

# Engineering (ENGR)

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## Courses

### **ENGR 121 Engineering Orientation (2 Hours)**

Upon successful completion of this course, the student should be able to describe careers in engineering and use fundamental concepts in engineering problem solving. Topics include engineering disciplines, aptitude and academic requirements, professional responsibilities, problem definition and solution, engineering design, and terminology. Students will meet professional engineers during field trips to engineering companies and work sites. The primary intent of this course is to introduce students to the engineering problem-solving process and to help each student make the best career decision. 2 hrs. lecture/wk.

### **ENGR 131 Engineering Graphics I:AutoCAD\* (4 Hours)**

**Prerequisites or corequisites:** MATH 130 or MATH 171 or MATH 172 or MATH 173 or MATH 241

Upon successful completion of this course, the student will be able to apply graphic principles used in the engineering design process. The student will master graphics concepts using computer-aided drafting (CAD) software. Topics include 2-D and 3-D CAD commands; geometric construction; multi-view, orthographic projection; sectional views; isometrics; dimensioning; and descriptive geometry. 3 hrs. lecture, 4 hrs. open lab/wk.

### **ENGR 180 Engineering Land Surveying I\* (3 Hours)**

**Prerequisites or corequisites:** MATH 131 or MATH 172

Upon successful completion of this course, the student should be able to identify the basic applications of plane surveying procedures; measurement of horizontal distances, directions, angles, leveling, traversing, curves and stadia coordinates; computations with the aid of a computer; and topographical property and construction surveying. Students will take part in field operations using equipment such as auto levels, theodolites, EDM, GPS, and total station. 2 hrs. lecture, 3 hrs. lab/wk.

### **ENGR 251 Statics\* (3 Hours)**

**Prerequisites:** MATH 242

**Prerequisites or corequisites:** PHYS 220

Upon successful completion of this course, the student should be able to describe and predict the conditions of rest and motion of bodies under the action of forces. The principles used will include vectors, force systems, equilibrium, free body diagram, centroids, moments of inertia, trusses, frame, and shear and moment diagrams. This course is typically offered in the summer and fall semesters. 3 hrs. lecture/wk.

### **ENGR 251H HON: Statics (1 Hour)**

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

### **ENGR 254 Dynamics\* (3 Hours)**

**Prerequisites:** ENGR 251

Upon successful completion of this course, the student should be able to apply the principles of dynamics, the branch of engineering mechanics that studies objects in motion. Topics covered will include unbalanced force systems (Newton's second law), displacement, velocity and acceleration, work and energy, and impulse and momentum. Computer applications may be included. This course is typically offered in the spring semester. 3 hrs. lecture/wk.

### **ENGR 254H HON: Dynamics (1 Hour)**

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.