

# Engineering (ENGR)

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## Courses

### **ENGR 213. Mechanics I. 3 Credits.**

Elementary vector operations, resultant of two- and three-dimensional force systems, centroid, hydrostatic forces, equilibrium of trusses and frames, laws of friction and impending motion, moments of inertia, virtual work, stability.

P: MATH 202

Fall Only.

### **ENGR 214. Mechanics II. 3 Credits.**

Displacement, velocity and acceleration components, kinematics of particles using rectilinear and curvilinear coordinates, relative motion, solution and plane motion of rigid bodies, work and potential energy of particles and rigid bodies, linear and angular impulse and momentum, central force motion.

P: ENGR 213

Spring.

### **ENGR 240. Micro-controllers and Programmable Logic Controllers. 3 Credits.**

This course introduces embedded computer systems and mid-range micro-controller peripherals, including electric motor control components, using assembly and C programming. PLC topics such as troubleshooting, timers, counters, sequencers, data move, math, and analog input and output are covered.

P: ET 142 and ET 211

Spring.

### **ENGR 301. Engineering Materials. 4 Credits.**

This course covers the basic behavior and processing of engineering materials, including metals, ceramics, plastics, and alloys. Phase behavior of alloys, response to applied loads, crystalline and noncrystalline behavior are included.

P: ET 206 OR CHEM 212 or concurrent enrollment

Spring.

### **ENGR 342. Supervisory Control and Data Acquisition. 3 Credits.**

This course uses knowledge acquired from previous courses as it applies to techniques for precision measurements, interpreting measurement data and using it in control systems. Hands on laboratory experiments are provided to demonstrate and verify the concepts in precision measurement theory.

P: ET 240

Fall Only.

### **ENGR 498. Independent Study. 1-4 Credits.**

Independent study is offered on an individual basis at the student's request and consists of a program of learning activities planned in consultation with a faculty member. A student wishing to study or conduct research in an area not represented in available scheduled courses should develop a preliminary proposal and seek the sponsorship of a faculty member. The student's advisor can direct him or her to instructors with appropriate interests. A written report or equivalent is required for evaluation, and a short title describing the program must be sent early in the semester to the registrar for entry on the student's transcript.

P: fr or so st with cum gpa  $\geq$  2.50; or jr or sr st with cum gpa  $\geq$  2.00.

Fall and Spring.