

- predict effect of temperature on stress and strain.
- estimate of failure strength of composite material.

3ME3202

Fracture Mechanics

[3 0 0 3]

Course Learning Outcome

After successful completion of the course, student will be able to

- predict material failure for any combination of applied stresses.
- estimate failure conditions of a structure.
- determine the stress intensity factor for components of simple geometry
- predict the likelihood of failure of a structure containing a defect

3ME3216

Pressure Vessel and Piping Design

[3 0 0 3]

Course Learning Outcome

After successful completion of the course, student will be able to

- understand fundamentals of pressure vessel and piping design.
- get acquainted with the existing codes (ASME section VIII) for piping and vessel design.
- design and analyze pressure vessels for internal as well as external pressure.
- design various components of pressure vessel subjected to fluctuating load

3ME3226

Nonlinear Vibration and Chaos

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- understand basic theoretical concepts of nonlinear dynamics to analyze practical problems encountered in engineering practice involving nonlinearities.
- understand experimental observations that cannot be interpreted with classical linear vibration theory.
- interpret the vibratory responses of nonlinear systems through experiments.

3ME4116

Product Life Cycle Management

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- appreciate the importance of design activities in product development.
- discuss economic factors and human engineering consideration in product design.
- integrate the concept of value engineering in product design.
- create importance of concurrent engineering in product life cycle management.

3ME4126

Design of Machine Tools

[3 0 0 3]

Course Learning Outcome

After successful completion of the course, student will be able to

- design the components of machine tool like spindle, bed, column.
- select the configuration of gearing system for required application.
- apply the concepts of ergonomics and dynamics for the machine tools

3ME4136

Analysis of Manufacturing Processes

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- evaluate and select casting and welding processes by considering the related parameters for specified component.
- evaluate and select machining and metal forming processes by considering the related parameters for specified component.
- devise a mathematical model for various manufacturing processes.

- select and apply modern engineering tools and techniques for analysis of manufacturing processes.

3ME4146 Tooling Design [3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- understand principles of jig, fixture and gauge design
- implement design aspects for practical applications
- develop tooling for press work using appropriate software.
- compute and analyze principles of plastic molding tools and design.

3ME4215 Supply Chain Management [3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- understand the concept of supply chain management.
- evaluate different supply chain strategies for a given situation.
- decide the appropriate demand forecasting method.
- interpret the need of appropriate production planning and inventory control policies in a supply chain.

3ME4225 Mechatronics [3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- acquire knowledge of mechatronics system
- understand functionality of various components used in mechatronics system
- select the sensors,actuators and controllers for given application
- design and analyze mechatronics system

3ME4235 Theory of Plasticity [3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- explain effect of various factors on stress strain behavior of metals beyond yield point
- analyze elasto-plastic behavior of metals under different states of stresses
- formulate the industrial problems related to deformation
- apply different analytical methods to solve plastic deformation problems

3ME4245 Micro Electro Mechanical Systems [3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- understands applications and directions of Micro electro mechanical system(MEMS).
- understand different sensing and actuation methods of MEMS.
- study fabrication methods of microstructure.
- study applications of polymer in MEMS and optical MEMS

3ME2115 Refrigeration Engineering [3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- analyse vapor compression and absorption refrigeration systems and related components.

- analyse air cycle and alternate refrigeration systems such as steam jet and thermo-electric refrigeration.
- comprehend the design for various applications of refrigeration such as food preservation, transport and cold storages.

3ME2125

SI Engines

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to:

- apply knowledge of reaction chemistry of air fuel mixture for combustion processes.
- computes properties of mixture of air, fuel and residual burnt gases in I C engines.
- comprehend the gas exchange and fuel metering systems of IC Engines.
- analyze the combustion phenomena in SI engine
- evaluate usage of various alternate fuels for SI engine.

3ME2135

Design of Thermal Turbo Machine

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- evaluate the design of thermal turbo machines alongwith applications of energy transfer principles.
- apply the thermal design principles to steam turbines.
- analyse the forces and energy losses in two dimensional cascade systems.
- evaluate the working principles of axial flow turbomachines.
- analyse combined cycle power plants.

3ME2145

Energy Conservation and Audit

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- appreciate the overall energy scenario of country and the world.
- comprehend and apply energy management concepts.
- understand preliminary energy audit and detailed energy audit process.
- analyze various energy conservation techniques to assess performances of various power consuming equipments.

3ME2155

Instrumentation for Engineers

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- analyse the basic concepts involved in the design of measuring instruments and transducers.
- model measuring systems mathematically and conduct error analysis for estimating the experimental uncertainties in measurement
- analyse the principles of data acquisition systems and working of various instruments involved measurement of flow, temperature and heat flux.

3ME2215

Air Conditioning Engineering

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- understand the principle of applied psychrometry and thermal comfort in air conditioning systems.
- analyse and estimate the cooling load for air conditioning application.
- design the air distribution and air handling systems.
- analyse the working and performance of various air conditioning systems, cooling towers and evaporative cooler.
- analyse noise in air conditioning systems and its control methods

3ME2225

CI Engine

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- analyze concepts of ideal cycle and fuel air cycle.
- comprehend fundamental concepts of motion of charge inside cylinder and parameters involved.
- analyze combustion phenomena in CI engine.
- apply concepts of simulation to CI engine.

3ME2235

Heat Exchanger Network Synthesis

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- analyse and review the basic underlying concepts related to synthesis of heat exchanger networking.
- apply the concept of pinch technology for networking of heat exchangers.
- evaluate heat exchanger networks and retrofitting

3ME2245

Combustion

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- analyze air fuel chemical reactions fundamentals.
- comprehend various thermal and chemical reaction systems.
- understand transport equations involved in combustion phenomena.
- analyze various types of combustion phenomena.
- analyze and compare emissions based on premixed and non premixed combustion and its control technique.

3ME2255

Thermal Insulation and Design

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to

- understand role of thermal insulation in energy conservation
- comprehend classification, characteristics, properties and testing of thermal insulation
- apply heat transfer fundamentals to thermal insulation systems
- analyze selection, design and optimization of thermal insulation
- evaluate energy saving using thermal insulation through case studies

3ME2265

Microscale Energy Transport

[3 0 0 3]

Course Learning Outcome:

After successful completion of the course, student will be able to:

- appreciate the macroscopic and microscopic concepts involved in energy transport
- comprehend the mechanisms of energy transport phenomena at microscopic level
- apply the microscopic transport concepts to describe energy transport in modern small-scale materials and devices.