ENGINEERING (ENR)

ENR 116 Introduction to Engineering (3 Credits)
This course is an introduction to the engineering profession utilizing problem-based learning strategies. It provides an overview of various engineering disciplines, engineering ethics, relevant concepts from science and mathematics, and develops an open mindset to learning. Additionally, students will develop the problem-solving, computer, and study skills required for success with subsequent engineering coursework.

ENR 117 Computer-Aided Design and Drafting (1 Credit)
This course provides students with a broad introduction into 2-dimensional and 3-dimensional Computer-Aided Design and Drafting (CADD) and modeling with a focus on producing a 3D printable capstone project.

ENR 173 Introduction to Computing (4 Credits)
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Prerequisite: MTH 103 College Algebra

ENR 201 Statics (3 Credits)
This course studies the effects of external forces acting on stationary rigid bodies in equilibrium. Vector algebra is used to study two and three-dimensional systems of forces.
Prerequisite: MTH 165

ENR 202 Dynamics (3 Credits)
This course examines kinematics and dynamics of particles, solid bodies and structures. Topics will cover kinetics and kinematics of two and three-dimensional mechanisms. Emphasis will include free body diagrams, vector analysis methods, and various coordinate systems.
Prerequisite: MTH 166, ENR 201

ENR 203 Mechanics of Materials (3 Credits)
Introduction to stress, strain, and their relationships; torsion of circular shafts, bending stresses, deflection of beams, stress transformations. Understand the reaction of deformable materials to applied loads (both mechanical and thermal).
Prerequisite: ENR 201, MTH 166

ENR 204 Surveying (4 Credits)
This course is designed to introduce students to measurement and errors, topographical and construction surveys, vertical and horizontal control methods, field exercises and computation techniques for surveying data, computation of earthwork volumes.

ENR 211 Analysis and Design Methods for Environmental Engineers (1 Credit)
Exposure to real-life environmental design, analysis, and processes. This will include an overview of contemporary software, exposure to sustainability, cultural, global, environmental, social, risk, and economic considerations. One 3-hour lab.
Prerequisite: ENR 111

ENR 212 Fundamentals of Visual Communications for Engineering (3 Credits)
This course introduces visual communications for design and manufacturing, computer-aided drawing and design, three-dimensional modeling and orthographic projections, geometric dimensioning and tolerancing. Student will adhere to the American Society of Mechanical Engineers Y14.5 1994 standard, which includes sketching, parametric modeling, drawings and assemblies.

ENR 217 Advanced Manufacturing (2 Credits)
This course builds on the ENR 117 Computer-Aided Design and Drafting course and introduces advanced manufacturing. Projects will challenge students to follow the steps of producing a product from need identification through production (art to part) using advanced manufacturing. The course will include a survey of the major advanced manufacturing methodologies, metrology, and material property assessment.
Prerequisite: ENR 117

ENR 250 Fundamentals of Environmental Engineering (3 Credits)
Fundamental principles in environmental engineering; basic principles of calculation; introduction to mass and energy balances; chemical stoichiometry; biology, microbiology, biochemistry, and enzyme kinetics; risk and uncertainty; and, fundamental concepts for assessing sustainability.
Prerequisite: ENR 211, MTH 165

ENR 275 Digital Systems (4 Credits)
This course serves as an introduction to computer arithmetic, designing combinatorial circuits, and designing basic sequential circuits.
Prerequisite: MTH 107 Precalculus

ENR 290 Manufacturing Processes (3 Credits)
This course will explore traditional manufacturing processing methods as employed in contemporary practice. Includes: properties of materials, machining, casting, forming, and fabrication techniques. Several experiments will be conducted on various manufacturing processes in the laboratory.
Prerequisite: ENR 117 Computer Aided Design and Drafting