

# ENGINEERING (ENGR)

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## **ENGR 100. Computer Tools in Engineering. (3 Credits)**

An introduction to the engineering profession followed by a survey of PC-based computer tools applicable to new Engineering Science students. These tools range from standard word processing through graphics and CAD to analysis tools such as spreadsheets and computer math packages. These tools are applied in project context providing an introduction to the engineering design process from initial identification of need through specification and communication of final design. Pre- or Co-requisite: MATH 103 or equivalent 3 credits (2 lecture hours, 2 laboratory hours), fall semester

## **ENGR 135. Comp & Numer Tech for Science. (3 Credits)**

Introduction to a modern, math oriented programming language and to the computer-assisted solution of engineering problems. Introduction to more advanced programming topics including the handling and manipulation of complex numbers, the solution of large systems of equations and unknowns, and numerical searches and root finding. Structured programming methodology will be emphasized. This problem-oriented course will use a current programming language as recommended by the Engineering Science program coordinator. Prerequisite: MATH 151 or permission of instructor Pre- or Co-requisite: MATH 152 3 credits (3 lecture hours), spring semester

## **ENGR 201. Analytic Mechanics I. (3 Credits)**

Students will gain knowledge of composition and resolution of forces and couples, equivalent systems, equilibrium of simple structures, trusses and frames, friction, properties of areas. Free body diagrams and vector algebra will be used. Prerequisite: PHYS 154 3 credits (3 lecture hours), fall semester This course satisfies the Liberal Arts and Sciences requirement and the SUNY General Education Requirement for Natural Science

## **ENGR 202. Analytic Mechanics II. (3 Credits)**

Kinematics of motion, Cartesian, path and polar coordinates, rigid body motion and relative motion analysis. Kinetics of particle and rigid body motion using force-acceleration, work-energy, and impulse-momentum approaches. Vector calculus used throughout. Prerequisite: ENGR 201, MATH 261 3 credits (3 lecture hours), spring semester This course satisfies the Liberal Arts and Sciences requirement and the SUNY General Education Requirement for Natural Science

## **ENGR 210. Introductn To Electrical Systms. (3 Credits)**

Analysis of linear one-dimensional electric circuits including DC, AC and transient solutions. Basic network principles and theorems, loop and node solutions, transfer functions, frequency response, analogs, zero-pole concepts and coupled circuits. Computer analysis. Pre- or Co-requisite: MATH 262 3 credits (3 lecture hours), spring semester This course satisfies the Liberal Arts and Sciences requirement and the SUNY General Education Requirement for Natural Science

## **ENGR 212. Mechanics Of Materials. (3 Credits)**

Examination of stress-strain relationships, physical properties of engineering materials. Analysis of mechanics of deformation, stress and strain for axial, torsion, and transverse loadings, combined stress, buckling of columns. Pre- or Co-requisites: ENGR 202 and MATH 262 3 Credits (3 lecture hours), spring semester This course satisfies the Liberal Arts and Sciences requirement and the SUNY General Education Requirement for Natural Science