

MECHANICAL ENGINEERING TECHNOLOGY (ETME)

ETME 2305. Engineering Analysis Methods. 3 Hours. [TCCN: MATH 2414]

Students learn modeling and analysis of engineering systems that contain mechanical, electrical, thermal, and fluid components. Both steady and dynamic state models involving applications of analysis tools such as integration, differentiation, matrices, and statistics will be introduced.

Prerequisite: ETEC 1010 and MATH 1420.

ETME 3376. Engineering Dynamics. 3 Hours.

Students learn engineering mechanics regarding the motion of bodies under the action of forces. Topics may include kinematics, force-momentum formulation for systems of particles and rigid bodies in planar motion, work-energy concepts, virtual displacements and virtual work, Lagrange's equations for systems of particles, linearization of equations of motion, and free and forced vibration in mechanical systems.

Prerequisite: MATH 1420, PHYS 1301, and PHYS 1101.

ETME 3378. Applied Fluid Mechanics. 3 Hours.

Students learn principles of fluid mechanics, including both statics and dynamics, and their application to engineering systems. Topics may include properties of fluids, viscosity of fluids, pressure measurement, forces due to static fluid, buoyancy and stability, the Bernoulli equation, Reynolds number, various pipeline systems, selection and application of pumps, and flow measurements.

Prerequisite: ETME 2305 and PHYS 1411.

ETME 4376. Applied Thermodynamics. 3 Hours.

Students learn the fundamentals of gas concepts, gas measuring devices, and calibration of measuring instruments. Topics may include vapor and gas cycles, ideal gas mixtures, reading of psychrometric charts, determining fuel combustion efficiency of a steam generating system, and measuring or analyzing humid air and steam conditions including heat content. Concepts of Rankine cycle as the basis for steam and heat engine operations will also be discussed.

Prerequisite: ETME 3378.

ETME 4385. Mechanical Design. 3 Hours.

Students learn advanced modeling, design, and integration of machine elements such as bearings, springs, gears, and cams. Hands-on laboratory experiences and design projects are part of the class wherein students disassemble machines, model, design, build, and test mechanical systems that are relevant to industrial applications.

Prerequisite: ETDD 1361, ETME 2305, and ETME 3376.