ENGINEERING TECHNOLOGY (ENR)

Division: Mathematics, Engineering Technologies and Computer Sciences (METCS) Division

ENR 100 Fund. of Engineering Design (2 Credits)
This course is a 2-credit course that reviews the basic concepts of engineering and introduces some tools used for design and implementation of devices and systems. the course has a lecture and lab component. In the lecture portion, the students will be introduced to the basic principles of engineering design process, reserch, and engineering ethics. In the lab portion, the students will be using the basic instruments, pencil and paper at the beginning. Then, using a parametric solid modeling software (Inventor or SolidWorks), the students prepare 3D design objects, generate simulations and blueprints/design documents according to the ANSI standards used in industry. These designs are then produced using 3D printing equipment. All activities offered through this course are designed to help students pick up transferable skills that they can take to any engineering major they choose to pursue with special emphasis on oral and written communication skills. The overall objective is to provide background and access engineering studies and help students to succeed and move forward on an engineering education path.
Pre-requisites: (((Companion Arithmetic with a score of 069 and Companion Elementary Algebra with a score of 076) or (Arithmetic (Next-Gen) with a score of 260 and Quant,Algebra,Stats(Next-Gen) with a score of 260) or (Bilingual Computation with a score of 20 and Bilingual Algebra with a score of 19) or Move Up Math 092 with a score of P or MTH 092 Summer Bridge with a score of P or TRANSFERRED COLLEGE LEVEL MATH with a score of 898 or Elig. for Math 100,101,103 with a score of 905 or Pre-reg. COLG math waiver only with a score of 908 or SAT/ACT Elig for Mth 100 with a score of 994) and ((Companion Essay with a score of 08 or Write Placer Essay with a score of 07 or Write Placer Essay with a score of 08 or Move Up English 096 with a score of P or ENG 096 Summer Bridge with a score of P or TRANSFERRED ENG 101 with a score of 889 or Elig. for Eng 101 with a score of 904 or Pre-reg. Eng 101 waiver only with a score of 906 or SAT/ACT Elig for Eng 101 with a score of 993 or TRANSFERRED ENG 102 with a score of 998))) or COLLEGE DEGREE with a score of 988 or SAT/ACT Elig Eng101 Mth100 with a score of 995 or Transf. Eng 101 Mth 100 with a score of 999

ENR 103 Engr. Graphics & Intro. to CAD (2 Credits)
This course covers the fundamentals of engineering graphics including the drawing of orthographic, isometric, and auxiliary projections. Other topics include scaling, sectioning, dimensioning, and drawing documentation. This course uses the latest release of computer-aided design (CAD) software commonly used in industry to introduce students to CAD interface, structure, and commands.
Pre-requisites: ENR 100 with a minimum grade of C

ENR 105 Applied Computer Aided Design (2 Credits)
This first course in Computer-Aided Design (CAD) uses the latest release of AutoCAD software. Students are introduced to the terminology, use, and capabilities of CAD. Through hands-on instruction, students learn to complete projects using the latest hardware and software. After starting with the beginning draw and edit commands, the course proceeds to cover tolerance dimensioning, printing, the creation of symbols libraries, isometric rending, threedimensional wire-frame modeling, and blocks with attributes.
Pre-requisites: ENR 103 with a minimum grade of C and MTH 100 with a minimum grade of C

ENR 106 Intermediate Comp-Aided Design (2 Credits)
This course uses the latest release of CAD software commonly used in workplaces. Through hands-on instruction, students learn to complete a series of CAD projects. Topics covered include drawings in different disciplines, three-dimensional wire, surface, and solid modeling, geometric dimensioning and tolerancing, shading, and rendering.
Pre-requisites: ENR 103 with a minimum grade of C

ENR 110 Statics for Technology (3 Credits)
This is a basic course in statics for technology students involving the fundamental principles of the mechanics of rigid bodies. Topics included are vectors, forces, moments, center of gravity, free-body diagrams, equilibrium, simple trusses, friction and moment of inertia.
Pre-requisites: MTH 113 with a minimum grade of C and PHY 101 with a minimum grade of C

ENR 112 Dynamics for Technology (3 Credits)
This course features a non-calculus approach, using Physics principles in small elementary steps, with a consistent method of problem solving. Topics covered include kinematics, Kinetics, work, energy, power, impulse, and momentum.

ENR 205 Advanced Autocad (3 Credits)
This third course in Computer Aided Design (CAD) uses the latest release of AutoDesk software products in mechanical, architectural and civil engineering design. Students perform a number of hands-on projects using Inventor (parametric 3D-solid modeling), AutoCAD Architect (3D architectural design), and Civil 3D software. These projects cover general 3D design and detailing problems related to the above-mentioned disciplines.
Pre-requisites: ENR 105 with a minimum grade of C

ENR 211 Engineer Mechanics I - Statics (3 Credits)
This is a course in calculus-based statics. Topics covered include elementary vector algebra, scalar and vector products as applied to two and three-dimensional force systems, equilibrium, friction, second moments, and virtual work. Extensive use is made of the free body diagram approach and vector analysis.
Pre-requisites: MTH 121 with a minimum grade of C and PHY 103 with a minimum grade of C

ENR 212 Engineer Mechanics II-Dynamics (3 Credits)
This is a course in kinematics and kinetics using vector analysis. Topics covered include curvilinear motion with respect to fixed and rotating axes of particles and rigid bodies, work, energy, impulse, and momentum.
Pre-requisites: ENR 211 with a minimum grade of C

ENR 220 Mechanics of Materials (3 Credits)
This course for technology students covers stresses and deformation in structural members due to axial, tensile and compressive loads, torsional loads on shafts and bending and shear loads on beams. Also included is the study of the basic design of structural members based on the analysis of stress and the deformation.
Pre-requisites: ENR 110 with a minimum grade of C

ENR 221 Strength of Materials (3 Credits)
This calculus based course for Engineering students covers stresses and deformation in structural members due to axial, tensile and compressive loads, torsional loads on shafts and bending and shear loads on beams. Also included is the study of the basic design of structural members based on the analysis of stress, the deformation, and an understanding of the mechanical behavior of materials under various load conditions.
Pre-requisites: ENR 211 with a minimum grade of C and MTH 122 with a minimum grade of C

ENR 250 Computer-Aided Design Project (2 Credits)
In this course, students apply the skills they learned from previous CAD courses to individually design a comprehensive project in their fields using specialized CAD software commonly used in workplaces. For example, manufacturing and mechanical students design parts using a parametric solid modeling package; architectural students make architectural designs using an animation and rendering package; and civil construction/surveying students complete projects in construction, road design, and surveying using civil and mapping packages. Students are provided internship opportunities with industry.
Pre-requisites: ENR 205 with a minimum grade of C

ENR 290 Honors CapstoneProj.- Engr. (3 Credits)