**ENGINEERING SCIENCES (ESCI)**

**ESCI 1010 - Freshman Engineering I**  
Credit(s): 1 Credit  
An introduction to the philosophy of engineering and engineering design. Introduction to the various laboratory and computing facilities on campus. Introduction to engineering drawing and computer aided drafting techniques.

**ESCI 1020 - Computer Aided Design**  
Credit(s): 1 Credit  
Prerequisite(s): ESCI-1010. Further topics in the philosophy of engineering and engineering design. Further topics in skills and tools used in engineering.

**ESCI 2100 - Statics**  
Credit(s): 3 Credits  
Study of force systems acting on particles and rigid bodies, 2-D and 3-D equilibrium, trusses, frames machines, shear and moment diagrams, friction, centroids, area moment of inertia. Pre/Corequisite(s): PHYS-1610.

**ESCI 2150 - Dynamics**  
Credit(s): 3 Credits  
Particle kinematics and kinetics in rectangular, cylindrical and normal-tangential coordinates; projectiles; relative motion using translating axes; work; conservative forces; conservation of energy, linear and angular impulse and momentum, conservation of momentum, rigid body kinematics and kinetics. Prerequisite(s): MATH-1520 Pre/Corequisite(s): ESCI-2100.

**ESCI 2300 - Thermodynamics**  
Credit(s): 3 Credits  

**ESCI 2930 - Special Topics**  
Credit(s): 3 Credits  
(Repeatable for credit)

**ESCI 2980 - Independent Study**  
Credit(s): 1 or 3 Credits  
(Repeatable for credit)

**ESCI 3100 - Mechanics of Solids**  
Credit(s): 3 Credits  
Stress and deformation due to axial load, torsion, bending and shear; properties of materials; statically indeterminate problems, analysis of plane stress and strain; combined loading; pressure vessels; beam deflections. Prerequisite: ESCI 2100 Pre/Corequisite: MATH 2530.

**ESCI 3101 - Mechanics of Solids Lab**  
Credit(s): 1 Credit  
Laboratory experiments to emphasize material covered in lectures of ESCI-3100. Corequisite(s): ESCI-3100.

**ESCI 3110 - Linear Vibrations**  
Credit(s): 3 Credits  
Single and two degrees-offreedom with and without damping, vibration dampers and absorbers; model properties of vibrating systems; vibration of lumped parameter and continuous systems; approximate numerical methods and digital computation. Review of test equipment and methods. Prerequisite: ESCI 2150, MATH 3550.

**ESCI 3200 - Fluid Dynamics**  
Credit(s): 3 Credits  
Fluid mechanics, conservation of mass, momentum and energy, stream function; dimensional analysis and similitude; application to problems of inviscid and viscous flows, drag, flow measurements. Pre/Corequisite: MATH 2530.

**ESCI 3201 - Fluid Dynamics Laboratory**  
Credit(s): 1 Credit  
Corequisite: ESCI-3200.

**ESCI 3300 - Linear Vibrations**  
Credit(s): 3 Credits  
Single and two degrees-of-freedom with and without damping, vibration dampers and absorbers; model properties of vibrating systems; vibration of lumped parameter and continuous systems; approximate numerical methods and digital computation. Review of test equipment and methods. Prerequisite: ESCI 2150, MATH 3550.

**ESCI 3410 - Analysis & Cntrl of Linear Sys**  
Credit(s): 3 Credits  
Linear vibration theory; control system block diagrams; analog and digital simulation; frequency and time domain analysis techniques; state space; and introduction to optimal control theory. Spring semester.

**ESCI 3930 - Special Topics**  
Credit(s): 3 Credits (Repeatable for credit)

**ESCI 3980 - Independent Study**  
Credit(s): 1 or 3 Credits (Repeatable for credit)

**ESCI 4930 - Special Topics**  
Credit(s): 1-3 Credits (Repeatable for credit)

**ESCI 4980 - Independent Study**  
Credit(s): 1 or 3 Credits (Repeatable for credit)