Sant Baba Bhag Singh
UNIVERSITY
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PO, PEO, PSO and CO

of

(Mechanical Engineering)

Amrinder Singh
CoD, ME

Dr. Vijay Dhir
Dean

Sant Baba Bhag Singh University
Village Khiala
P.O. Padhiana
Distt. Jalandhar

Program educational objectives of B.Tech (Mechanical Engineering)

I. To prepare students for successful careers as mechanical engineers in organizations that meet the needs of Indian and global/multinational industrial/research establishments.

II. To train students with a wide spectrum of scientific and engineering courses so that students could comprehend, analyze, design and create products and services that address real life problems, which are efficient and cost effective.

III. To inculcate in students a professional and ethical attitude, impart effective communication skills and ability to work in teams with multidisciplinary approach, be part of and interact with professional bodies so as to resolve engineering issues of social relevance.

IV. To provide students with an academic environment that fosters excellence, leadership, yearning to pursue higher studies and passion for lifelong learning so as to have a successful professional career.

Programme Outcomes of B.Tech

I. Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

II. An understanding of professional and ethical responsibility.

III. An ability to use modern engineering techniques, skills, and computing tools necessary for engineering practice

IV. Communicate effectively among engineering community, being able to comprehend andwrite effectively reports, presentation and give / receive clears instructions.

Programme Specific Outcomes (B.TECH)

I. To apply the concepts of material science and engineering, computer aided engineering, thermal engineering and manufacturing technologies for design, development, analysis and maintenance of mechanical systems or processes.

II. To work as a professional or as an entrepreneur by applying mechanical engineering principles and management practices

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Dr. Vijay Dhir
(Dean UIET)

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Learning objectives of M.Tech

I. A commitment to lifelong learning , quality and continuous improvement through the clear ability to assume increasing levels of technical or management responsibility

II. To ability to drive the design of manufacturable products ,design effective and efficient new production process and improve the performance of existing operation

III. To develop the effective technical communication

IV. Leadership and Participation in teams that act as change agents and innovators in Product design and manufacturing related organization

Programme Outcomes of M.Tech

I. Apply advanced level Knowledge , techniques ,skills and modern tools of Production Engineering

II. Develop management control System to Provide the right kind of assistance in financial planning ,cost analysis,and production Planning for the physical distribution of goods and service s.

III. Function on multidisciplinary teams ,working cooperatively, respectfully and responsible as a member of a team.

IV. Identify ,formulate, and solve industrial Productivity related problems using advanced level computing techniques

Programme Specific Outcomes (M.Tech)

I. Graduates should be able to handle research Problems and Write Dessertation

II. An ability to apply knowledge and skill of various approaches in manufacturing technology and automation ,for solving complex Problem

for (Amrinder Singh) CoD, Mechanical Engg

Dr. Vijay Dhir Dean, UIET

Sant Baba Bhag Singh University Village Khiala P.O. Padhiana Distt. Jalandhar

Semester	Course Name	Course Code		Detail Of Course Outcomes
1	Advanced Computer Design and Manufacturing	ME501	CO1	Apply/develop solutions or to do research in the areas of Design and simulation in Mechanical Engineering
			CO2	Have abilities and capabilities in developing and applying computer software and hardware to mechanical design and manufacturing fields.
			CO3	Design and validate technological solutions to defined problems and communicate clearly and effectively for the practical application of their work
	Jig Fixture and Die Design	ME 503	CO1	Write methodically, the sequence of operations of simple work-piece.
			CO2	Identify and select locating and clamping points on work-piece.
			CO3	Design assembly of jigs and fixtures on simple work-piece
	Research Methodology and IPR	MAT524	CO1	Understanding and formulation of research problem.
			CO2	Analyze research related information.
			CO3	Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity
	Computer Aided Engineering Lab	ME 505	CO1	Design and validate technological solutions to defined problems and communicate clearly and effectively for the practical application of their work
			CO2	Have abilities and capabilities in developing and applying computer software and hardware to mechanical design and manufacturing fields.
	Cutting Tool Design	ME 507	CO1	Describe tool design methods and punch and die manufacturing Techniques.
			CO2	Select material for cutting tools and gages; classify various cutting tools and gages and identify their nomenclature.
			CO3	Design fixtures for milling, boring, lathe, grinding, welding; Identify fixtures and cutting tools for NC machine tools.
	Industrial Tribology	ME509	CO1	Describe the viscosity and laws of fluid flow with reference to lubrication.
			CO2	Analyze mathematical approach of hydrodynamic and hydrostatic lubrication.
			CO3	Illustrate the behavior of tribological components subjected to different working conditions and describe different tribological measures.
	Machine Tool Design	ME511	CO1	Ability enhancement for the design of various components of structures, guideways, spindles of machine tools.
			CO2	To gain the knowledge of design of gear boxes & feed boxes used in machine tools.
			CO3	Ability enhancement to adopt & implement the recent trends required as per the applications.
	Total Quality Control	ME513	CO1	To realize the importance of significance of quality
			CO2	Manage quality improvement teams
			CO3	Identify requirements of quality improvement programs
	Mechatronics	ME515	CO1	Identification of key elements of mechatronics system and its representation in terms of block diagram
			CO2	Understanding the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O
			CO3	Development of PLC ladder programming and implementation of real life system
	Simulation of Industrial Systems	ME517	CO1	Manage projects in various sectors of economy with a focus on conceptual, technical and human aspects.
			CO2	Exhibit knowledge of value and professional ethic in their area of work.
	Methods of Engineering & Ergonomics	ME519	CO1	Understand the concept of good postures and less exertion and better height.
			CO2	Understand the concept how workstation becomes more efficient
	Flexible Manufacturing System	ME521	CO1	Identify various workstations, system support equipments.
			CO2	Identify hardware and software components of FMS.
2	Modern Welding and Casting Process	ME502	CO1	Understand different Welding and joining processes and its defects.
			CO2	Understand about advance welding process
	Metal Forming	ME504	CO1	To understand various plastic deformation during forming processes.
			CO2	To acquaint with the basic knoeledge on fundamentals of metal forming processes.
	Mini project with seminar	ME506	CO1	This course focuses on implementation of various real time projects
	Modern Welding and Casting Process Lab	ME508	CO1	Understand and analyze foundry practices like pattern making, mold making, Core making and inspection of defects
			CO2	Understand different plastic molding processes,
			CO3	Understand different Welding and joining processes and its defects
	Metal Cutting	ME510	CO1	To understand Extrusion of Plastic and Thermoforming.
			CO2	To acquaint with the basic knoeledge on fundamentals of metal forming processes.
	Industrial Automation	ME512	CO1	Describe working of various blocks of basic industrial automation system.
			CO2	To understand the application of fluid power to logic gate circuits, basic knowledge of robotics
	Metrology & Industrial Inspection	ME514	CO1	Identify techniques to minimize the errors in measurement
			CO2	To understand the concept of clearance and tolerances.
	HYBRID MANUFACTURING	ME 516	CO1	To solve complex manufacturing problems for significant technological and societal development.
			CO2	Engage in lifelong learning to adapt to changing needs for professional advancement.
	Entrepreneurship	ME518	CO1	Analyze the business environment in order to identify business opportunities.
			CO2	Evaluate the basic performance indicators of entrepreneurial activity.
	Product Design & Development	ME 520	CO1	Students will familiar with the design protection and intellectual property.
			CO2	Carry out cost and benefit analysis through various cost models.
	Statistics & Reliability Engineering	ME 522	CO1	To understand the role of statistics in engineering
			CO2	To understand how the analysis of variance is used to analyze the data from these experiments.
	Supply Chain Management	ME524	CO1	Analyze factors influencing network design
			CO2	Develop mathematical models to represent curves and surfaces.

for Amritsar (CoD, Mechanical Engg.)

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		CO3	Model engineering components using solid modeling techniques
Productions & Operations Management	ME526	CO1	To understand the basic concepts and theories of the production management.
		CO2	To apply operations management concepts and their influence on business decisions.
		CO3	To expand individual knowledge of operations management principles and practices.
Dissertation-I	ME601	CO1	To understand the need of problem formulation, literature review.
		CO2	To understand the format of writing research paper and thesis report
Materials Technology	ME603	CO1	Understand the basic concepts and properties of Material
		CO2	Understand about material fundamental and processing.
		CO3	Detect the defects in crystal and its effect on crystal properties.
Non Conventional Machining Processes	ME605	CO1	Understand the concept of machining the hard material using chemical energy and electrochemical energy.
		CO2	Familiarity with various thermal energy based non conventional machining processes.
LEAN MANUFACTURING	ME 609	CO1	To understand how lean management today represents a profound change in the competitive business culture.
		CO2	Developing an understanding of basic principle of lean management strategy
Industrial Safety Engineering	ME611	CO1	The student will be able to identify and solve complex engineering principles.
Composite Materials	ME613	CO1	Some understanding of types, manufacturing processes, and applications of composite materials
		CO2	Ability to analyze problems on macromechanical behavior of lamina
		CO3	Ability to analyze problems on micromechanical behavior of lamina
		CO4	Ability to analyze problems on macromechanical behavior of laminate
Quality Engineering	ME615	CO1	To realize the importance of significance of quality.
		CO2	Identify requirements of quality improvement programs
Waste To Energy Technology	EE611	CO1	The development of the project will holistically take into account five pillars – institutional, political/policy, social, technical and economic/financial
Business Analytics	COM233	CO1	Students will demonstrate knowledge of data analytics
		CO2	Students will demonstrate the ability of think critically in making decisions based on data and deep analytics
		CO3	Students will demonstrate the ability to use technical skills in predicative and prescriptive modeling to support business decision-making.
		CO4	Students will demonstrate the ability to translate data into clear, actionable insights
Internet of Things	CSE611	CO1	Students will demonstrate knowledge of data analytics.
		CO2	Students will demonstrate the ability of think critically in making decisions based on data and deep analytics.
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ENGLISH FOR RESEARCH PAPER WRITING	ENG001	CO1	. Understand that how to improve your writing skills and level of readability
		CO2	Learn about what to write in each section
		CO3	Understand the skills needed when writing a Title
		CO4	Ensure the good quality of paper at very first-time submission
DISASTER MANAGEMENT	EVS501	CO1	To gain understand approaches of Disaster Risk Reduction and the relation between vulnerability, disasters and risk reduction.
CONSTITUTION OF INDIA	LAW001	CO1	Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics
		CO2	Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India
		CO3	Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
		CO4	Discuss the passage of the Hindu Code Bill of 1956.
PEDAGOGY STUDIES	EDU001	CO1	What pedagogical practices are being used by teachers in formal and informal classrooms in developing countries
		CO2	What is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners
		CO3	How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy?

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Computer Aided Process Planning	ME 607	CO1		
		CO2		
		CO3		
LEAN MANUFACTURING	ME 609	CO1	To understand how lean management today represents a profound change in the competitive business culture.	
		CO2	Developing an understanding of basic principle of lean management strategy	
Dissertation-II	ME602			
Introduction To Rural Technology & Community Development	CE611	CO1		
		CO2		
		CO3		
Industrial Safety Engineering	ME611	CO1	The student will be able to identify and solve complex engineering principles.	
Composite Materials	ME613	CO1	Some understanding of types, manufacturing processes, and applications of composite materials	
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Software Project Planning & Management	CSE613	CO1		
		CO2		
		CO3		
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HOD, Mechanical Engg.

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	Semester	Course Name	Course Code	Detail Of Course Outcomes	
		SRENGTH OF MATERIALS-I	ME201-19	CO1	Apply knowledge of mathematics, science for engineering applications
				CO2	Design and conduct experiments, as well as to analyze and interpret data
				CO3	Identify, formulate, and solve engineering problem
		APPLIED THERMODYNAMICS I	ME203_19& 204	CO1	Apply various laws of thermodynamics to various processes and real systems.
				CO2	Apply the concept of Entropy, Calculate heat, work and other important thermodynamic properties for various ideal gas processes
				CO3	Estimate performance of various Thermodynamic gas power cycles and gas refrigeration cycle and availability in each case
		Manufacturing Technology -I	ME205-19	CO1	Understand and analyze foundry practices like pattern making, mold making, Core making and Inspection of defects
				CO2	Understand different plastic molding processes, Extrusion of Plastic and Thermoforming •
				CO3	Understand different Welding and joining processes and its defects
		MECHANICS OF MACHINES I	ME206-19	CO1	Identify mechanisms in real life applications.
				CO2	Perform kinematic analysis of simple mechanisms.
				CO3	Determine moment of inertia of rigid bodies experimentally
1	3	Engineering Mathematics-III	MAT205	CO1	Solve higher order linear differential equations and apply to modeling and analyzing mass spring systems
				CO2	Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations
				CO3	Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems
		MACHINE DRAWING	ME207-19	CO1	Draw the machine elements including keys, couplings, cotters, riveted, bolted and welded joints
				CO2	Understand the representation of materials used in machine drawing.
				CO3	Construct an assembly drawing using part drawings of machine components
		SRENGTH OF MATERIALS-I (LAB)	ME209-19	CO1	Describe the behavior of materials upon normal external loads.
				CO2	Predict the behavior of the material under impact conditions.
				CO3	Recognize the mechanical behavior of materials
		Manufacturing Lab -1	ME211-19	CO1	Interpret foundry practices like pattern making, mold making, Core making and Inspection of defects.
				CO2	Understand the welding process, their compatibility, limitations and developments in them.
				CO3	Select appropriate Manufacturing Processing to manufacture any component.
		Applied Thermodynamics - I lab	ME213-19	CO1	Compute the property of fuels and lubricating oils using suitable tests.
				CO2	Demonstrate the performance of internal combustion engines and air compressors.
				CO3	Interpret the emission characteristics of internal combustion engines
		SRENGTH OF MATERIALS-II	ME202-19	CO1	Determine the resistance and deformation in members subjected to axial, flexural and torsional loads.
				CO2	Evaluate principal stresses, strains and apply the concept of failure theories for design
				CO3	Analyze and design thin, thick cylinders and springs.
		APPLIED THERMODYNAMICS II	ME204-19	CO1	Estimate thermodynamic properties of gas mixtures.
				CO2	Identify the models to estimate the properties of real gases.
				CO3	Analyse reactive and non-reactive gas mixtures using the concepts of statistical thermodynamics and kinetic theory of gases.
		Manufacturing Technology -II	ME208-19	CO1	Understand the basic concepts and properties of Material.
				CO2	Detect the defects in crystal and its effect on crystal properties.
				CO3	Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement
		Environmental Science	EVS101-	CO1	Measure environmental variables and interpret results.
				CO2	. Evaluate local, regional and global environmental topics related to resource use and management.
				CO3	Propose solutions to environmental problems related to resource use and management.
2	4			CO1	Understand the basic concepts and properties of Material

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Material Science and Metallurgy	ME210-19	CO2	Understand about material fundamental and processing.
		CO3	• Detect the defects in crystal and its effect on crystal properties.
Mechanics of Machine-I lab	ME212-19	CO1	Students will determine the follower displacement and also able to draw cam profile.
		CO2	Student will determine the braking torque value for brakes.
		CO3	Student will able to know about gears and gear trains.
Manufacturing Process II Lab	ME214-19	CO1	Illustrate the various sheet metal forming processes for a specific application.
		CO2	Explain the process of making patterns, preparation of sand mould, various special casting processes and casting defects.
		CO3	Describe various fusion, friction and special welding processes, soldering and brazing processes.
Material Science and Metallurgy Lab	ME216-19	CO1	Summarize the crystal structure for SC, BCC, FCC and HCP. s.
		CO2	Outline the microstructure for pure metals and alloy
		CO3	Observe the micro structure of heat treated steels
MECHANICS OF MACHINES- II	ME305-19	CO1	Evaluate gear tooth geometry and select appropriate gears for the required application
		CO2	Understand the gyroscopic effects in ships, aero planes and road vehicles.
		CO3	Analyze balancing problems in rotating and reciprocating machinery
Fluid Mechanics	ME301-19	CO1	Use of various properties in solving the problems in fluids
		CO2	Use of Bernoulli's equation for solutions in fluids
		CO3	Determination of forces drag and lift on immersed bodie
MACHINE DESIGN -I	ME303-19	CO1	Understand the customers' need, formulate the problem and draw the design specifications
		CO2	Understand component behavior subjected to loads and identify the failure criteria
		CO3	Design keys, cotters, couplings and joints including riveted, bolted and welded joints.
Human Values and Professional Ethics	SSC303-19	CO1	Learn the moral issues and problems in engineering; find the solution to those problems.
		CO2	Learn the need for professional ethics, codes of ethics and roles, concept of safety, risk assessment.
		CO3	Gain exposure to Environment Ethics & computer ethics; know their responsibilities and rights
Constitution of India	PIS303-19	CO1	Understand the emergence and evolution of Indian Constitution
		CO2	Understand the structure and composition of Indian Constitution
		CO3	Understand and analyse federalism in the Indian context
Fluid Mechanics LAB	ME309-19	CO1	Estimate the friction and measure the frictional losses in fluid flow.
		CO2	Experiment with flow measurement devices like venturimeter and orifice meter.
		CO3	Predict the coefficient of discharge for flow through pipes.
Industrial training undertaken after 4th SEM	ME307-19	CO1	To familiarize the students with management of industrial resources and production operations
		CO2	An ability to utilize technical resources.
		CO3	An ability to write technical documents and give oral presentations related to the work completed.
Automobile Engineering	ME315	CO1	Understand the basic lay-out of an automobile.
		CO2	Understand the operation of engine cooling, lubrication, ignition, electrical and air conditioning systems.
		CO3	Understand the principles of transmission, suspension, steering and braking systems
Envionmental Pollution and abatement	ME313-19	CO1	quantify and analyze the pollution load.
		CO2	2. analyze/design of suitable treatment for wastewater
		CO3	3. model the atmospheric dispersion of air pollutants

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		Mechanical Handling System and Equipment	ME315-19	CO1	To discuss the material handling equipments & their applications.
				CO2	To discuss the different components of material handling systems.
				CO3	To study the mechanism used in material handling equipment
4	6	HEAT TRANSFER	ME302	CO1	Understand the basic modes of heat transfe
				CO2	Compute temperature distribution in steady-state and unsteady-state heat conduction.
				CO3	Understand and analyse heat transfer through extended surfaces
		Machine Design-II	ME304-19	CO1	Understand the concepts of principal stresses, theories of failure, stress concentration and fatigue loading
				CO2	Design shafts, couplings and gears.
				CO3	Analyze the pressure distribution and design journal bearings.
		Computer Aided Design and Manufacturing	ME306-19	CO1	*Analyze factors* influencing network design
				CO2	Develop mathematical models to represent curves and surfaces.
				CO3	Model engineering components using solid modeling techniques.
		Industrial Metrology	ME308-19	CO1	Identify techniques to minimize the errors in measurement
				CO2	Identify methods and devices for measurement of length, angle, gear & thread parameters, surface roughness and geometric features of parts.
				CO3	Comprehend speed and feed mechanisms of machine tools.
		Heat Transfer Lab	ME310-19	CO1	Estimate heat transfer coefficient in forced convection.
				CO2	Estimate the effective thermal resistance in composite slabs and efficiency in pin
				CO3	Measure heat transfer coefficient in free convection and correlate with theoreticalvalues
		Industrial Metrology LAB	ME312-19	CO1	Recognize the errors associated with measuring instruments
				CO2	Calibrate gauges and measuring instruments
				CO3	Demonstrate the methods of measurement for various instruments and gauges.
		Design Software Lab	ME316-19		Sketch, construct and simulate the mechanical engineering parts and components which include shaft coupling, bearings, automobile parts, machine tool parts along wit their assembly drawing..
		TOTAL QUALITY MANAGEMENT	ME371	CO1	Develop an understanding on quality management philosophies and frameworks.
				CO2	Adopt TQM methodologies for continuous improvement of quality.
				CO3	Determine the set of indicators to evaluate performance excellence of an organization
		Production Planning and Control	ME373	CO1	Understand the role Production Planning and control activities in Manufacturing and Services
				CO2	Understand and perform various Inventory Management techniques and apply in real manufacturing scenario
				CO3	Demonstrate various Scheduling procedures
		FLUID MACHINERY	ME401-19	CO1	Analyze and design free surface and pipe flows
				CO2	Formulate and solve one dimensional compressible fluid flow problems
				CO3	Design the working proportions of hydraulic machines
		Fluid Machinery Lab	ME403-19	CO1	Undrstand the constructional features of reciprocating pump and to perform test on it for determination
				CO2	Conduct experiments on hydraulic turbines and pumps to draw characteristics.
				CO3	Test basic performance parameters of hydraulic turbines and pumps and execute the knowledge in real life situations.
		Minor Project Work	ME405-19	CO1	Identify real world problems of mechanical engineering and related systems.
				CO2	Interpret the working of mechanical engineering systems.

(Amrinder Singh) HoD, Mechanical Engg. Dr. Vijay [illegible] (Dean, [illegible])

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			CO3	Apply the principles of mechanical engineering in real world systems.
	Industrial Training	ME407-19	CO1	An ability to work in actual working environment.
			CO2	An ability to utilize technical resources.
			CO3	An ability to write technical documents and give oral presentations related to the work completed.
	MANAGEMENT OF SUPPLY CHAIN	ME411-19	CO1	Understand the decision phases and apply competitive & supply chain strategies.
			CO2	Understand drivers of supply chain performance.
			CO3	Analyze factors influencing network design
	Industrial Automation and Robotics	ME409-19	CO1	Enumerate principles, strategies and advantages of industrial automation
			CO2	Differentiate types of robots and robot grippers.
			CO3	Understand the basic components of robots.
	Introduction to Mechatronics	ME413-19	CO1	Describe mechatronic systems and overview of control systems & actuators.
			CO2	Differentiate between various sensors, transducers and actuators and their applications.
			CO3	. Relate various signal conditioning units, amplifiers, logic gates and their role in programmable logic controllers.
7	Finite element Method	ME415-19	CO1	Apply finite element method to solve problems in solid mechanics, fluid mechanics andheat transfer
			CO2	Formulate and solve problems in one dimensional structures including trusses, beams and frames.
			CO3	Formulate FE characteristic equations for two dimensional elements and analyze plain stress, plain strain, axi-symmetric and plate bending problems.
	Mechanical Vibrations	ME417-19	CO1	Understand the causes and effects of vibration in mechanical systems.
			CO2	Develop schematic models for physical systems and formulate governing equations of motion.
			CO3	Understand the role of damping, stiffness and inertia in mechanical systems
	Computational Fluid Dynamics	ME419-19	CO1	Develop mathematical models for flow phenomena.
			CO2	Analyze mathematical and computational methods for fluid flow and heat transfer simulations.
			CO3	Solve computational problems related to fluid flows and heat transfer
	Industrial Engineering Management	ME372-19	CO1	Student shall be able to describe basic concepts and theories within the area of industrial management
			CO2	Student shall be able to present organizationalanalysis,
			CO3	Student shallalso be able to use simple project planning technique
	Management Information SYSTEM	ME374-19	CO1	Relate the basic concepts and technologies used in the field of management information systems
			CO2	Compare the processes of developing and implementing information systems
			CO3	Outline the role of the ethical, social, and security issues of information systems.
	Material Management	ME471-19	CO1	Develop an ability to perform the role of a materials manager in an organization.
			CO2	Shall be able to manage the activities of materials manager like purchasing, inventory analysis, storage etc.in a scientific manner.
			CO3	3. Shall be able to improve due date performance through use of MRP techniques with in capacity constraints
	Maintenance and reliability engineering	ME473-19	CO1	Understand the maintenance function and its objectives and know how to prepare reportabout the maintenance function
			CO2	Gain the necessary knowledge about the types of maintenance and know how to use them when design maintenance systems
			CO3	Gain the necessary knowledge about failure distributions and apply failure analysis techniques
	Refrigeration and Air Conditioning	ME402-19		Understand the principles and applications of refrigeration systems
			CO2	Understand vapour compression refrigeration system and identify methods for performance improvement.
			CO3	Analyze air-conditioning processes using the principles of psychrometry
			CO1	Study of refrigerant compressors, expansion devices used in vapour compression refrigeration system, thermostat with range and differential setting, charging of refrigeration system

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		Refrigeration and Air Conditioning lab	ME404-19	CO2	Students should be able to operate and analyze the refrigeration and air conditioning system
				CO3	Students will demonstrate an understanding of heat transfer in buildings with a given architectural design and its application to heating and cooling load estimation
		Advanced Manufacturing Processes	ME408-19	CO1	Understand abrasive and electrical discharge machining processes
				CO2	Understand forming process for thin sections
				CO3	Understand the principles and applications of friction stir welding processes
		Non Destructive Evaluation and Testing	ME410-19	CO1	Be able to List and define different defects that occur in welding shown through Non-Destructive Examination/Destructive Testing
				CO2	Be able to identify the types of equipment used for each Non-Destructive and Destructive Examination.
				CO3	Be able to go to specific Code, Standard, or Specification related to each testing method
6	8	Technology of Surface Coating	ME412-19	CO1	Decide the surface preparation methods suitable for different substrate materials.
				CO2	Apply knowledge on properties offered by different Coatings based on the application requirement.
				CO3	Understand & interpret testing &evaluation of metallic coatings.
		Project Work	ME406-19	CO1	Students will acquire the ability to make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
				CO2	Students will acquire collaborative skills through working in a team to achieve common goals.
				CO3	Students will be able to learn on their own, reflect on their learning and take appropriate actions to improve it.
		Operation Management	ME472-19	CO1	Apply knowledge of fundamental concepts of operations management.
				CO2	Apply knowledge of approaches to operational performance improvement.
				CO3	Apply decision-support tools to business decision making.
		Industrial Safety	ME474-19	CO1	Enumerate the importance of industrial safety.
				CO2	Indicate unsafe acts and conditions causing accidents.
				CO3	Outline accident investigation and analysis.
		IC ENGINE	ME476-19	CO1	Differentiate the internal combustion engines based on the classification parameters.
				CO2	Explain different types of fuel injection system and combustion chambers of CI engine
				CO3	Discuss various ignition methods used in I.C engine
		Power Plant Engineer	ME478-19	CO1	Summarize the layout and components in a power plant.
				CO2	2. Enumerate and classify the types of power plants available.
				CO3	3. Recognize the steam cycles on pressure - volume and temperature diagram

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