ENGR 2214: Engineering Mechanics - Statics

3 Credit Hours

Prerequisite: PHYS 2211, and PHYS 2211L

This course studies the force vectors, equilibrium of particles, equilibrium of rigid bodies in two and three dimensions; trusses, friction, centroids and moments of inertia.

ENGR 2500: Solid Mechanics & Materials

4 Credit Hours

Prerequisite: See advisor for prerequisite.

This course is made of two distinct parts. The first part of the course is a study of stress and strain of deformable bodies in tension, compression, bending, and torsion. Topics covered include: axial stress and strain; thermal stress and strain; statically indeterminate systems; torsional stress and strain; bending stresses in beams; beam deflections; combined stresses; and finite element analysis methods. The second part of the course is a study of metals and alloys, ceramics, polymers, and composites as related to design. Areas include corrosion, atomic structure, mechanical properties, fatigue, and the effects of alloying, hot- and cold-working and heat treating. The lab work includes tensile testing, heat treating, impact testing, hardness testing, and corrosion.

ENGR 3122: Engineering Mechanics - Dynamics

3 Credit Hours

Prerequisite: ENGR 2214 and MATH 2202

A study of the mechanics of particles and rigid bodies. Topics covered include: kinematics and kinetics of particles; work and kinetic energy; impulse and momentum; rigid body motions; relative motion; and moving coordinate systems.

ENGR 3125: Machine Dynamics and Vibrations

3 Credit Hours

Prerequisite: (ME 1311 or (CSE 1321 and CSE 1321L)) and ENGR 3122 and Engineering Standing

The analysis of motion, velocity, acceleration, and forces in mechanisms and machines. Emphasis is placed on the analytical methods suitable for computerized analysis as well as graphical methods for visualization and preliminary design studies. Also an introduction to vibration theory, including the modeling and analysis of oscillatory phenomena found in linear discrete and continuous mechanical systems.