

ENGINEERING SCIENCE (ENSC)

ENSC 2113 Statics

Prerequisites: Either MATH 2133 or MATH 2144 and either PHYS 1114 or PHYS 2014 with grades of "C" or better.

Description: Resultants of force systems, static equilibrium of rigid bodies, statics of structures, and fluid statics. Shear and moment diagrams.

Credit hours: 3

Contact hours: Lecture: 2 Contact: 3 Other: 1

Levels: Undergraduate

Schedule types: Discussion, Combined lecture & discussion, Lecture

Department/School: Dean of Engineering

ENSC 2123 Elementary Dynamics

Prerequisites: ENSC 2113 with a grade of "C" or better.

Description: Kinematics and kinetics of particles, systems of particles, and rigid bodies from a Newtonian viewpoint using vector algebra and calculus. Work-energy and impulse-momentum principles. Planar and three-dimensional kinetics and kinematics of rigid bodies.

Credit hours: 3

Contact hours: Lecture: 2 Contact: 3 Other: 1

Levels: Undergraduate

Schedule types: Discussion, Combined lecture & discussion, Lecture

Department/School: Dean of Engineering

ENSC 2141 Strength of Materials Lab

Prerequisites: Concurrent enrollment in ENSC 2143 or GENT 3323 or permission of the instructor.

Description: Study the sensing, conditioning and acquisition of load, deformation and strain data and the inference of stress. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. Perform material tensile tests and acquire stress and strain data. Study the behavior of engineering materials in service and failure. Operate 3D printers and mills to manufacture samples and structures for testing. Test engineered designs of beams, pressure vessels, truss and frames structures, etc. to failure and compare to design predictions from ENSC 2143. Preparation of formal reports, including the presentation of plots, figures and table.

Credit hours: 1

Contact hours: Lab: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lab

Department/School: Dean of Engineering

ENSC 2143 Strength of Materials

Prerequisites: ENSC 2113 with grade of "C" or better.

Description: Bending moments, deformation and displacement in elastic and plastic deformable bodies. Axial, torsional and shear loads. Buckling stress transformations and combined loads.

Credit hours: 3

Contact hours: Lecture: 2 Contact: 3 Other: 1

Levels: Undergraduate

Schedule types: Discussion, Combined lecture & discussion, Lecture

Department/School: Dean of Engineering

ENSC 2213 Thermodynamics

Prerequisites: A grade of "C" or better in CHEM 1314, CHEM 1414 or CHEM 1515, MATH 2144, PHYS 2014.

Description: Properties of substances and principles governing changes in form of energy. First and second laws.

Credit hours: 3

Contact hours: Lecture: 2 Contact: 3 Other: 1

Levels: Undergraduate

Schedule types: Discussion, Combined lecture & discussion, Lecture

Department/School: Dean of Engineering

ENSC 2411 Electrical Science Lab

Prerequisites: ENSC 2613 or concurrent enrollment in ENSC 2613 or permission of instructor.

Description: Laboratory providing hands-on experience with engineering topics related to Electrical Science. May not be used for degree credit with ENSC 2611.

Credit hours: 1

Contact hours: Lab: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lab

Department/School: Dean of Engineering

ENSC 2611 Electrical Fabrication Lab

Prerequisites: ENSC 2613 or concurrent enrollment in ENSC 2613 or ECEN 2714 or concurrent enrollment in ECEN 2714 or permission of instructor.

Description: This course will cover electrical fabrication techniques including schematic capture, printed circuit board layout, circuit board milling, cabling, heat sinks, soldering and package design. An emphasis on a hands-on experience with modern PCB fabrication tools and equipment will be central to this course.

Credit hours: 1

Contact hours: Lab: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lab

Department/School: Dean of Engineering

ENSC 2613 Introduction to Electrical Science

Prerequisites: MATH 2153.

Description: Elements of electrical engineering; AC and DC circuits, mesh and node formulation of network equations, steady-state response to sinusoids, energy, power and power factor.

Credit hours: 3

Contact hours: Lecture: 2 Contact: 3 Other: 1

Levels: Undergraduate

Schedule types: Discussion, Combined lecture & discussion, Lecture

Department/School: Dean of Engineering

ENSC 3231 Fluids and Hydraulics Lab

Prerequisites: Concurrent enrollment in ENSC 3233 or MET 3313 or FPST 2483 or MAE 3333 or permission of instructor.

Description: Laboratory providing hands-on experience with standard measurement techniques of fluid mechanics and their applications. Develop and conduct appropriate experimentation, analyses and interpret data to draw conclusions using engineering judgment. Comparison of analytical models introduced in an introductory fluid mechanics course to the actual behavior of real fluid flows. Preparation of formal reports, including the presentation of plots, figures, and tables.

Credit hours: 1

Contact hours: Lab: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lab

Department/School: Dean of Engineering

ENSC 3233 Fluid Mechanics

Prerequisites: ENSC 2113 and MATH 2153 with a grade of "C" or better.

Description: The study of fluid properties, statics, conservation equations, dimensional analysis and similitude, viscous flow in ducts, inviscid flow, boundary layer theory, open channel flow, turbomachinery and fluid measurement techniques.

Credit hours: 3

Contact hours: Lecture: 2 Contact: 3 Other: 1

Levels: Undergraduate

Schedule types: Discussion, Combined lecture & discussion, Lecture

Department/School: Dean of Engineering

ENSC 3311 Material Science Lab

Prerequisites: Concurrent enrollment in ENSC 3313 or permission of the instructor.

Description: Study of material science offering students the ability to conduct hands on experiments, analyze and interpret data, and use engineering judgement to draw conclusions. Perform a wide array of material testing methods and fundamental material science concepts covered in ENSC 3313. A wide range of materials: ferrous, nonferrous, polymers, concrete and composites will be used in lab experiments. Preparation of formal reports by students working part & interdisciplinary groups.

Credit hours: 1

Contact hours: Lab: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lab

Department/School: Dean of Engineering

ENSC 3313 Materials Science

Prerequisites: CHEM 1314 or CHEM 1414 or CHEM 1515.

Description: Introductory level. Relationship between structure and properties of materials and engineering applications. Atomic, microscopic and macroscopic properties.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Dean of Engineering

ENSC 3431 Thermodynamics and Heat Transfer Lab

Prerequisites: Concurrent enrollment in ENSC 2213 or MET 3433 or MAE 3233 or MET 3453 or MET 4433 or permission of the instructor.

Description: Laboratory providing hands-on experience with engineering topics related to fundamental principles of Thermodynamics and Heat Transfer.

Credit hours: 1

Contact hours: Lab: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lab

Department/School: Dean of Engineering