMME	B.E.– MECHANICAL ENGINEERING
ACADEMIC YEAR	2022-2023
REGULATION	2017

SEMESTER 01

1.Course Code and Name:HS8151-Communicative English

	CO Statements	Knowledge Level
At the end of the course, learners will be able to:		
1	Read articles of a general kind in magazines and newspapers.	K2
2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.	K2
3	Comprehend conversations and short talks delivered in English	K2
4	Write short essays of a general kind and personal letters and emails in English.	K3

2.Course Code and Name: MA8151 Engineering Mathematics – I

	CO Statements	Knowledge Level
After completing this course, students should demonstrate competency in the following skills:		
1	Use both the limit definition and rules of differentiation to differentiate functions.	K2
2	Apply differentiation to solve maxima and minima problems.	K3
3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.	K5
4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K3
5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.	K5
6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.	K2
7	Apply various techniques in solving differential equations.	K3

3.Course Code and Name:PH8151 Engineering Physics

	CO Statements	Knowledge Level
Upon completion of this course,		
1	The students will gain knowledge on the basics of properties of matter and its applications,	K3
2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,	K3

3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,	K3
4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes,	K3
5	The students will understand the basics of crystals, their structures and different crystal growth techniques.	K4

4.Course Code and Name: CY8151 Engineering Chemistry

	CO Statements	Knowledge Level
Upon completion of this course,		
1	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.	K3

5.Course Code and Name:GE8151 Problem Solving and Python Programming

	CO Statements	Knowledge Level
Upon completion of the course, students will be able to		
1	Develop algorithmic solutions to simple computational problems	K3
2	Read, write, execute by hand simple Python programs.	K3
3	Structure simple Python programs for solving problems.	K4
4	Decompose a Python program into functions	K4
5	Represent compound data using Python lists, tuples, and dictionaries.	K4
6	Read and write data from/to files in Python Programs.	K4

6.Course Code and Name:GE8152 Engineering Graphics

	CO Statements	Knowledge Level
On successful completion of this course, the student will be able to		
1	Familiarize with the fundamentals and standards of Engineering graphics	K2
2	Perform freehand sketching of basic geometrical constructions and multiple views of objects	K3
3	Project orthographic projections of lines and plane surfaces	K2
4	Draw projections and solids and development of surfaces	K3
5	Visualize and to project isometric and perspective sections of simple solids.	K2

7.Course Code and Name:GE8161 Problem Solving and Python Programming Laboratory

	CO Statements	Knowledge Level
Upon completion of the course, students will be able to		
1	Develop algorithmic solutions to simple computational problems	K6
2	Read, write, execute by hand simple Python programs.	K6
3	Structure simple Python programs for solving problems	K6
4	Decompose a Python program into functions	K6
5	Represent compound data using Python lists, tuples, and dictionaries.	K3
6	Read and write data from/to files in Python Programs.	K3

8.Course Code and Name:BS8161 Physics and Chemistry Laboratory

	CO Statements	Knowledge Level
Upon completion of the course, the students will be able to		
1	Apply principles of elasticity, optics and thermal properties for engineering applications.	K3
2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters	K2
SEMESTER 02		
1.Course Code and Name: HS8251 Technical English		
	CO Statements	Knowledge Level
At the end of the course learners will be able to		
1	Read technical texts and write area- specific texts effortlessly	K2
2	Listen and comprehend lectures and talks in their area of specialization successfully.	K2
3	Speak appropriately and effectively in varied formal and informal contexts.	K2
4	Write reports and winning job applications.	K3
2.Course Code and Name:MA8251 Engineering Mathematics–II		
	CO Statements	Knowledge Level
After successfully completing the course, the student will have a good understanding of the following topics and their applications:		
1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.	K3
2	Gradient, divergence and curl of a vector point function and related identities	K3
3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.	K3
4	Analytic functions, conformal mapping and complex integration	K3
5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.	K3
3.Course Code and Name: PH8251-Materials Science		
	CO Statements	Knowledge Level
Upon completion of this course,		
1	The students will have knowledge on the various phase diagrams and their applications	K2
2	The students will acquire knowledge on Fe-Fe ₃ C phase diagram, various microstructures and alloys	K3
3	The students will get knowledge on mechanical properties of materials and their measurement	K3
4	The students will gain knowledge on magnetic, dielectric and superconducting properties of materials	K3
5	The students will understand the basics of ceramics, composites and nonmaterial's	K2

	CO Statements	Knowledge Level
4.Course Code and Name: BE8253 Basic electrical, Electronics and Instrumentation Engineering		
	CO Statements	Knowledge Level
Ability to		
1	Understand electric circuits and working principles of electrical machines	K2
2	Understand the concepts of various electronic devices	K2

3	Choose appropriate instruments for electrical measurement for a specific application	K2
5.Course Code and Name: GE8291 Environmental Science And Engineering		
	CO Statements	Knowledge Level
1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.	K2
2	Public awareness of environmental is at infant stage.	K2
3	Ignorance and incomplete knowledge has lead to misconceptions	K2
4	Development and improvement in std. of living has lead to serious environmental disasters	K2
6.Course Code and Name: GE8292 Engineering Mechanics		
	CO Statements	Knowledge Level
On successful completion of this course, the student will be able to		
1	illustrate the vectorial and scalar representation of forces and moments	K3
2	Analyse the rigid body in equilibrium	K3
3	Evaluate the properties of surfaces and solids	K3
4	Calculate dynamic forces exerted in rigid body	K3
5	Determine the friction and the effects by the laws of friction	K3
7.Course Code and Name: GE8261 Engineering Practices Laboratory		
	CO Statements	Knowledge Level
On successful completion of this course, the student will be able to		
1	fabricate carpentry components and pipe connections including plumbing works	K2
2	use welding equipments to join the structures	K2
3	Carry out the basic machining operations	K2
4	Make the models using sheet metal works	K6
5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings	K2
6	Carry out basic home electrical works and appliances	K2
7	Measure the electrical quantities	K2
8	Elaborate on the components, gates, soldering practices.	K2
8.Course Code and Name: BE8261 Basiclectrical,Electronicsand Instrumentation Engineering Laboratory		
	CO Statements	Knowledge Level
1	Ability to determine the speed characteristic of different electrical machines	K3
2	Ability to design simple circuits involving diodes and transistors	K3
3	Ability to use operational amplifiers	K3
SEMESTER 03		
1.CourseCodeandName:MA8353 Transforms and Partial Differential Equations		
	CO Statements	Knowledge Level
Upon successful completion of the course, students should be able to:		
1	Understand how to solve the given standard partial differential equations	K2
2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.	K2
3	Appreciate the physical significance of Fourier series techniques in solving one and two	K2

	dimensional heat flow problems and one dimensional wave equations	
4	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.	K2
5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.	K2
2.Course Code and Name:ME8391 Engineering Thermodynamics		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions.	K3
2	Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.	K6
3	Apply Rankine cycle to steam power plant and compare few cycle improvement methods	K3
4	Derive simple thermodynamic relations of ideal and real gases	K2
5	Calculate the properties of gas mixtures and moist air and its use in psychometric processes	K3
3.Course Code and Name: CE8394 Fluid Mechanics And Machinery		
	CO Statements	Knowledge Level
Upon completion of this course, the students will be able to		
1	Apply mathematical knowledge to predict the properties and characteristics of a fluid	K3
2	Can analyse and calculate major and minor losses associated with pipe flow in piping networks.	K3
3	Can mathematically predict the nature of physical quantities	K4
4	Can critically analyse the performance of pumps	K3
5	Can critically analyse the performance of turbines.	K3
4.Course Code and Name: ME8351 Manufacturing Technology - I		
	CO Statements	Knowledge Level
Upon completion of this course, the students will be able to		
1	Explain different metal casting processes, associated defects, merits and demerits	K2
2	Compare different metal joining processes.	K2
3	Summarize various hot working and cold working methods of metals	K2
4	Explain various sheet metal making processes.	K2
5	Distinguish various methods of manufacturing plastic components	K4
5.Course Code and Name: EE8353 Electrical Drives And Controls		
	CO Statements	Knowledge Level
Upon completion of this course, the students will be able to		
1	Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance	K2
6.Course Code and Name:ME8361 Manufacturing Technology Laboratory-I		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Demonstrate the safety precautions exercised in the mechanical workshop	K2
2	Make the work piece as per given shape and size using Lathe.	K2
3	Join two metals using arc welding.	K2

4	Use sheet metal fabrication tools and make simple tray and funnel.	K3
5	Use different molding tools, patterns and prepare sand moulds.	K3
7.Course Code and Name:ME8381 Computer Aided Machine drawing		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Follow the drawing standards, Fits and Tolerances	K2
2	Re-create part drawings, sectional views and assembly drawings as per standards	K2
8.Course Code and Name:EE8361 Electrical Engineering Laboratory		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Ability to perform speed characteristic of different electrical machine	K3
9.Course Code and Name:Hs8381 Interpersonal Skills/ Listening & Speaking		
	CO Statements	Knowledge Level
At the end of the course Learners will be able to:		
1	Listen and respond appropriately	K1
2	Participate in group discussions	K6
3	Make effective presentations	K6
4	Participate confidently and appropriately in conversations both formal and informal	K6
SEMESTER 04		
1.Course Code and Name: MA8452 Statistics And Numerical Methods		
	CO Statements	Knowledge Level
Upon successful completion of the course, students will be able to:		
1	Apply the concept of testing of hypothesis for small and large samples in real life problems	K2
2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.	K2
3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.	K3
4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	K2
5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications	K2
2.Course Code and Name: ME 8492 Kinematics Of Machinery		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Discuss the basics of mechanism	K2
2	Calculate velocity and acceleration in simple mechanisms	K3
3	Develop CAM profiles	K2
4	Solve problems on gears and gear trains	K2
5	Examine friction in machine elements	K2
3.Course Code and Name:ME8451 Manufacturing Technology - II		

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain the mechanism of material removal processes	K2
2	Describe the constructional and operational features of centre lathe and other special purpose lathes.	K2
3	Describe the constructional and operational features of shaper, planner, milling, drilling, sawing and broaching machines	K2
4	Explain the types of grinding and other super finishing processes apart from gear manufacturing processes	K4
5	Summarize numerical control of machine tools and write a part program.	K2

4.Course Code and Name:ME8491 Engineering Metallurgy

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification	K3
2	Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes.	K4
3	Clarify the effect of alloying elements on ferrous and non-ferrous metals	K4
4	Summarize the properties and applications of non metallic materials.	K2
5	Explain the testing of mechanical properties	K4

5.Course Code and Name:CE8395 Strength of Materials for Mechanical Engineers

	CO Statements	Knowledge Level
Students will be able to		
1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.	K4
2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment	K2
3	Apply basic equation of simple torsion in designing of shafts and helical spring	K2
4	Calculate the slope and deflection in beams using different methods.	K2
5	Analyze and design thin and thick shells for the applied internal and external pressures.	K2

6.Course Code and Name:ME8493 Thermal Engineering - I

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Apply thermodynamic concepts to different air standard cycles and solve problems	K2
2	Solve problems in single stage and multistage air compressors	K2
3	Explain the functioning and features of IC engines, components and auxiliaries	K4
4	Calculate performance parameters of IC Engines	K3
5	Explain the flow in Gas turbines and solve problems.	K2

7.Course Code and Name:ME8462 Manufacturing Technology Laboratory - II

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	use different machine tools to manufacturing gears	K2
2	Ability to use different machine tools to manufacturing gears	K3

3	Ability to use different machine tools for finishing operations	K3
4	Ability to manufacture tools using cutter grinder	K3
5	Develop CNC part programming	K4

8.Course Code and Name: CE8381 Strength of Materials and Fluid Mechanics and Machinery Laboratory

	CO Statements	Knowledge Level
Upon completion of this course, the students will be able to:		
1	Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials.	K2
2	Perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials.	K3
3	Use the measurement equipments for flow measurement.	K3
4	Perform test on different fluid machinery	K6

9.Course Code and Name:HS8461 Advanced Reading and Writing

	CO Statements	Knowledge Level
At the end of the course Learners will be able to:		
1	Write different types of essays.	K2
2	Write winning job applications.	K2
3	Read and evaluate texts critically	K2
4	Display critical thinking in various professional contexts.	K2

SEMESTER 05

1.Course Code and Name: ME8595 Thermal Engineering - II

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Solve problems in Steam Nozzle	K3
2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters.	K3
3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.	K2
4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers	K2
5	Solve problems using refrigerant table / charts and psychometric charts	K2

2.Course Code and Name:ME8593 Design Of Machine Elements

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain the influence of steady and variable stresses in machine component design.	K2
2	Apply the concepts of design to shafts, keys and couplings	K5
3	Apply the concepts of design to temporary and permanent joints.	K2
4	Apply the concepts of design to energy absorbing members, connecting rod and crank shaft.	K4
5	Apply the concepts of design to bearings.	K3

3.Course Code and Name:ME8501 Metrology And Measurements

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Describe the concepts of measurements to apply in various metrological instruments	K2

2	Outline the principles of linear and angular measurement tools used for industrial applications	K3
3	Explain the procedure for conducting computer aided inspection	K3
4	Demonstrate the techniques of form measurement used for industrial components	K3
5	Discuss various measuring techniques of mechanical properties in industrial applications	K3
4.Course Code and Name:ME8594 Dynamics Of Machines		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Calculate static and dynamic forces of mechanisms.	K2
2	Calculate the balancing masses and their locations of reciprocating and rotating masses	K2
3	Compute the frequency of free vibration	K3
4	Compute the frequency of forced vibration and damping coefficient	K2
5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.	K5
5.Course Code and Name: OIM552 Lean Manufacturing		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	The students will be able to identify waste in any process, reduce the waste using proper kaizens and other methods thereby improving the productivity of the organization using LM tools.	K3
6. Course Code and Name: ME 8511 Kinematics And Dynamics Laboratory		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain gear parameters, kinematics of mechanisms, gyroscopic effect and working of lab equipments	K1
2	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.	K2
7.Course Code and Name: ME8512 Thermal Engineering Laboratory		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials	K1
2	Conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.	K3
3	conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity	K1
4	Conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.	K2
5	Conduct tests to evaluate the performance of refrigeration and air conditioning test rigs.	K2
8.Course Code and Name: ME8513 Metrology And Measurements Laboratory		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration.	K2

2	Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection	K4
SEMESTER 06		
1.Course Code and Name:ME8651 Design Of Transmission Systems		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Apply the concepts of design to belts, chains and rope drives.	K2
2	Apply the concepts of design to spur, helical gears.	K2
3	Apply the concepts of design to worm and bevel gears.	K2
4	Apply the concepts of design to gear boxes .	K3
5	Apply the concepts of design to cams, brakes and clutches	K2
2.Course Code and Name:ME8691 Computer Design And Manufacturing		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics	K4
2	Explain the fundamentals of parametric curves, surfaces and Solids	K2
3	Summarize the different types of Standard systems used in CAD	K3
4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines	K4
5	Summarize the different types of techniques used in Cellular Manufacturing and FMS	K3
3.Course Code and Name:ME8693 Heat And Mass Transfer		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems	K3
2	Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems	K3
3	Explain the phenomena of boiling and condensation, apply LMTD and NTU methods of thermal analysis to different types of heat exchanger configurations and solve problems	K3
4	Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types of surfaces to solve problems	K3
5	Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications	K3
4.Course Code and Name:ME8692 Finite Element Analysis		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Summarize the basics of finite element formulation.	K2
2	Apply finite element formulations to solve one dimensional Problem.	K2
3	Apply finite element formulations to solve two dimensional scalar Problems.	K2
4	Apply finite element method to solve two dimensional Vector problems	K3
5	Apply finite element method to solve problems on ISO parametric element and dynamic Problems.	K3
5.Course Code and Name: ME8694 Hydraulics And Pneumatics		

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain the Fluid power and operation of different types of pumps.	K2
2	Summarize the features and functions of Hydraulic motors, actuators and Flow control valves	K2
3	Explain the different types of Hydraulic circuits and systems	K2
4	Explain the working of different pneumatic circuits and systems	K2
5	Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems	K3
6.Course Code and Name: Professional Elective – 1 : PR592 Welding Technology		
	CO Statements	Knowledge Level
Upon completion of this course, the students can able		
1	Understand the construction and working principles of gas and arc welding process.	K5
2	Understand the construction and working principles of resistance welding process.	K2
3	Understand the construction and working principles of various solid state welding process	K2
4	Understand the construction and working principles of various special welding processes.	K2
5	Understand the concepts on weld joint design, weld ability and testing of elements.	K2
7.CourseCodeandName:ME8681CAD/CAMLABORATORY		
	CO Statements	Knowledge Level
Upon completion of this course, the students can able		
1	Draw 3D and Assembly drawing using CAD software	K5
2	Demonstrate manual part programming with G and M codes using CAM	K5
9.Course Code and Name:ME8682 Design And Fabrication Project		
	CO Statements	Knowledge Level
Upon completion of this course, the students can able		
1	Design and Fabricate the machine element or the mechanical product	K3
2	Demonstrate the working model of the machine element or the mechanical product	K6
8.Course Code and Name:HS8581 Professional Communication		
	CO Statements	Knowledge Level
At the end of the course Learners will be able to:		
1	Make effective presentations	K6
2	Participate confidently in Group Discussions.	K6
3	Attend job interviews and be successful in them	K6
4	Develop adequate Soft Skills required for the workplace	K6
SEMESTER 07		
1.Course Code and Name:ME8792 Power Plant Engineering		
	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain the layout, construction and working of the components inside a thermal power plant.	K2
2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants	K2

3	Explain the layout, construction and working of the components inside nuclear power plants	K2
4	Explain the layout, construction and working of the components inside Renewable energy power plants	K3
5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.	K2

2.Course Code and Name:ME8793 Process Planning And Cost estimation

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	select the process, equipment and tools for various industrial products	K2
2	Prepare process planning activity chart.	K3
3	Explain the concept of cost estimation.	K3
4	compute the job order cost for different type of shop floor	K3
5	calculate the machining time for various machining operations	K2

3.Course Code and Name:ME8791 Mechatronics

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology.	K2
2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller	K1
3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various device interfacing	K3
4	Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.	K2
5	Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and also from the given case studies	K3

4.Course Code and Name: Open Elective II : OIE 751-Robotics

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Upon completion of this course, the students can able to apply the basic engineering knowledge for the design of robotics	K3

5.Course Code and Name: Professional Elective – II ME8073 Unconventional Machining Processes

	CO Statements	Knowledge Level
Upon the completion of this course the students will be able to		
1	Explain the need for unconventional machining processes and its classification	K2
2	Compare various thermal energy and electrical energy based unconventional machining processes.	K2
3	Summarize various chemical and electro-chemical energy based unconventional machining processes	K2
4	Explain various nano abrasives based unconventional machining processes	K2
5	Distinguish various recent trends based unconventional machining processes.	K2

6.Course Code and Name: Professional Elective – III - GE8074 Human Rights

CO Statements		Knowledge Level
Upon the completion of this course the students will be able to		
1	Engineering students will acquire the basic knowledge of human rights	K3
7.Course Code and Name:ME8711 Simulation And Analysis Laboratory		
CO Statements		Knowledge Level
Upon the completion of this course the students will be able to		
1	Simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using MATLAB.	K3
2	analyze the stresses and strains induced in plates, brackets and beams and heat transfer problems	K3
3	calculate the natural frequency and mode shape analysis of 2D components and beams	K3
8.Course Code and Name:ME8781 Mechatronics Laboratory		
CO Statements		Knowledge Level
Upon the completion of this course the students will be able to		
1	Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.	K2
2	Demonstrate the functioning of control systems with the help of PLC and microcontrollers.	K3
SEMESTER 08		
1.Course Code and Name:MG8591 Principles Of Management		
CO Statements		Knowledge Level
Upon the completion of this course the students will be able to		
1	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management	K4
2.Course Code and Name: Professional Elective – IV IE8693 Production Planning And Control		
CO Statements		Knowledge Level
Upon the completion of this course the students will be able to		
1	Upon completion of this course, the students can able to prepare production planning and control activities such as work study, product planning, production scheduling, Inventory Control.	K2
2	They can plan manufacturing requirements manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP).	K3
3.Course Code and Name:ME8811 Project Work		
CO Statements		Knowledge Level
1	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology	K3