

# ENGINEERING SCIENCES (EGR)

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## **EGR-1500 Introduction to Engineering and Design I (2 semester hours)**

This course introduces students to the interpersonal and professional skills that engineers use daily to design solutions to meet societal needs. The engineer's impact on society will be explored by studying design process understanding, implementing project management and team building, discussing decision making and ethics, and presenting information. Innovative design solutions will drive technical reports and oral presentations.

## **EGR-2500 Introduction to Engineering and Design II (2 semester hours)**

Students in this course develop an understanding of engineering design by developing ideas and solutions to relevant real-world opportunities. With team building, project management skills, and coursework fundamentals, students apply their knowledge of the design cycle and working within constraints using available tools.

**Prerequisite(s):** EGR-1500.

**Co/prerequisite(s):** MTH-1100.

## **EGR-2600 Statics (4 semester hours)**

Statics is the study of forces acting on physical systems where the systems do not experience an acceleration. This course will cover forces, moments, couples and resultants; construction of free body diagrams; equilibrium in 2- and 3- dimensions; structures; distributed forces; shear and bending moment diagrams and friction.

**Prerequisite(s):** MTH-2210.

**Corequisite(s):** PHY-2240.

## **EGR-2700 Dynamics (4 semester hours)**

This course focuses on the motion of particles and particle systems, mass center and moments of inertia, planar kinematics and kinetics of rigid bodies, energy and momentum methods for rigid body systems. These topics are studied using vector algebra, matrix algebra, free body diagrams for 2- and 3-dimensional systems in rigid motion.

**Prerequisite(s):** EGR-2600.

## **EGR-3100 Circuits (4 semester hours)**

Introduction to basic electrical circuits and electronics. Includes Kirchhoff's law, phasor analysis, circuit elements, operational amplifiers and transistor circuits.

**Prerequisite(s):** MTH-2220; PHY-2250.

## **EGR-3200 Thermodynamics (4 semester hours)**

Thermodynamic is the study of energy transformations involving work and heat. This course includes the first and second laws, reversible and irreversible processes and application to engineering problems.

**Prerequisite(s):** MTH-2230; PHY-2250.

## **EGR-3300 Fluid Mechanics (4 semester hours)**

This course is an introduction to the basic properties of Fluid Mechanics including conservation of mass, momentum and energy. Topics include vorticity, viscous fluid flows, channel flow and boundary layers.

**Prerequisite(s):** MTH-3300.

## **EGR-4990 Engineering Capstone I (4 semester hours)**

Students work in teams for two semesters on a design project proposed by an industry/corporate partner. The design projects will be presented at the end of spring quarter to a panel of faculty and industry professionals. The projects will be an integration of the analytical and design skills mastered during the program. Design reports and presentations will occur throughout the year. Permission of the department chair required.

**Prerequisite(s):** Senior Standing.

## **EGR-4995 Engineering Capstone II (4 semester hours)**

This course is a continuation of EGR-4990 Engineering Capstone I. Permission of the Department Chair required.

**Prerequisite(s):** Senior Standing.