ENGINEERING (ENGR)

ENGR 10 – Freshman Engineering Seminar  0 credit hours
Overview of the engineering field as well as major specific information. Information will be provided to help with transitional needs to UNL and the college of engineering (time management, study skills, and resources), involvement opportunities (student organizations, research, and study abroad), tours of engineering facilities for experiential learning, and interactive learning to increase business knowledge and skills.

ENGR 101 – Introduction to Engineering  3 credit hours
Students will examine relevant and practical industrial and commercial engineering applications to gain necessary engineering skills that will help them succeed as a student as well as a professional engineer. A variety of engineering disciplines will be highlighted and discussed, as well as topics in the underlying physical, chemical, and biological scientific principles and processes related to each topic. The class will use a specified focus area that involves real world applications to aid in the conceptualization and learning of the course material. Corequisite: MATH 103 or MATH 115 or MATH 202.

ENGR 130 – Computer Aided Drafting for Mechanical Engineering  3 credit hours
Principles and accepted practices of geometric design in mechanical engineering. Computer generation of 2D and 3D models for mechanical systems. Introduction to engineering design practices such as specifications, dimensioning, and tolerance. Prerequisite: ENGR 101

ENGR 215 – Engineering Circuits I  4 credit hours

ENGR 216 – Engineering Circuits II  4 credit hours
Steady state power calculations for sinusoidal single-phase and balanced three-phase circuits. Analysis of circuits containing mutual inductance. Advanced analysis of active and passive circuits in both the time and frequency domain. Introduction to fundamentals of semiconductor theory and their application to p-n junction devices. Kirchhoff's laws and circuit analysis theorems applied to steady state diode and transistor circuits. Applications of operational amplifiers. Lecture 3 hours, lab 1 hour. Prerequisite: ENGR 215

ENGR 223 – Engineering Statics  3 credit hours
Analysis of forces, using vector algebra, acting on particles and rigid bodies in static equilibrium; equivalent systems of forces; friction; centroids and moments of inertia; introduction to energy methods. Prerequisite: PHYS 275 and ENGR 101. Corequisite: MATH 202.

ENGR 325 – Mechanics of Materials  3 credit hours
Stresses and strain in solids, uniaxial loading, linear elasticity, material behavior, stresses in beams, pressure vessels, Torsion of circular shafts, bending of beams of symmetrical section, column buckling and elastic instability. Prerequisite: ENGR 223. Corequisite: MATH 260. Additional Course Fee Required

ENGR 373 – Engineering Dynamics  3 credit hours
Basic theory of engineering mechanics, using calculus, involving the displacement, velocity, and acceleration of particles, rigid bodies, and systems of particles. Newton's Laws, work and energy relationships, principles of impulse and momentum are applied to the solution of kinematic engineering problems. Prerequisite: ENGR 223. Corequisite: MATH 260.