

# MECHANICAL ENGINEERING AND RELATED TECHNOLOGY (MERT)

## MERT 12000 ENGINEERING DRAWING 3 Credit Hours

Engineering drawing principles and techniques: orthographic projection, sketching, sections, auxiliary views, dimensioning and conventional practices.

**Prerequisite:** None.

**Schedule Type:** Laboratory, Lecture, Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** CTAG Engineering Graphics

## MERT 12001 COMPUTER-AIDED DESIGN 3 Credit Hours

Introduces 3D modeling techniques to design and draft mechanical components and assemblies.

**Prerequisite:** Minimum C grade in MERT 12000.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** CTAG Mechanical Engineering Technology, ITAG Mechanical Engineering Technology, TAG Engineering Technology

## MERT 12004 MANUFACTURING PROCESSES 3 Credit Hours

Introduces students to the various manufacturing processes such as extrusion, molding, forging, casting, stamping, piercing, joining and finishing. Investigates the various ways parts are made from the vast array of materials available.

**Prerequisite:** None.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** CTAG Mechanical Engineering Technology, TAG Engineering Technology

## MERT 12005 PROPERTIES OF MATERIALS 3 Credit Hours

Covers the structure and physical and mechanical properties of engineering materials, such as metals (ferrous and non-ferrous), polymers, ceramics and composites. Students learn the mechanical behavior of materials under different types of loading and testing of mechanical properties including elasticity, yield strength, ultimate tensile strength, shear strength, bending strength and hardness. Heat treatment and the effects of the manufacturing processes on the material properties are also considered.

**Prerequisite:** None.

**Schedule Type:** Laboratory, Lecture, Combined Lecture and Lab

**Contact Hours:** 2 lecture, 2 lab

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

## MERT 21096 INDIVIDUAL INVESTIGATION IN MECHANICAL ENGINEERING TECHNOLOGY 1-4 Credit Hours

(Repeatable for credit) Independent in depth research of a mechanical engineering technology topic supervised and coordinated by an engineering technology faculty member.

**Prerequisite:** Permission.

**Schedule Type:** Individual Investigation

**Contact Hours:** 1-4 other

**Grade Mode:** Standard Letter

## MERT 22003 COMPUTER-AIDED TOOL DESIGN 3 Credit Hours

Tool design practices and procedures including materials, commercial standards, cutting tools, drill jigs, fixtures, dies and gauges using computer-aided design.

**Prerequisite:** MERT 12001.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## MERT 22005 STATICS 3 Credit Hours

Basic vector mechanics, calculation of reactions from applied forces, drawing free body diagrams, working with equations of equilibrium, analysis of simple structures, calculating mass properties and forces due to friction.

**Prerequisite:** None.

**Corequisite:** MATH 11022.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

## MERT 22007 STRENGTH OF MATERIALS 3 Credit Hours

Covers taking the stresses induced into members due to applied loading, and coupled with mass properties of the sections, designing members to safely carry the loads. Types of stresses considered are tensile, compressive, shear, bending, torsional and combined.

**Prerequisite:** MERT 22005.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

## MERT 22012 FLUID POWER 3 Credit Hours

Fluid properties, kinematics of fluid flow, momentum, viscosity, conservation of energy in fluid flow, industrial hydraulics and gas laws.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** TAG Engineering Technology

## MERT 22095 SPECIAL TOPICS IN MECHANICAL ENGINEERING TECHNOLOGY 1-3 Credit Hours

(Repeatable for credit) Special topics in mechanical engineering technology.

**Prerequisite:** Permission.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

## MERT 32004 MACHINE DESIGN 3 Credit Hours

This course provides the concepts, procedures, data, and decision analysis techniques necessary to design machine elements commonly found in mechanical devices and systems.

**Prerequisite:** MERT 12001 and MERT 22007.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**MERT 34002 ADVANCED SOLID MODELING 3 Credit Hours**

Advance parametric solid modeling using advanced software (CREO) to create and analyze solid models. Includes model creation using advance features, introduction to FEA simulation, and manufacturing simulations.

**Prerequisite:** MERT 12001.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**MERT 42000 THERMODYNAMICS FOR ENGINEERING TECHNOLOGY  
3 Credit Hours**

Includes the study of the first and second laws of thermodynamics with a detailed study of various types of heat engines. Additional topics include principles of heat transfer and energy management.

**Prerequisite:** PHY 13001 and PHY 13002 or PHY 13012.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter