

MECHANICAL ENGINEERING TECHNOLOGY

- MCET 102 MACHINES LABORATORY -1 semester hour** **F, Sp**
Basic hand tools, shop safety procedures; fundamental machine operations of drilling, sawing, milling, turning; inspection tools, gauges, measuring instruments.
Prerequisite: None
- MCET 200 STATICS - 3 semester hours** **F**
Force systems, resultants, and equilibrium; trusses, method of joints, method of sections; friction; centroids, moments of inertia.
Prerequisites: MATH 121, ENGT 100
Corequisite: PHYS 116
- MCET 201 STRENGTH OF MATERIALS - 3 semester hours** **Sp**
Stress and deformation; axial, tensile and compressive stresses, torsion; shear and moment in beams; stresses in beams; and design of beams. Use of computers in beam design is included.
Prerequisite: MCET 200 Statics
- MCET 202 STRENGTH OF MATERIALS LAB -1 semester hour** **Sp**
Tensile, compressive, torsional, bending, impact, hardness, and fatigue tests of materials; use of electrical resistance strain gages; statistical evaluation of data.
Prerequisites: MCET 200 s; MCET 102 Machines Lab
Corequisite: MCET 201 Strength of Materials
- MCET 301 INTRODUCTION TO THERMODYNAMICS - 3 semester hours** **Sp**
An introduction to fundamentals of thermodynamics; including work and heat; first and second laws; properties of gases, gas mixtures; compression and expansion of gas steam tables are covered.
Prerequisites: MATH 200 Calculus I
- MCET 305 MANUFACTURING MATERIALS AND PROCESSES - 3 semester hours**
Sp
The study of the physical and mechanical properties of various materials as applied to design, processing, and fabrication methods.
Corequisite: CHEM 101/103
- MCET 306 MACHINE DESIGN I - 3 semester hours** **F**
The design of basic elements used in machines, including machine columns, welds, rivets, screws, springs, flexible couplings, belt and chain drives. Design for fatigue strength is included.
Prerequisites: MCET 201 Strength of Materials; DRFT 261 Computer Aided Drafting; MATH 200 Calculus I
- MCET 307 KINEMATICS OF MACHINES - 3 semester hours** **F, Sp**
The study of techniques for the analysis of displacement, velocity, and acceleration of machine elements; emphasis on graphical kinematics of linkages; introduction to cams.
Prerequisites: DRFT 261 Computer Aided Drafting; MCET 311 Dynamics
- MCET 311 DYNAMICS - 3 semester hours** **F**
The kinematics and kinetics of particles and rigid bodies; rectilinear and curvilinear motion, work, energy, impulse and momentum. Use of computers for problem solving is included.
Prerequisites: MCET 200 Statics; MATH 201 Calculus II; PHYS 116 General College Physics I
- MCET 313 FLUID MECHANICS - 3 semester hours** **F**
Properties of fluids; fluid statics and dynamics, including momentum, energy, Bernoulli's equation, fluid flow in pipes, fluid machinery, and open channels: study of the siphon, pitot tube, venturi meter, orifices, nozzles, diffusers, weirs, etc.
Prerequisites: MCET 200 Statics; MATH 200 Calculus I
- MCET 314 FLUID MECHANICS LABORATORY - 1 semester hour** **F**
Laboratory demonstrations, experiments, and exercises dealing with the verification of fluid equations, and principles and characteristics of fluid machinery.
Corequisite: MCET 313 Fluid Mechanics
- MCET 401 APPLIED THERMODYNAMICS - 3 semester hours** **F**

Study of thermodynamic cycles; includes Carnot, Rankine, Sterling and Application of thermodynamic principles to turbines and compressors.

Prerequisites: MCET 301 Introduction to Thermodynamics; MATH 201 Calculus II

MCET 403 QUALITY CONTROL - 3 semester hours

F, Sp

A study of the principles and techniques of quality control and its applications to industrial processes. Topics include: An overview of Total Quality Management (TQM), statistics, process control charts, and probability. The relationship between process capability and product specifications is analyzed.

Prerequisite: ENGT 105

MCET 404 ENERGY LABORATORY - 1 semester hour

F

A study of heat transfer equipment; shell and tube heat exchangers, energy conversion from chemical to mechanical energy; calorimeters; internal combustion engines (diesel and Otto cycles).

Corequisite: MCET 401

MCET 406 MACHINE DESIGN II - 3 semester hours

F, Sp

A further development of the principles and techniques of machine element design with particular regard to gears, axles and shafts, bearings, clutches, brakes, gaskets and seals. Design projects are included.

Prerequisite: MCET 306

MCET 415 INSTRUMENTATION AND CONTROLS - 3 semester

Sp

A study of the basic concepts and principles associated with the operation and use of sensors and instruments for the measurement and for the control of various properties (temperature, pressure, liquid level, fluid flow, etc); accuracy and reliability of instruments and their role in control systems.

Prerequisites: ELET 410 Introduction to Electricity and Electronics

MCET 416 MEASUREMENTS LABORATORY - 1 semester hour

Sp

Experiments are conducted to reinforce and expand on concepts learned in MCET 415 lecture course; emphasis is on electrical and electronic devices used in mechanical measurements; included as various types of transducers, bridge circuits, and operational amplifiers.

Corequisite: MCET 415 Instrumentation and Controls

MCET 420 SENIOR PROJECT - 1 to 4 semester hours

F, Sp

Student will design a project to illustrate basic knowledge and skills in one phase of his major field. In many cases a prototype will be built and tested.

Prerequisite: Senior standing in MET curriculum. (All 300 level courses in the MET Program successfully)

MCET 421 HYDRAULICS AND PNEUMATICS - 3 semester hours

Sp

Fundamentals of hydraulic and pneumatic system design and troubleshooting; topics include circuit diagrams, valves, rotary activators, cylinders, pumps, piping and fitting losses.

Prerequisite: MCET 313

MCET 422 HYDRAULICS AND PNEUMATICS LAB - 1 semester hour

Sp

Selected design problems and projects dealing with principles and methods discussed in MCET 421. Preparation of circuit diagrams, flow charts, and detailed designs; circuits are set up and analyzed.

Corequisite: MCET 421

MCET 441 HEAT TRANSFER - 3 semester hours

F, Sp

A course on the fundamental principles of heat transfer with a broad range of engineering applications. The classic modes of heat transfer, steady state and transient conduction, natural and forced convection, and radiation, will be emphasized. Both numerical and analytical solutions are discussed and illustrated. Application to problems associated with both mechanical and electronic engineering will be demonstrated through problems such as those related to the heating and cooling of buildings and the cooling of electronic equipment.

Prerequisite: Math 201 and Permission of instructor

MCET 499 SPECIAL TOPICS IN ENGINEERING TECHNOLOGY - 3 semester hours

F, Sp

A course or independent study covering some topic in Engineering Technology as technical elective. Goal is to enhance student skill and knowledge in relevant topic.

Prerequisite: Permission of instructor

