

**R.M.K. ENGINEERING COLLEGE**  
RSM Nagar, Kavaraipettai – 601 206

**Department of Mechanical Engineering**

**Course Outcomes – ODD Semester 2019-20**

Sl. No.	Semester	Theory/Practical	Course Code / Course Name
1.	3	Theory	MA8353-Transforms and Partial Differential Equations
2.	3	Theory	ME8391 -Engineering Thermodynamics
3.	3	Theory	CE8394 -Fluid Mechanics and Machinery
4.	3	Theory	ME8351-Manufacturing Technology - I
5.	3	Theory	EE8353-Electrical Drives and Controls
6.	3	Practical	ME8361-Manufacturing Technology Laboratory – I
7.	3	Practical	ME8381-Computer Aided Machine Drawing
8.	3	Practical	EE8361-Electrical Engineering Laboratory
9.	3	Practical	HS8381-Interpersonal Skills / Listening & Speaking
10.	5	Theory	ME8595 -Thermal Engineering- II
11.	5	Theory	ME8593-Design of Machine Elements
12.	5	Theory	ME8501 -Metrology and Measurements
13.	5	Theory	ME8594 -Dynamics of Machines
14.	5	Theory	OMF551-Product Design and Development
15.	5	Practical	ME8511-Kinematics and Dynamics Laboratory
16.	5	Practical	ME8512 -Thermal Engineering Laboratory
17.	5	Practical	ME8513 -Metrology and Measurements Laboratory
18.	7	Theory	ME6701- Power Plant Engineering
19.	7	Theory	ME6702- Mechatronics
20.	7	Theory	ME6703 Computer Integrated Manufacturing Systems
21.	7	Theory	GE6757 Total Quality Management
22.	7	Theory	ME6005 -Process Planning and Cost Estimation
23.	7	Theory	ME6012-Maintenance Engineering
24.	7	Practical	ME6711- Simulation and Analysis Laboratory
25.	7	Practical	ME6712- Mechatronics Laboratory
26.	7	Practical	ME6713- Comprehension

**Third Semester (Academic Year 2019-20)**

**MA8353-Transforms and Partial Differential Equations**

COs	Course Outcome : The students, after the completion of the course, are expected to ....
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.

<b>CO3</b>	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
<b>CO4</b>	Understand the mathematical principles on Fourier transforms would provide them the ability to formulate and solve some of the physical problems of engineering.
<b>CO5</b>	Construct z- transform and find inverse z-transform techniques for discrete time systems.
<b>CO6</b>	Use the effective mathematical tools for the solutions of difference equations by using Z transform techniques for discrete time systems.

### **ME8391 -Engineering Thermodynamics**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Explain the basic concepts and laws of thermodynamics.
<b>CO2</b>	Apply the concept of enthalpy and entropy in thermal systems
<b>CO3</b>	Compute the properties of pure substance and explain the working of steam cycles
<b>CO4</b>	Distinguish the properties of ideal and real gases.
<b>CO5</b>	Solve problems in psychrometric processes and gas mixtures.
<b>CO6</b>	Apply thermodynamic laws for real time applications

### **CE8394 -Fluid Mechanics and Machinery**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Apply mathematical knowledge to predict the properties and characteristics of a fluid.
<b>CO2</b>	Analyze and calculate major and minor losses associated with pipe flow in piping networks.
<b>CO3</b>	Mathematically predict the nature of physical quantities.
<b>CO4</b>	Critically analyze the performance of pumps.
<b>CO5</b>	Critically analyze the performance of turbines.

### **ME8351-Manufacturing Technology – I**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Distinguish the various casting methods for product making with their merits and demerits.
<b>CO2</b>	Distinguish the various material joining process and associated defects with possible cause and cure.
<b>CO3</b>	Discuss the various metal forming process with its application
<b>CO4</b>	Distinguish the various process involved in sheet metal forming with its applications and salient features
<b>CO5</b>	Explain the various process in making of plastic components for engineering / domestic applications.

<b>CO6</b>	Apply the suitable manufacturing process for making products.
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### **EE8353-Electrical Drives and Controls**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Compare the types of Drives and its power rating
<b>CO2</b>	Explain the Mechanical & Braking characteristics of Motors
<b>CO3</b>	Compare the types of Motor Starters
<b>CO4</b>	Determine the Solid state Speed control of DC Drives
<b>CO5</b>	Determine the Solid state Speed control of AC Drives

### **Practical**

#### **ME8361-Manufacturing Technology Laboratory – I**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to.</b>
<b>CO1</b>	Demonstrate the safety precautions exercised in the mechanical workshop .
<b>CO2</b>	Make the work piece as per given shape and size using Lathe
<b>CO3</b>	Join two metals using arc welding.
<b>CO4</b>	Use sheet metal fabrication tools and make simple tray and funnel
<b>CO5</b>	Use different moulding tools, patterns and prepare sand moulds

#### **ME8381-Computer Aided Machine Drawing**

<b>Cos</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Understand the various drawing standards, Fits and Tolerances
<b>CO2</b>	Re-create part drawings, sectional views and assembly drawings as per standards
<b>CO3</b>	Understand the design software tool
<b>CO4</b>	Design of machine components using Software tool
<b>CO5</b>	Detailing of machine components.

#### **EE8361-Electrical Engineering Laboratory**

<b>Cos</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Understand the functions of electrical Machines
<b>CO2</b>	Demonstrate the basic working concepts of the various AC and DC motor
<b>CO3</b>	Compute performance of motor with various loads
<b>CO4</b>	Analysis the speed characteristic of different electrical machine

#### **HS8381-Interpersonal Skills / Listening & Speaking**

<b>Cos</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
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<b>CO1</b>	Understand the Listening and responding appropriately
<b>CO2</b>	Participate in group discussions
<b>CO3</b>	Make effective presentations
<b>CO4</b>	Participate confidently and appropriately in conversations both formal and informal

## Fifth Semester (Academic Year 2019-20)

### ME8595 -Thermal Engineering- II

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to...</b>
<b>CO 1</b>	Discuss about various types of steam nozzles and its flow characteristics
<b>CO 2</b>	Explain the functioning and features of different types of Boilers along with its auxiliaries required to compute performance parameters.
<b>CO 3</b>	Calculate the Performance of steam turbines in power generation.
<b>CO 4</b>	Summarize the concept of Cogeneration, working features of heat pumps and Heat Exchangers.
<b>CO5</b>	Compute the cooling load for air conditioning and COP of refrigeration systems.
<b>CO6</b>	Apply thermal engineering principles to examine the performance of various thermal systems.

### ME8593-Design of Machine Elements

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ...</b>
<b>CO1</b>	Compute the stress acting on various machine elements
<b>CO2</b>	Compute the dimensions, stress requirements of shaft and couplings based on various load conditions
<b>CO3</b>	Summarize about temporary and permanent joints based on application requirements
<b>CO4</b>	Compute the dimensions of the energy storing devices for specific applications
<b>CO5</b>	Predict appropriate bearing, from the standard catalog for varied applications
<b>CO6</b>	Apply the various design concepts on to real time product applications

### **ME8501 -Metrology and Measurements**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Describe the concepts of measurements to apply in various metrological instruments
<b>CO2</b>	Outline the principles of linear and angular measurement tools used for industrial applications
<b>CO3</b>	Demonstrate the techniques of form measurement used for industrial components
<b>CO4</b>	Explain the procedure for conducting computer aided inspection
<b>CO5</b>	Discuss various measuring techniques of mechanical properties in industrial applications

### **ME8594 -Dynamics of Machines**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Calculate static and dynamic forces of mechanisms
<b>CO2</b>	Calculate the balancing masses and their locations of reciprocating and rotating masses
<b>CO3</b>	Compute the frequency of free vibration.
<b>CO4</b>	Compute the frequency of forced vibration and damping coefficient.
<b>CO5</b>	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.
<b>CO6</b>	Do the force analysis of Mechanisms and Machines to calculate the unbalanced forces and consequent vibrations to facilitate their design for smooth operations

### **OMF551-Product Design and Development**

<b>Cos</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Associate all the stake holders for effective NPD in an organization
<b>CO2</b>	Predict the feasible concept for product development
<b>CO3</b>	Explain the various process involved in product architecture
<b>CO4</b>	Defend the significance of the Industrial Design process in product development.
<b>CO5</b>	Discuss the cost involved in project execution and product making.
<b>CO6</b>	Apply the concepts involved in NPD and validated through a case study.

### **ME8511-Kinematics and Dynamics Laboratory**

<b>Cos</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Explain gear parameters, kinematics of mechanisms, gyroscopic effect and working of lab equipments.
<b>CO2</b>	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.

### **ME8512 -Thermal Engineering Laboratory**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials
<b>CO2</b>	conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.
<b>CO3</b>	conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity
<b>CO4</b>	conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.
<b>CO5</b>	conduct tests to evaluate the performance of refrigeration and airconditioning test rigs.

### **ME8513 -Metrology and Measurements Laboratory**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration.
<b>CO2</b>	Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection.

## Seventh Semester (Academic year 2019-20)

### ME6701 Power Plant Engineering

<b>Cos</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Discuss the layout of thermal power plant and working principle of various types of boilers.
<b>CO2</b>	Explain the working of diesel and gas turbine power plant along with optimization technique
<b>CO3</b>	Discuss the various types of nuclear reactors used in nuclear power plant
<b>CO4</b>	Summarize the principles and working of various renewable energy power plants
<b>CO5</b>	Explain the energy, economic and environmental issues of power plants
<b>CO6</b>	Paraphrase the different types of power plant, its function and issues related to them

### ME6702 Mechatronics

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical and Electronic Systems.
<b>CO2</b>	Classify the actuation and sensor systems based on the principle of operation and application.
<b>CO3</b>	Discuss Mechatronic components and systems using the microprocessor & micro controller and their working
<b>CO4</b>	Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.
<b>CO5</b>	Discuss a Mechatronic system using the knowledge and skills acquired through the course and also from the given case studies

### ME6703 Computer Integrated Manufacturing Systems

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
<b>CO1</b>	Explain the CIM concepts and basic elements of an automated system.
<b>CO2</b>	Explain the concept of Computer aided process planning and material requirement planning
<b>CO3</b>	Discuss the concept of cellular manufacturing using Rank order clustering and Hollier method
<b>CO4</b>	Explain FMS planning and applications of Automated guided vehicle systems.
<b>CO5</b>	Explain the concepts of robot control system and part programming
<b>CO6</b>	Explain the applications of computer in planning, manufacturing and controlling

## **GE6757 Total Quality Management**

COs	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
CO1	Discuss the philosophies of quality management
CO2	Apply the TQM principles for quality improvement in organization
CO3	Distinguish various TQM tools and techniques used in Manufacturing and Service sectors
CO4	Use QFD tool to design and develop a new product as per customer requirements
CO5	Explain various ISO Standards and Quality systems practiced in various sector
CO6	Summarize the basic concepts in total quality management relevant to manufacturing and service Sectors

## **ME6005 -Process Planning and Cost Estimation**

COs	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
CO1	Associate the knowledge of engineering fundamentals for process planning
CO2	Distinguish various process planning activities
CO3	Discuss the various elements involved in costing.
CO4	Estimate the product cost of job done by various manufacturing methods
CO5	Estimate the Machining time for various operations carried out in different machines
CO6	Apply the concept of Process planning and cost estimation for various production process

## **ME6012-Maintenance Engineering**

COs	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
CO1	Explain the principles and practices of maintenance planning for an organization
CO2	Discuss maintenance policies with special reference to preventive maintenance
CO3	Predict appropriate condition monitoring (CM) techniques and instruments
CO4	Distinguish various repair methods for basic machine elements
CO5	Summarize repair methods for material handling equipment.
CO6	Explain various maintenance categories like PM, CM and repairs of machine elements to control failures, accidents, down time etc

## **ME6711- Simulation and Analysis Laboratory**

COs	<b>Course Outcome : The students, after the completion of the course, are expected to</b> ....
CO 1	Demonstrate the various applications of simulation and analysis tools.
CO 2	Discuss the need of software tools to analyze engineering problem
CO 3	Create the model, analyse and simulate experiments to meet real world systems



<b>CO 4</b>	Evaluate the performance of the various models using thermal, vibration and modal analysis
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### **ME6712- Mechatronics Laboratory**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO 1</b>	Understand the working of various pneumatic systems by practice
<b>CO 2</b>	Create various microprocessor or programs for stepper motors and allied equipments.
<b>CO 3</b>	Analyse the different hydraulic circuits through hydraulic trainer kit
<b>CO 4</b>	Demonstration of image processing technique kit
<b>CO 5</b>	Simulation of circuits with multiple cylinder sequences in electro pneumatic using PLC.
<b>CO 6</b>	Simulation of basic hydraulic, pneumatic and electrical circuits using software.

### **ME6713- Comprehension**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO 1</b>	ability to understand and comprehend any given problem related to mechanical engineering field.

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Department of Mechanical Engineering

**Course Outcomes – Even Semester 2019-20**

<b>Sl. No.</b>	<b>Semester</b>	<b>Theory/Practical</b>	<b>Course Code / Course Name</b>
1)	4	Theory	MA8452- Statistics and Numerical Methods
2)	4	Theory	ME8492- Kinematics of Machinery
3)	4	Theory	ME8451- Manufacturing Technology – II
4)	4	Theory	ME8491- Engineering Metallurgy
5)	4	Theory	CE8395- Strength of Materials for Mechanical Engineers
6)	4	Theory	ME8493- Thermal Engineering- I
7)	4	Practical	ME8462- Manufacturing Technology Laboratory – II
8)	4	Practical	CE8381- Strength of Materials and Fluid Mechanics and Machinery Laboratory
9)	4	Practical	HS8461- Advanced Reading and Writing
10)	6	Theory	ME8651- Design of Transmission Systems
11)	6	Theory	ME8691 - Computer aided design and manufacturing
12)	6	Theory	ME8693 - Heat and Mass Transfer
13)	6	Theory	ME8692 - Finite Element Analysis
14)	6	Theory	ME8694 - Hydraulics and pneumatics
15)	6	Theory	ME8091 - Automobile Engineering
16)	6	Practical	ME8681 - C.A.D. / C.A.M. Laboratory
17)	6	Practical	ME8682 - Design and Fabrication Project
18)	6	Practical	HS8581 - Professional Communication
19)	8	Theory	MG6863- Engineering Economics
20)	8	Theory	MG6071- Entrepreneurship Development
21)	8	Theory	ME6016- Advanced I.C. Engines
22)	8	Practical	ME6811- Project Work

**Fourth Semester  
MA8452 - Statistics and Numerical Methods**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Apply the concept of testing of hypothesis for small and large samples in real life problems.
<b>CO2</b>	Explain the concepts of algebraic and transcendental equations
<b>CO3</b>	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
<b>CO4</b>	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
<b>CO5</b>	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
<b>CO6</b>	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

**ME8492 – Kinematics of Machinery**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Explain the principles of kinematic pairs of planar mechanisms.
<b>CO2</b>	Compute velocity and acceleration in planar mechanisms.
<b>CO3</b>	Apply various motion principles to draw cam profiles
<b>CO4</b>	Compute the gear terminology suitable for given application
<b>CO5</b>	Discuss the effect of various types of friction in power transmission

**ME8451- Manufacturing Technology – II**

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Apply the theory of metal cutting for effective machining.
<b>CO2</b>	Discuss the working principles of various operations performed in a lathe machine.
<b>CO3</b>	Explain the working of special type machines.
<b>CO4</b>	Discuss multi – point machining machineries.
<b>CO5</b>	Apply NC codes to prepare machining program.
<b>CO6</b>	Apply suitable machine tool in machining of desired product.
<b>CO6</b>	Apply thermal engineering principles to examine the performance of compressors, engines and turbines.

### ME 8491 Engineering Metallurgy

COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Explain various binary alloy systems with respective invariant reaction
CO2	Classify various heat treatment process and its significance
CO3	Discuss various Ferrous and non-ferrous metals with its application
CO4	Explain the various non-metallic materials with its applications
CO5	Compute the material properties by various material testing techniques
CO6	Apply the knowledge of material science on material selection for specific requirements

### CE 8395 – Strength of Materials for Mechanical Engineers

COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Define the basic concepts of stresses and strains.
CO2	Construct the S.F and B.M diagrams and explain stresses and deformations of beams
CO3	Evaluate the effect of bending moment and torsion in machine elements
CO4	Analyze the deformation behavior of simple structures subjected to different types of loads
CO5	Compute the change in dimensions of a Cylindrical shell subjected to internal fluid pressure
CO6	Evaluate and explain the effect of bending moments and torsion in machine elements

### Laboratory

#### ME8462- Manufacturing Technology Laboratory – II

Sl.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Use different machine tools to manufacturing gears
CO2	Ability to use different machine tools to manufacturing gears
CO3	Ability to use different machine tools for finishing operations
CO4	Ability to manufacture tools using cutter grinder
CO5	Develop CNC part programming

### **CE8381- Strength of Materials and Fluid Mechanics and Machinery Laboratory**

<b>Sl.No.</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Ability to perform Tension test on Solid materials.
<b>CO2</b>	Ability to perform Torsion test on Solid materials.
<b>CO3</b>	Ability to perform Hardness test on Solid materials.
<b>CO4</b>	Ability to perform Compression test on Solid materials.
<b>CO5</b>	Ability to perform Deformation test on Solid materials.

### **HS8461- Advanced Reading and Writing**

<b>Sl.No.</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically.
<b>CO4</b>	Display critical thinking in various professional contexts.

### **Sixth Semester**

### **ME8651- Design of Transmission Systems**

<b>Sl.No.</b>	<b>Course Outcome : The students, after the completion of the course, are expected to ....</b>
<b>CO1</b>	Apply the concepts of design to belts, chains and rope drives.
<b>CO2</b>	Apply the concepts of design to spur, helical gears.
<b>CO3</b>	Apply the concepts of design to worm and bevel gears.
<b>CO4</b>	Apply the concepts of design to gear boxes .
<b>CO5</b>	Apply the concepts of design to cams, brakes and clutches

### ME8691- Computer Aided Design and Manufacturing

Sl.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics
CO2	Explain the fundamentals of parametric curves, surfaces and Solids
CO3	Summarize the different types of Standard systems used in CAD
CO4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines
CO5	Summarize the different types of techniques used in Cellular Manufacturing and FMS

### ME8693- Heat And Mass Transfer

Sl.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems
CO2	Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems
CO3	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
CO4	Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types of surfaces to solve problems
CO5	Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications

### ME8692 - Finite Element Analysis

Sl.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Summarize the basics of finite element formulation
CO2	Apply finite element formulations to solve one dimensional Problems
CO3	Apply finite element formulations to solve two dimensional scalar Problems
CO4	Apply finite element method to solve two dimensional Vector problems
CO5	Apply finite element method to solve problems on iso parametric element and dynamic Problems

### ME 8694 - Hydraulics and Pneumatics

S.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Understand, compare and explain the concepts of discrete and continuum mathematical modeling.
CO2	Apply numerical methods for solving engineering problems for design.
CO3	Able to apply finite element formulation of Boundary value problems
CO4	Understand and explain application of FEA principles in heat transfer and fluid mechanics domains.
CO5	Understand, compare and explain the concepts of one dimensional and two dimensional cases of FEA.
CO6	Explain the dynamics analysis by FEA method.

### ME8091 - Automobile Engineering

Sl.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Recognize the various parts of the automobile and their functions and materials.
CO2	Discuss the engine auxiliary systems and engine emission control.
CO3	Distinguish the working of different types of transmission systems.
CO4	Explain the Steering, Brakes and Suspension Systems.
CO5	Predict possible alternate sources of energy for IC Engines.

### Laboratory

#### ME8681- CAD / CAM Laboratory

S.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO 1	Draw 3D and Assembly drawing using CAD software
CO 2	Demonstrate manual part programming with G and M codes using CAM

#### ME8682 - Design and Fabrication Project

S.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO 1	Design and Fabricate the machine element or the mechanical product.
CO 2	demonstrate the working model of the machine element or the mechanical product.

### HS8581 - Professional Communication - Laboratory Based

S.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO 1	Make effective presentations
CO 2	Participate confidently in Group Discussions
CO3	Attend job interviews and be successful in them
CO4	Develop adequate Soft Skills required for the workplace

### Eight Semester MG6863- Engineering Economics

Sl.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Understand and explain the basics of economics and costing and compute costing of projects and processes for comparison.
CO2	Compile data, compute various costs for make or buy decisions and value engineering of components
CO3	Demonstrate the various cash flow methods for the comparison of alternatives
CO4	Evaluate, and select among alternatives proposals by understanding and explaining the concepts of replacement and maintenance analysis
CO5	Evaluate and solve problems related to public alternatives and economic life of an asset.
CO6	Explain the various depreciation techniques applicable in industry

### MG 6071 – Entrepreneurship Development

COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Understand and explain the role of entrepreneur in economic growth of the nation
CO2	Outline the major motivation factors for becoming an entrepreneur
CO3	Classify, compare and analyze for setting up of a good business opportunity
CO4	Summarize the various sources of finance and method of accounting
CO5	Plan for establishing business opportunity with the knowledge on government norms
CO6	Apply the knowledge expanding business



### ME6016- Advanced I.C.Engines

Sl.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	To understand the underline principles of operation of different IC Engines and components.
CO2	Explain and discuss combustion and emissions in IC Engines
CO3	Demonstrate the formation and measurement of emissions
CO4	Explain the use and applications of alternative fuels in IC Engines
CO5	Outline the recent developments in IC Engines
CO6	Provide knowledge on pollutant formation, control, alternate fuel, etc.

### Laboratory

### ME6811- Project work

S.No.	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	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.