

MEEG: MECHANICAL ENGINEERING (MEEG)

MEEG 205. Statics. (3 Credits)

The theory and application of engineering vector mechanics to the design and analysis of rigid structures. Application of the principle of equilibrium to particles, rigid bodies, and simple structures are included. Friction, distributed forces, center of gravity, centroids, and moment of inertia are introduced. U.S. engineering and metric systems of units and applications are used. Prerequisite: PHYS 112 Physics I. Co-requisite: MATH 261 Calculus II.

MEEG 210. Dynamics. (3 Credits)

Kinematics of particles and rigid bodies. Rectilinear motion, Curvilinear motion, Coordinates systems, velocity, acceleration, relative motion. Newton's second law. Kinetics of particles, Angular momentum, Work-energy methods, Impulse and momentum. Vector mathematics where appropriate. Prerequisite: MATH 261 Calculus II and MEEG 205 Statics.

MEEG 225. Thermodynamics. (3 Credits)

Fundamental concepts of thermodynamics in which first and second law of thermodynamics are studied. Topics include properties of a simple pure substance, equations of state, work and heat; chemical reactions, internal energy, specific heats, enthalpy, and the application work and heat to a system or a control volume, entropy and equilibrium, and power cycles. Prerequisite: PHYS 112 Physics I. Co-requisite: MATH 261 Calculus II.

MEEG 305. Mechanics of Deformable. (3 Credits)

Introduction to analysis of deformable bodies solids. Topics include stress, strain, stress-strain relations, torsion, beam bending and shearing stresses, stress transformations, beam deflections, statically indeterminate problems, energy methods, column buckling; fatigue; failure theory; analysis and design of bar-type members.

MEEG 306. Solid Mechanics Lab. (1 Credit)

Experimental studies on several engineering fundamentals of material behavior under mechanical loads. Topics include testing materials for tensile, compression, bending and torsional loads, hardness, fatigue, and fracture toughness.

MEEG 325. Fluid Mechanics. (3 Credits)

Introduction to the concepts and applications of fluid mechanics and dimensional analysis. Topics include, fluid properties, fluid statics, Bernoulli and Navier-Stokes equations, layer theory, internal and external flows, friction factors in pipes and packed beds, drag coefficients; compressible flow; flow measurements, and turbo machinery.

MEEG 335. Heat Transfer. (3 Credits)

Introduction to the principal concepts and methods of heat transfer. Topics includes steady and transient conduction in one- two- and three dimension, external and internal laminar and turbulent convection, radiation. Application of heat transfer in designing heat exchangers, fins, electronic packages will be discussed.

MEEG 336. Thermal Science Lab. (1 Credit)

Introduction to the principal concepts and methods of heat transfer. Topics includes steady and transient conduction in one- two- and three dimension, external and internal laminar and turbulent convection, radiation. Application of heat transfer in designing heat exchangers, fins, electronic packages will be discussed.

MEEG 405. Machine Design. (3 Credits)

Fundamentals of mechanical design process and Basic principles of applied mechanics and materials employed for the design of machine elements and mechanical systems. Design and application of machine components such as brakes, belt drives, gears, mechanisms, bearings, ways, sleeves, and bushings.

MEEG 406. Machine Design Lab. (1 Credit)

Fundamental of planar mechanisms design and analysis and simulation. The laboratory experience provides open-ended projects to reinforce the design process.

MEEG 410. Computer Aided Engineering. (3 Credits)

Introduction to the use of modern computational tools used for design and analysis. Emphasis is placed on product design with solid modeling and finite-element analysis. Software such as NX/NASTRAN, ANSYS, and MATLAB that are representative of that found in industry.

MEEG 425. Thermal System Design. (3 Credits)

Faculty supervised projects typical of problems which graduates encounter in their professions and which involve costs, planning, scheduling and research. Formal written reports suitable for reference library that include discussions of methodology, results, and conclusions.

MEEG 455. Systems and Controls. (3 Credits)

An introduction to linear systems, transfer functions, and Laplace transforms. It covers stability and feedback, and provides basic design tools for specifications of transient response and frequency-domain techniques.

MEEG 461. Senior Project I. (2 Credits)

Faculty supervised projects typical of problems which graduates encounter in their professions and which involve costs, planning, scheduling and research. Formal written reports suitable for reference library that include discussions of methodology, results, and conclusions.

MEEG 462. Senior Project II. (2 Credits)

Faculty supervised projects typical of problems which graduates encounter in their professions and which involve costs, planning, scheduling and research. Formal written reports suitable for reference library that include discussions of methodology, results, and conclusions.