GEOMETRIC DIMENSIONING AND TOLERANCING

ENGR 150

Basics of geometric dimensioning and tolerancing: what it is and why use it, GDT symbols and their use, maximum and least material conditions, datums, and geometric characteristics. AutoCAD will be used to dimension drawings using GDT. [SE]
FUNDAMENTALS OF FLIGHT
ENGR 208  3 Credits/Units
22 hours of lecture / 22 hours of lab
Prerequisite: Concurrent enrollment in or completion of ENGR 107, ENGR 150, and MATH 151 with a grade of "C" or better in all courses. Introduction to the fundamentals of the flight of air and space craft. Topics include review of basic fluid flow and aerodynamics, circulation theory of lift, finite wings, aerodynamic performance, stability and control, propulsion, and space flight. The course includes a team design project.

INTRODUCTION TO GAS DYNAMICS
ENGR 209  3 Credits/Units
22 hours of lecture / 22 hours of lab
Prerequisite: Completion of with a grade of "C" or concurrent enrollment in ENGR 207, and MATH 152. Introduction to compressible flow as applied to aerodynamics of aerospace systems. Topics include review of foundational principles, control volume analysis, compressible flow, normal and oblique shocks, Prandtl-Meyer flow, and overview of Fanno and Reyleigh flow. The course includes a team design project.

STATICS
ENGR214  5 Credits/Units
55 hours of lecture
Prerequisite: MATH 152 (or MATH 211). Solution of two and three dimensional vector systems using vector algebra notation and free-body diagrams. Friction, centroids, moment of inertia, radius of gyration, and loads involved in structures, machines, and trusses. [SE]

DYNAMICS
ENGR215  5 Credits/Units
55 hours of lecture
Prerequisite: ENGR 214 and MATH 152 or (ENGR 211 and MATH 211). Kinematics and kinetics of particles, systems of particles and rigid bodies. Force/acceleration, work/energy and impulse/momentum problem solving techniques will be applied to two and three dimensional systems. [SE]

INTEGRATED COMPUTATIONAL DESIGN
ENGR 216  3 Credits/Units
11 hours of lecture / 44 hours of lab
Prerequisite: Completion of or concurrent enrollment in ENGR 150, and ENGR 214. Use computational SolidWorks Simulation CADD applications in the design and analysis of engineering problems. Also, integrated surface/solid modeling techniques, motion analysis, and use of CADD in documentation of designs and analyses.

MATERIALS SCIENCE
ENGR 221  5 Credits/Units
55 hours of lecture
Prerequisite: CHEM 142 (or CHEM 132). Basic structure and properties of materials. Phase equilibrium and transformations. Mechanical properties, electronic structure, thermal, electrical, and magnetic properties. [SE]
SIGNALS AND SYSTEMS
ENGR 253 5 Credits/Units
44 hours of lecture / 33 hours of lab
**Prerequisite:** ENGR 252.
Concepts and applications in signal processing and linear system theory.
Utilization of Fourier Analysis in both continuous and discrete time signals and systems. Role of sampling and the process of reconstructing a continuous-time signal from its samples and basics of communication systems. Application of Laplace transform and Z-transform. [SE]

DIGITAL SYSTEMS AND MICROPROCESSORS
ENGR 270 5 Credits/Units
44 hours of lecture / 33 hours of lab
**Prerequisite:** A grade of "C" or better in ENGR 250 and CSE 121, or consent of Instructional Unit.
Continuation of the Digital Design sequence. Covering synchronous/asynchronous state machines, shift registers, arithmetic circuits and devices, microprocessor internal and system architecture, design and subsystem interfacing, assembly language, and programmable logic devices, design for test, documentation standards, and use of computer-based tools. [SE]

SELECTED TOPICS
ENGR 280 5 Credits/Units
55 hours of lecture
The course focuses on selected topics in Engineering. Topics vary, and course theme and content change to reflect new topics. Because the course varies in content, it is repeatable for credit for different topics. [SE]

SPECIAL PROJECTS
ENGR 290 6 Credits/Units
**Prerequisite:** Consent of Instructional Unit.
Opportunity to plan, organize and complete special projects approved by the department. [GE]