



# AVANTHI

## INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE, Permanently Affiliated to JNT University, Kakinada,  
Accredited by NBA & Recognized Under 2(f) and 12(b) by UGC, New Delhi)  
Tamarani, Makavarapalem, Narsipatnam(R.D), Visakhapatnam Dist-531113

### DEPARTMENT OF MECHANICAL ENGINEERING

#### COURSE OUTCOME (R-19)

1<sup>st</sup> Year first Semester :

#### Mathematics-I

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1101	utilize mean value theorems to real life problems
2	BS1101	solve the differential equations related to various engineering fields
3	BS1101	familiarize with functions of several variables which is useful in optimization
4	BS1101	Apply double integration techniques in evaluating areas bounded by region
5	BS1101	students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems

#### Mathematics - II

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1102	develop the use of matrix algebra techniques that is needed by engineers for practical applications
2	BS1102	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
3	BS1102	evaluate approximating the roots of polynomial and transcendental equations by different algorithm
4	BS1102	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals
5	BS1102	apply different algorithms for approximating the solutions of ordinary differential equations to its analytical computations (L3)



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### Engineering Physics :

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1108	explain how sound is propagated in buildings
2	BS1108	analyze acoustic properties of typically used materials in buildings
3	BS1108	recognize sound level disruptors and their use in architectural acoustic
4	BS1108	Use of ultrasonics in flaw detection using NDT technique

### PROGRAMMING FOR PROBLEM SOLVING USING C

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1101	To write algorithms and to draw flowcharts for solving problems
2	ES1101	To convert flowcharts/algorithms to C Programs, compile and debug programs
3	ES1101	To use different operators, data types and write programs that use two-way/ multi-way selection
4	ES1101	To select the best loop construct for a given problem
5	ES1101	To design and implement programs to analyze the different pointer applications
6	ES1101	To decompose a problem into functions and to develop modular reusable code



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### Engineering Drawing :

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1103	The student will learn how to visualize 2D & 3D objects.

### PROGRAMMING FOR PROBLEM SOLVING USING C LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1102	Gains Knowledge on various concepts of a C language.
2	ES1102	Able to draw flowcharts and write algorithms.
3	ES1102	Able design and development of C problem solving skill

### 1<sup>st</sup> Year 2<sup>nd</sup> semester :

#### ENGLISH

At the end of the course student should be able to

Sno	Course code	CO Statement
1	HS1201	understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
2	HS1201	ask and answer general questions on familiar topics and introduce oneself/others
3	HS1201	employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
4	HS1201	recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
5	HS1201	form sentences using proper grammatical structures and correct word forms



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### ENGINEERING CHEMISTRY

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1210	Outline the properties of polymers and various additives added and different methods of forming plastic materials.
2	BS1210	Explain the theory of construction of battery and fuel cells
3	BS1210	Explain the techniques that detect and measure changes of state of reaction.
4	BS1210	Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced.
5	BS1210	Explain the impurities present in raw water, problems associated with them and how to avoid.

### ENGINEERING MECHANICS

At the end of the course student should be able

Sno	Course code	CO Statement
1	BS1204	The student should be able to draw free body diagrams for FBDs for particles and rigid bodies in plane and space and problems to solve the unknown forces, orientations and geometric parameters
2	BS1204	He should be able to determine centroid for lines, areas and center of gravity for volumes and their composites
3	BS1204	He should be able to determine area and mass moment of inertia for composite sections
4	BS1204	He should be able to analyze motion of particles and rigid bodies and apply the principles of motion, work energy and impulse – momentum.

### BASIC ELECTRICAL & ELECTRONICS ENGINEERING

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1206	Analyse various electrical networks.
2	ES1206	Understand operation of DC generators, 3-point starter and DC machine testing by Swinburne's Test and Brake test.
3	ES1206	Analyse performance of single-phase transformer and acquire proper knowledge



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		and working of 3-phase alternator and 3-phase induction motors.
4	ES1206	Analyse operation of half wave, full wave bridge rectifiers and OP-AMPS..

### COMPUTER AIDED ENGINEERING DRAWING

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1207	Student get exposed on working of sheet metal with help of development of surfaces
2	ES1207	Student understands how to know the hidden details of machine components with the help of sections and interpenetrations of solids
3	ES1207	Student shall exposed to modeling commands for generating 2D and 3D objects using computer aided drafting tools which are useful to create machine elements for computer aided analysis.

### ENGINEERING CHEMISTRY LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1211	The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.

### BASIC ELECTRICAL & ELECTRONICS ENGINEERING LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1208	Compute the efficiency of DC shunt machine without actual loading of the machine.
2	ES1208	Estimate the efficiency and regulation at different load conditions and power factors for single phase transformer with OC and SC tests.
3	ES1208	Pre-determine the regulation of an alternator by synchronous impedance method.



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### Engineering exploration Project :

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PR1201	
2	PR1201	
3	PR1201	

### II Year I semester

#### VECTOR CALCULUS & FOURIER TRANSFORMS

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BSC	<ul style="list-style-type: none"><li>• Interpret the physical meaning of different operators such as gradient, curl and divergence (L5)</li><li>• Estimate the work done against a field, circulation and flux using vector calculus (L5)</li></ul>
2	BSC	<ul style="list-style-type: none"><li>• Apply the Laplace transform for solving differential equations (L3).</li><li>• Find or compute the Fourier series of periodic signals (L3)</li></ul>
3	BSC	<ul style="list-style-type: none"><li>• Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)</li><li>• Identify solution methods for partial differential equations that model physical processes (L3)</li></ul>

#### MECHANICS OF SOLIDS

At the end of the course student should be able to

Sno	Course code	CO Statement
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1	PCC-ME	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium
2	PCC-ME	Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
3	PCC-ME	Students will learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components. Students are able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
4	PCC-ME	Students attain a deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
5	PCC-ME	Design and analysis of Industrial components like pressure vessels

### MATERIALS SCIENCE & METALLURGY

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems.
2	PCC-ME	Study the behavior of ferrous and non ferrous metals and alloys and their application in different domains.
3	PCC-ME	Able to understand the effect of heat treatment, addition of alloying elements on properties of ferrous metals
4	PCC-ME	Grasp the methods of making of metal powders and applications of powder metallurgy
5	PCC-ME	Comprehend the properties and applications of ceramic, composites and other advanced methods

### PRODUCTION TECHNOLOGY

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	: Able to design the patterns and core boxes for metal casting processes
2	PCC-ME	Able to design the gating system for different metallic components



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3	PCC-ME	Know the different types of manufacturing processes
4	PCC-ME	Be able to use forging, extrusion processes
5	PCC-ME	Learn about the different types of welding processes used for special fabrication

### THERMODYNAMICS

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	: Basic concepts of thermodynamics
2	PCC-ME	Laws of thermodynamics
3	PCC-ME	Concept of entropy
4	PCC-ME	Property evaluation of vapors and their depiction in tables and charts
5	PCC-ME	Evaluation of properties of perfect gas mixtures.

### MACHINE DRAWING

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Draw and represent standard dimensions of different mechanical fasteners and joints and Couplings.
2	PCC-ME	. Draw different types of bearings showing different components.
3	PCC-ME	Assemble components of a machine part and draw the sectional assembly drawing showing the dimensions of all the components of the assembly as per bill of materials
4	PCC-ME	Select and represent fits and geometrical form of different mating parts in assembly drawings
5	PCC-ME	To prepare manufacturing drawings indicating fits, tolerances, surface finish and surface treatment requirements.

### METALLURGY & MECHANICS OF SOLIDS LAB

At the end of the course student should be able to





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Sno	Course code	CO Statement
1	PCC-Lab1	Summarize the crystal structure for SC, BCC, FCC and HCP. Outline the microstructure for pure metals and alloys. Observe the micro structure of heat treated steels. Observe the hardness of alloys metals by using jominey quenching test. Describe how and why defects (point, line and interfacial) in materials greatly affect engineering properties and limit their use in service.
2	PCC-Lab1	Analyze the behaviour of the solid bodies subjected to various types of loading. Apply knowledge of materials and structural elements to the analysis of simple structures. Undertake problem identification, formulation and solution using a range of analytical methods. Analyze and interpret laboratory data relating to behaviour of structures and the materials they are made of, and undertake associated laboratory work individually and in teams Expectation and capacity to undertake lifelong learning.
3		

### PRODUCTION TECHNOLOGY LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PCC-Lab2	1. Learn about patterns and casting of metals. 2. Understand the concept of Arc, Spot, TIG welding and brazing process.
2	PCC-Lab2	3. Understand the Process of simple, compound and progressive press and Hydraulic press 4. Learn the Moulding process of plastic materials
3	PCC-Lab2	5. Understand the processing of different materials in the lab.

### SOCIALLY RELEVANT PROJECT

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PROJ-2101	
2	PROJ-2101	
3	PROJ-2101	



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### II Year - II Semester

#### COMPLEX VARIABLES & STATISTICAL METHODS

At the end of the course the student able to

S.No	Course code	CO Statement
1	BSC	apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic (L3)
2	BSC	find the differentiation and integration of complex functions used in engineering problems (L5)
3	BSC	apply discrete and continuous probability distributions (L3)
4	BSC	design the components of a classical hypothesis test (L6)
5	BSC	infer the statistical inferential methods based on small and large sampling tests (L4)

#### KINEMATICS OF MACHINERY

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Contrive a mechanism for a given plane motion with single degree of freedom.
2	PCC-ME	Suggest and analyze a mechanism for a given straight line motion and automobile steering motion
3	PCC-ME	Analyze the motion (velocity and acceleration) of a plane mechanism.
4	PCC-ME	Suggest and analyze mechanisms for a prescribed intermittent motion like opening and closing of IC engine valves etc.
5	PCC-ME	Select a power transmission system for a given application and analyze motion of different transmission system

#### APPLIED THERMODYNAMICS

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S.No	Course code	CO Statement
1	PCC-ME	Expected to learn the working of steam power cycles and also should be able to analyze and evaluate the performance of individual components
2	PCC-ME	Student is able to learn the principles of combustion , stoichiometry and flue gas analysis
3	PCC-ME	Students will be able to design the components and calculate the losses and efficiency of the boilers, nozzles and impulse turbines.
4	PCC-ME	Students will be able to design the components and calculate the losses and efficiency of reactions turbines and condensers.
5	PCC-ME	Student is able to learn various types of compressors, principles of working and their performance evaluation

### FLUID MECHANICS & HYDRAULIC MACHINES

At the end of the course student should be able

S.No	Course code	CO Statement
1	PCC-ME	The basic concepts of fluid properties
2	PCC-ME	The mechanics of fluids in static and dynamic conditions
3	PCC-ME	Boundary layer theory, flow separation and dimensional analysis.
4	PCC-ME	Hydrodynamic forces of jet on vanes in different positions
5	PCC-ME	Working Principles and performance evaluation of hydraulic pump and turbines.

### METAL CUTTING & MACHINE TOOLS

At the end of the course student should be able

S.No	Course code	CO Statement
1	PCC-ME	Learned the fundamental knowledge and principals in material removal



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		process
2	PCC-ME	acquire the knowledge on operations in conventional, automatic, Capstan and turret lathes
3	PCC-ME	capable of understanding the working principles and operations of shaping, slotting, planning, drilling and boring machines
4	PCC-ME	able to make gear and keyway in milling machines and understand the indexing mechanisms
5	PCC-ME	Understand the different types of unconventional machining methods and principles of finishing processes.

### DESIGN OF MACHINE MEMBERS – I

At the end of the course student should be able

S.No	Course code	CO Statement
1	PCC-ME	Calculate different stresses in the machine components subjected to various static loads, failures and suitability of a material for an engineering application.
2	PCC-ME	Calculate dynamic stresses in the machine components subjected to variable loads
3	PCC-ME	Design riveted, welded, bolted joints, keys, cotters and knuckle joints subjected to static loads and their failure modes
4	PCC-ME	. Design the machine shafts and suggest suitable coupling for a given application.
5	PCC-ME	Calculate stresses in different types of springs subjected to static loads and dynamic loads

### FLUID MECHANICS & HYDRAULIC MACHINERY LAB

At the end of the course student should be able

Sno	Course code	CO Statement
1	PCC-Lab5	Explain the effect of fluid properties on a flow system. Identify type of fluid flow patterns and describe continuity equation.
2	PCC-Lab5	Analyze a variety of practical fluid flow, measuring devices and utilize fluid mechanics principles in design. CO4 Select and analyze an appropriate turbine with reference to given situation in power plants.
3	PCC-Lab5	Estimate performance parameters of a given centrifugal and reciprocating pump. Able to demonstrate boundary layer concepts.



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### MACHINE TOOLS LAB

At the end of the course student should be able

Sno	Course code	CO Statement
1	PCC-Lab6	The students can operate different machine tools with understanding of work holders and operating principles to produce different part features to the desired quality.
2		
3		

### III YEAR I SEMESTER :

#### DYNAMICS OF MACHINERY

At the end of the course student should be able

S.No	Course code	CO Statement
1	PCC-ME	To compute the frictional losses and transmission in clutches, brakes and dynamometers.
2	PCC-ME	To determine the effect of gyroscopic couple in motor vehicles, ships and aeroplanes
3	PCC-ME	To analyze the forces in four bar and slider crank mechanisms and design a flywheel
4	PCC-ME	To determine the rotary unbalanced mass in reciprocating equipment
5	PCC-ME	To determine the unbalanced forces and couples in reciprocating and radial engines

#### DESIGN OF MACHINE MEMBERS-II

At the end of the course student should be able

S.No	Course code	CO Statement
1	PCC-ME	Select the suitable bearing based on the application of the loads and predict the life of the bearing.
2	PCC-ME	Design of IC Engines parts
3	PCC-ME	Design of power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws
4	PCC-ME	Design spur & helical gear for different engineering applications



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### MECHANICAL MEASUREMENTS & METROLOGY

S.No	Course code	CO Statement
1	PCC-ME	Describe the construction and working principles of measuring instruments for measurement of displacement and speed and select appropriate instrument for a given application
2	PCC-ME	Describe the construction and working principles of measuring instruments for strain, force, Torque, power, acceleration and Vibration and select appropriate instrument for a given application
3	PCC-ME	Explain shaft basis system and hole basis systems for fits and represent tolerances for a given fit as per the shaft basis system and hole basis system and design limit gauges based on the tolerances for quality check in mass production
4	PCC-ME	Explain methods for linear, angle and flatness measurements and select a suitable method and its relevant instrument for a given application

### MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY

S.No	Course code	CO Statement
1	PCC-ME	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product. The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least. The Learner can able to evaluate various investment project proposals with the help of capital. cost combination of inputs
2	PCC-ME	The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units.
3	PCC-ME	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
4	PCC-ME	budgeting techniques for decision making

### IC ENGINES & GAS TURBINES

: Student must able to,

S.No	Course code	CO Statement
1	PCC-ME	Derive the actual cycle from fuel-air cycle and air- standard cycle for all practical applications..
2	PCC-ME	Explain working principle and various components of IC engine



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3	PCC-ME	Explain combustion phenomenon of CI and SI engines and their impact on engine variables
4	PCC-ME	Analyze the performance of an IC engine based on the performance parameters
5	PCC-ME	Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine

### THERMAL ENGINEERING LAB

Sno	Course code	CO Statement
1	PCC-Lab	1 Illustrate the viscosity of liquid lubricants. 2 Understand the calorific values of solid and gaseous fuels
2	PCC-Lab	3 Analyse the flash and fire points of liquid fuels. 4 Observe the carbon residue for fuels.
3	PCC-Lab	5 Compare the depth penetration for different lubricants.

### THEORY OF MACHINES LAB

Sno	Course code	CO Statement
1	PCC-Lab	1. Identify various links in popular mechanisms. 2. Select suitable mechanism for various applications
2	PCC-Lab	3. Analyze the motion of cams and followers. 4. Select relevant belts, chains and drives for different applications.
3	PCC-Lab	5. Select relevant brakes and clutches for various applications 6. Select suitable flywheel and governor for various applications.

### MECHANICAL MEASUREMENTS & METROLOGY LAB

Sno	Course code	CO Statement
1	PCC-Lab	Metrology Lab Student will become familiar with the different instruments that are available for linear, angular, roundness and roughness measurements they will be able to select and use the appropriate measuring instrument according to a specific requirement (in terms of accuracy, etc)

### SOCIALLY RELEVANT PROJECT



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Sno	Course code	CO Statement
1		
2		
3		

### III year II semester

#### OPERATIONS RESEARCH

At the end of the course student should be able

S.No	Course code	CO Statement
1	PCC-ME	Formulate the resource management problems and identify appropriate methods to solve them
2	PCC-ME	Apply LPP, transportation and assignment models to optimize the industrial resources
3	PCC-ME	Solve decision theory problems through the application of game theory
4	PCC-ME	Apply the replacement and queuing models to increase the efficiency of the system
5	PCC-ME	Model the project management problems through CPM and PERT

#### HEAT TRANSFER

At the end of the course student should be able

S.No	Course code	CO Statement
1	PCC-ME	Compute rate of heat transfer for 1D, steady state composite systems without heat..
2	PCC-ME	Analyze the system with heat generation, variable thermal conductivity, fins and 1D transient conduction heat transfer problems.
3	PCC-ME	Compute the rate of heat transfer for natural convection systems and design and analysis of heat exchangers
4	PCC-ME	Solve the heat transfer systems with phase change and radiation.

#### CAD/CAM

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S.No	Course code	CO Statement
1	PCC-ME	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
2	PCC-ME	Describe the use of GT and CAPP for the product development
3	PCC-ME	Identify the various elements and their activities in the Computer Integrated Manufacturing Systems

### OPEN ELECTIVE :

At the end of the course student should be able to

Sno	Course code	CO Statement
1		
2		
3		

### SIMULATION OF MECHANICAL SYSTEMS LAB

Sno	Course code	CO Statement
1		
2		
3		

### HEAT TRANSFER LAB

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S.No	Course code	CO Statement
1	PCC-Lab	The student should be able to evaluate the amount of heat exchange for plane, cylindrical & spherical geometries and should be able to compare the performance of extended surfaces and heat exchangers

### CAD/CAM LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PCC-Lab	The student will be able to appreciate the utility of the modeling tools in creating 2D and 3D drawings.
2	PCC-Lab	Use of these tools for any engineering and real time applications
3	PCC-Lab	Acquire knowledge on utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence when it matters to use these tools in their Employment

### PEC-ME1 REFRIGERATION & AIR CONDITIONING

Sno	Course code	CO Statement
1	PEC-ME1	<ul style="list-style-type: none"><li>• Differentiate between different types of refrigeration systems with respect to engineering applications</li><li>• Thermodynamically analyse refrigeration and air conditioning systems and evaluate performance parameters</li></ul>
2	PEC-ME1	<ul style="list-style-type: none"><li>• Apply the principles of Psychrometrics to design the air conditioning loads for the industrial applications</li></ul>
3	PEC-ME1	<ul style="list-style-type: none"><li>• perform cooling load calculations and select the appropriate process and equipment for the required comfort and industrial air-conditioning.</li></ul>

### PEC-ME2 MECHATRONICS

Sno	Course code	CO Statement
1	PEC-ME2	1. Shall be able to use the various mechatronics systems devices and components in the design of electro mechanical systems.
2	PEC-ME2	2: Explain mechatronics design process and outline appropriate sensors and actuators for engineering applications Develop a simulation model for simple physical systems 3: Write simple microcontroller programs



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3	PEC-ME2	4: Explain linearization of nonlinear systems and elements of data acquisition CO5: Explain various applications of design of mechatronic systems
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### IV year I semester

#### INDUSTRIAL MANAGEMENT

At the end of the course student should be able to

S.No	Course code	CO Statement
1	HSIMS	1. Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
2	HSIMS	2. Design a system, component, or process, and synthesize solutions to achieve desired needs
3	HSIMS	3. Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints
4	HSIMS	4. Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management.

#### FINITE ELEMENT METHODS

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Understand the concepts behind variational methods and weighted residual methods in FEM
2	PCC-ME	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element .
3	PCC-ME	Develop element characteristic equation procedure and generate global equations
4	PCC-ME	Able to apply Suitable boundary conditions to global equations, and reduce it to a solvable form
5	PCC-ME	. Able to apply the FE procedure to field problems like heat transfer

#### PEC-ME3 PRODUCTION PLANNING & CONTROL

Sno	Course code	CO Statement
1	PEC-3	1.Apply the systems concept for the design of production and service



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		systems. 2. Make forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques.
2	PEC-3	3. Apply the principles and techniques for planning and control of the production and service systems to optimize/make best use of resources.
3	PEC-3	4. Understand the importance and function of inventory and to be able to apply selected techniques for its control and management under dependent and independent demand circumstances.

### PEC-ME4 POWER PLANT ENGINEERING

Sno	Course code	CO Statement
1	PEC-4	1 Understand various conventional methods of power generation
2	PEC-4	2 To understand the principle of operation and performance of respective prime movers along with their economics and their impact on environment.
3	PEC-4	3 To understand the power plant instrumentation and control

### OEC – 1

Sno	Course code	CO Statement
1		
2		
3		

### FINITE ELEMENT SIMULATION LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1		
2		
3		

### PROJECT – 1

Sno	Course code	CO Statement
1		



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2		
3		

### IV II 2<sup>ND</sup> SEMESTER

PEC-5

Sno	Course code	CO Statement
1		
2		
3		

PEC-6

Sno	Course code	CO Statement
1		
2		
3		

OEC-2

Sno	Course code	CO Statement
1		
2		
3		

OEC-3

Sno	Course code	CO Statement
1		
2		
3		

PROJ-II

Sno	Course code	CO Statement
1		



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2		
3		

**Principal**