MECHANICAL ENGINEERING (MECH)

Mechanical Engineering Undergraduate Courses

MECH 130 INTRODUCTION TO CAD (3 credits)
Principles and accepted practices of geometric design. Computer generation of 2D and 3D models for mechanical systems. Introduction to engineering design practices such as specifications, dimensioning and tolerancing.

MECH 200 ENGINEERING THERMODYNAMICS (3 credits)
First and Second Laws of Thermodynamics, properties of gases and vapors, and cycles. Sources of energy and its conversion to work.
Prerequisite(s): MECH 223. Not open to non-degree graduate students.

MECH 220 STATICS (3 credits)
Fundamental concepts, equilibrium of force systems, analysis of simple frames and trusses. Centroid and moments of inertia and friction.
Prerequisite(s): MATH 1950

MECH 223 ENGINEERING STATICS (3 credits)
The action of forces on engineering structures and machines. Force systems, static equilibrium of frames and machines. Friction, center of gravity, moment of inertia, vector algebra.
Prerequisite(s): MATH 1960 with grade of C or better and PHYS 2110 with grade of C or better

MECH 324 STRENGTH OF MATERIALS (3 credits)
Stress and strain analysis in elastic materials. Use of properties of materials in the analysis and design of welded and riveted connections, statically determinate and indeterminate flexure members, columns. Combined stresses, axial, eccentric and torsional loading. Observations of laboratory tests for axially loaded specimens. Introduction to shear and moment diagrams.
Prerequisite(s): MECH 220

MECH 325 MECHANICS OF ELASTIC BODIES (3 credits)
Concept of stress and strain considering axial, torsional and bending forces. Shear and moments. Introduction to combined stresses and column theory.
Prerequisite(s): MECH 223 (grade of C or better), and MATH 1970

MECH 373 ENGINEERING DYNAMICS (3 credits)
A study of force action related to displacement, velocity and acceleration of rigid bodies. Kinematics of plane motion, kinetics of translation and rotation. Mass moment of inertia, vibration, work, energy and power, impulse and momentum.
Prerequisite(s): MECH 223 (grade of C or better), and MATH 1970

MECH 399 UNDERGRADUATE RESEARCH AND THESIS (1-5 credits)
Engineering design or laboratory investigation that an undergraduate is qualified to undertake.
Prerequisite(s): Not open to non-degree graduate students.

MECH 491 SPECIAL TOPICS IN ENGINEERING MECHANICS (1-6 credits)
Treatment of special topics in engineering mechanics by experimental, computational and/or theoretical methods. Topics will vary from term to term. (Cross-listed with MECH 891).

MECH 498 RESEARCH (0-6 credits)
Faculty-supervised research. (Cross-listed with MECH 898).

MECH 891 SPECIAL TOPICS IN ENGINEERING MECHANICS (1-6 credits)
Treatment of special topics in engineering mechanics by experimental, computational and/or theoretical methods. Topics will vary from term to term. (Cross-listed with MECH 491).

MECH 898 RESEARCH (0-6 credits)
Faculty-supervised research. (Cross-listed with MECH 498).

MECH 999 DOCTORAL DISSERTATION (1-24 credits)
Doctoral dissertation
Prerequisite(s): Admission to doctoral degree program and permission of supervisory committee chair.