

EGR - ENGINEERING TECHNOLOGY

EGR 102 Introduction to Industrial/Engineering Careers (0-3-1)

Offered Fall, Spring, and Summer Semesters

Co-requisite: COL 103

This course is an overview of a variety of technical careers in the industrial and engineering technologies and the technical skills required for each. Students will evaluate different career paths through courses, guest speakers and site visits. Students will also assess their aptitude and abilities through standardized tests to choose a technology major that best fits their ability and personal goals.

EGR 104 Engineering Technology Foundations (3-0-3)

Offered Fall, Spring, and Summer Semesters

This problem-based course introduces the student to fundamental concepts of electrical, mechanical, thermal, fluids, optical, and material systems related to engineering technology. Workplace readiness skills such as laboratory safety, communications, and teamwork are integrated into the course.

EGR 130 Engineering Technology Applications and Programming (2-3-3)

Offered Fall, Spring, and Summer Semesters

This course covers the development and use of computer programs to solve engineering technology problems, including spreadsheets, databases, word processing and operating systems. Analytical problem solving using calculators and computers as preparation for physics and statics courses is also covered.

EGR 170 Engineering Materials (2-3-3)

Offered Fall and Spring Semesters

Co-requisites: ENG 101

This course is a study of the properties, material behaviors and applications of materials used in engineering structures and products. The mechanical properties and the classification systems of metals, ceramics, plastics and composites are covered. Studies start with the forces that bind atoms together and proceed up through crystal structure to macroscopic properties. Includes techniques for improving the strength of materials, with heavy emphasis on the heat treatment of steel.

EGR 175 Manufacturing Processes (2-4-3)

Offered Spring and Summer Semesters

Prerequisite: EGR 130 or EGR 269

Co-requisite: EGR 210 or EGR 275 or other department head approved CAD course

Pre- or Co-requisites: ENG 101 and MAT 110 (prerequisite preferred)
This course includes the processes, alternatives and operation in the manufacturing environment. The most important methods used by modern industry to convert materials into useful shape, including numerous variants of casting, forging, rolling, extruding, pressing and sintering, molding, joining, machining and grinding. Emphasis will be placed on types of parts for which each process is best suited.

EGR 194 Statics and Strength of Materials (2-6-4)

Offered Fall, Spring, and Summer Semesters

Prerequisite: PHY 201

Pre- or Co-requisite: MAT 111 (prerequisite preferred)

This course covers external and internal forces in structures and/or machines, including conditions of equilibrium, systems of force, moment of inertia and friction. It also covers the stress/strain relationships in materials, centroids, shear and moment diagrams, bending stresses and shear stresses with application to size determination of components under various loading conditions.

EGR 202 Introduction to Engineering Programming (2-3-3)

Offered Spring and Summer Semesters

Prerequisite: EGR 269 or CPT 170 or CPT 113

This course is an introduction into algorithm development and the use of a high-level programming language to solve engineering problems.

EGR 203 Foundations of Fluid and Thermal Systems (2-3-3)

Offered Spring and Summer Semesters

Prerequisites: MAT 240, PHY 222

This course is an introduction to control volumes, conservation laws of mass, momentum and energy. Concepts of work and heat are introduced, including rate forms. Knowledge and skills will be developed that allow the solution of problems through application of conservation principles in combination with appropriate models of the behavior of pure substances. This transfer course is primarily intended for engineering students.

EGR 204 Mechanics of Materials (2-3-3)

Offered Fall and Spring Semesters

Prerequisites: EGR 260, MAT 240

Co-requisites: EGR 206, MAT 242

This course is a study of the relationships between external loads on solid bodies and the resulting internal effects and dimension changes, including the derivation of rational formulas for stresses and deformations. This transfer course is primarily intended for engineering students.

EGR 206 Introduction to Materials Science (2-3-3)

Offered Fall and Spring Semesters

Prerequisite: CHM 110

Co-requisite: MAT 141

This course studies the relationships between a material's structure, processing and properties (electrical, mechanical and thermal). All levels of structure are considered from gross structures easily visible to the eye through electronic structure of atoms. This transfer course is primarily intended for engineering students.

EGR 209 Statistics for Engineers (3-0-3)

Offered Spring and Summer Semesters

Co-requisite: MAT 140

This course covers basic probability and statistics with applications and examples in engineering. Topics include elementary probability, random variables and their distributions, random processes, statistical inference, linear regression, correlation, and basic design of experiments.

EGR 210 Introduction to Engineering CAD (2-3-3)

Offered Fall, Spring, and Summer Semesters

Co-requisites: AET 110 or EGT 110 or CET 103

This course is a study of basic computer-aided design concepts required for engineering, architectural, surveying, construction and related industry applications. 2D and 3D AutoCAD applications are introduced in this course.

EGR 255 Engineering Technology Senior Systems Project (0-6-2)

Offered Spring Semester

Prerequisite: EGR 194 and completion of all other technical courses in the program in which the student is majoring, plus department head approval.

This course includes an instructor-approved project which is designed, specified, constructed and tested. Students work in teams on "real world" industrial, mechanical, or manufacturing projects and solve them by applying skills learned in previous program courses.

EGR 260 Engineering Statics (2-3-3)

Offered Fall and Spring Semesters

Prerequisite: PHY 221

Co-requisite: MAT 240

(Transfer course) This course is an introduction to the principles of engineering mechanics as applied to forces and force systems. The techniques of vector mathematics are employed. Both two and three-dimensional systems are studied.

EGR 262 Engineering Dynamics (2-3-3)

Offered Spring and Summer Semesters

Prerequisites: EGR 260, MAT 240

(Transfer course) This course is an introduction to the principles of engineering as applied to kinematics and kinetics of particles and rigid bodies. The techniques of vector mathematics are employed.

EGR 269 Engineering Disciplines and Skills (2-3-3)

Offered Fall, Spring, and Summer Semesters

Prerequisite: MAT 111

Co-requisite: ENG 101

This course assists students in selecting an engineering field while studying professionalism, ethics, safety, communications and career planning. Computers are used to study spreadsheets, obtain graphical solutions to problems, perform on-line tasks and work on a team design project and report.

EGR 270 Introduction to Engineering (2-3-3)

Offered Fall, Spring, and Summer Semesters

Prerequisite: EGR 269

Co-requisite: MAT 140

(Transfer course) This course covers the applications of computers in engineering practices, including the use of an appropriate operating system, programming in a high-level language, spreadsheets and word processing applications. It introduces students to team problem solving and the application of computers in engineering. Advanced Excel and MATLAB will be emphasized.

EGR 275 Introduction to Engineering/Computer Graphics (2-3-3)

Offered Fall, Spring, and Summer Semesters

(Transfer course) This course is a study of basic graphical concepts needed for engineering applications. This course emphasizes mechanical applications utilizing 3D SolidWorks as the CAD software.

EGR 299 Applied Research in a Technical Field (0-9-3)

Offered Fall, Spring, and Summer Semesters based on student request and Instructor Permission

Prerequisite: Instructor Permission

This course provides an opportunity for students to investigate a faculty-approved topic in the Engineering, Industrial, or Transportation disciplines using the application of practical research methods. The course is designed for students in an Engineering, Industrial, or Transportation program to explore part of their major in more depth by working one-on-one or in small groups on faculty- or student-designed research projects.