

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

Further topics in the philosophy of engineering and engineering design. Further topics in skills and tools used in engineering.

Prerequisite(s): ESCI 1010

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.

Prerequisite(s): PHYS 1610*

* Concurrent enrollment allowed.

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): ESCI 2100*; (MATH 1520 or Math Waiver per Advisor with a minimum score of 1520)

* Concurrent enrollment allowed.

ESCI 2300 - Thermodynamics

Credit(s): 3 Credits

Properties, characteristics and fundamental equations of gases, application of first and second laws of thermodynamics in evaluation of engines, cycles and processes.

Prerequisite(s): MATH 2530*

* Concurrent enrollment allowed.

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(s): (ESCI 2100 and MATH 2530*)

* Concurrent enrollment allowed.

Corequisite(s): ESCI 3101

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-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(s): (ESCI 2150 and 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.

Prerequisite(s): MATH 2530*

* Concurrent enrollment allowed.

Corequisite(s): ESCI 3201

ESCI 3201 - Fluid Dynamics Laboratory

Credit(s): 1 Credit

Corequisite(s): 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(s): (ESCI 211 and MATH 365)

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.

Prerequisite(s): ESCI 3110

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)

ESCI 5930 - Special Topics

Credit(s): 1-3 Credits (Repeatable for credit)

A one-time course on a particular topic, or a trial course that is expected to become a standard course with its own unique course number.