Pre-Engineering (EGR)

Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.

EGR 1100   Introduction to Engineering   ....3 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement into ESL 2510 or higher.
Prerequisite: MAT 1150 or consent of instructor.
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
Within this introductory engineering course students will be exposed to the core principles of engineering. This will include the implementation of a group project where students will be exposed to design, troubleshooting, teamwork, and a group demonstration/presentation. The course will also cover professional ethics. BILLABLE CONTACT HOURS: 3

EGR 2010   Engineering Programming   ....4 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement in ESL 2520.
Prerequisite: Take MAT 1730 or consent of instructor.
Corequisite: EGR 1100 (Required)
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
This course will introduce the student to software techniques for solving different engineering problems utilizing a high level programming language including C++ and MATLAB. Programs will solve electrical, chemical, mechanical, biomedical, civil, industrial and computer engineering problems. Topics include decision structures, loops and files, functions, numerical differentiation, and integration techniques. BILLABLE CONTACT HOURS: 4

EGR 2060   Engineering Digital Circuits   ....4 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement in ESL 2520.
Prerequisite: MAT 1730 or consent of instructor.
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
Topics include data representation in a digital form; Boolean algebra; logic gates; minimization and implementation of Boolean functions; arithmetic circuits; combinational circuits; sequential circuits; latches and flip-flops; counters; finite state machine; and introduction to field-programmable gate array (FPGA) implementation. An industry standard circuit simulator will be utilized. The course will include simulation and physical projects. BILLABLE CONTACT HOURS: 4

EGR 2080   Engineering Microcontrollers   ....4 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement in ESL 2520.
Prerequisite: EGR 2010 and EGR 2060 or consent of instructor.
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
Topics include introduction to computing based on assembly level programming; jump, loop, and call instructions; I/O programming; addressing modes; arithmetic and logic instructions; programming in C; serial port programming; interrupts; analog to digital converter (ADC), digital to analog converter (DAC), and sensor interfacing. An industry-standard circuit simulator will be used throughout the class. The course will include simulation and physical projects. BILLABLE CONTACT HOURS: 4

EGR 2100   Statics   ....3 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement in ESL 2520.
Prerequisite: EGR 2010, MAT 1730 and PHY 2400 or consent of instructor.
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
This course will cover vector description of forces and moments; two- and three- dimensional equilibrium of particles and rigid bodies, using free-body diagrams; analysis of trusses, frames, and machines; Coulomb friction; centroids and moments of inertia. BILLABLE CONTACT HOURS: 3

EGR 2200   Mechanics of Materials   ....3 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement in ESL 2520.
Prerequisite: EGR 2100 and MAT 1740 or consent of instructor.
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
This course will cover elastic relationships between external forces acting on deformable bodies and the associated stresses and deformations; structural members subjected to axial load, torsion, and bending; deflection of beams; column buckling; combined stresses; repeated loads; stress and strain transformation, unsymmetrical bending. BILLABLE CONTACT HOURS: 3

EGR 2500   Dynamics   ....3 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement in ESL 2520.
Prerequisite: EGR 2010 and EGR 2100 or consent of instructor.
Corequisite: MAT 2810 (Required)
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
The course will cover basic concepts and principles of dynamics with application of Newton's Laws of Motion to engineering problems; kinematics and kinetics of particles and rigid and variable-mass bodies; equations of motion, impulse-momentum, impact and work-energy principles. BILLABLE CONTACT HOURS: 3

EGR 2700   Engineering Circuits I   ....5 Credit Hours
ESL Placement Level: For English-as-a-Second-Language (ESL) students, placement in ESL 2520.
Prerequisite: EGR 2010 and PHY 2500 or consent of instructor.
Corequisite: MAT 2810 (Required)
Note: Prerequisites for courses in this department are not automatically waived for College Guest students and students with a bachelor's degree or higher from a U.S. institution.
Topics include electrical quantities and waveforms; resistance; Ohm's law; Kirchhoff's laws; network topologies; nodal and mesh analysis; Thevenin's theorem and other network theorems. Course includes solution of 1st and 2nd order linear time-invariant differential equations. An industry-standard circuit simulator will be utilized throughout the course. The course will include simulation projects and a lab. BILLABLE CONTACT HOURS: 6