

# ENGINEERING (ENGR)

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## ENGR 1201 Foundations of Engineering I

Introduction to the engineering profession and disciplines; drawing and design using CAD tools; engineering ethics and professional responsibilities; development of skills in problem solving, analysis, estimation, design, and teamwork; computational analysis; and computer programming applications. Students work in teams on an engineering project, including the design, testing, and reporting.

Prerequisites: MATH 2413 or concurrent enrollment.

TCCN: ENGR 1201

## ENGR 1202 Foundations of Engineering II

Introduction to engineering ethics and professional responsibilities; development of skills in problem solving, analysis, estimation, design, and teamwork; introduction to systems engineering; computational analysis, computer programming applications. Students work in teams on an engineering design project, including construction, testing, and reporting.

Prerequisites: ENGR 1201 and MATH 2413.

## ENGR 1204 Engineering Graphics

Orthographical and isometric drawings. Tolerance, working drawings, three dimensional pictorials, primary and successive auxiliary view and vector graphics. Computer aided design software is used for drawing and development of systems in mechanical, electrical and welding applications.

Prerequisites: ENGR 1201.

TCCN: ENGR 1204

## ENGR 1304 Computer-Aided Design

This course involves an introduction and extensive use of AutoCAD and other CAD software. The course will involve the production of 2-D and 3-D technical drawings, text format dimensions, section views, auxiliary views, assembly modeling, and vector graphics.

## ENGR 2103 Statics & Dynamics Lab

Laboratory course to accompany ENGR 2303. Laboratory exercises reinforce ENGR2303 lecture material and place importance on scientific communication and collaboration.

Corequisites: ENGR 2303.

## ENGR 2105 Principles of Elec Engr Lab

Laboratory course to accompany ENGR 2305. Laboratory exercises reinforce ENGR2305 lecture material and place importance on scientific collaboration.

Corequisites: ENGR 2305.

TCCN: ENGR 2105

## ENGR 2236 Programming for Engineers

Introduction of the foundation of programming, software engineering, debugging, and using existing computational codes in the context of controlling physical equipment, gathering experimental data, and visualizing results. The course will be taught using suitable programming languages (i.e., C++, MATLAB, Python), which provides a balance between access to physical devices and modern programming concepts. Pre-requisite: MATH 2414

## ENGR 2303 Statics & Dynamics

Application of the fundamental principles of Newtonian mechanics to the statics and dynamics of particles and the equilibrium of trusses, frames, beams and other rigid bodies. Dynamics of moving particles, including friction, torque, impulse, and momentum.

Prerequisites: PHYS 2325, PHYS 2125, and MATH 2414.

Corequisites: ENGR 2103.

TCCN: ENGR 2303

## ENGR 2305 Principles of Elec Engineering

Fundamentals of electrical circuit analysis, AC power and electronics, intended as a terminal course in these areas for most engineering disciplines.

Prerequisites: PHYS 2325 and ENGR 1201.

Corequisites: ENGR 2105.

TCCN: ENGR 2305

## ENGR 2360 Thermodynamics & Fluid Mech

Theory and applications of energy methods in engineering as well as a study of fluid at rest and in-motion. Topics covered in the course include: conservation principles to investigate "traditional" thermodynamics and internal flow fluids; fluid properties, pressures, hydrostatics, buoyance; and control volume approach to conservation of mass, momentum, and energy.

Prerequisites: ENGR 2303, MATH 2415, or concurrent enrollment

## ENGR 2372 Engineering Statistics

This course will cover a variety of important topics in probability and statistics such as pictorial and tabular methods in descriptive statistics, measures of location, measures of variability, samples spaces and events, axioms and properties of probability, counting techniques, conditional probability, independence, discrete random variables and probability distributions, continuous random variables and probability distributions, joint probability distributions and random samples. The course will also demonstrate how Microsoft Excel can be used to conduct statistical analysis such as basic simple and multiple regression.

Prerequisites: MATH 2414.

## ENGR 2376 Cons Prin in Thermal Engr

Theory and applications of energy methods in engineering; conservation principles to investigate "traditional" thermodynamics and internal flow fluids; material properties.

Prerequisites: ENGR 2303, MATH 2415 or registration therein.

## ENGR 2380 Fluid Mechanics

Study of fluid at rest and in-motion. Topics covered in the course include fluid properties, pressures, hydrostatics, buoyance, open system, control volume approach to conservation of mass, momentum, and energy. Applications includes fluid flow through pipes, dimensionless analysis, boundary layers, and lift and drag acting on object.

Prerequisites: MATH 2415 and CHEM 1311

## ENGR 2390 Mechanics of Materials

Principle of material mechanics in engineering problems addressing strength and stiffness of different solid material. The course includes topics in continuum stress and strain, torsion of circular shaft, beam bending, and combined stresses applied to an object.

Prerequisites: PHYS 2325, PHYS 2125, and MATH 2414.

## ENGR 3300 Engineering Economics

Principles of engineering economics including economic equivalence, time value of money, analysis of single and multiple investments, comparison of alternatives; capital recovery and tax implications; certainty; uncertainty; risk analysis; public sector analysis and break-even concepts. Interchangeable with SENG 3300.

Prerequisites: MATH 2414.