ENGINEERING (CEGR)

CEGR 101 Introduction to Engineering 3 Credits
Introduction to the engineering profession and various branches of engineering utilizing audio-visual material, lectures by visiting professionals and trips to plants and factories, emphasis on professionalism and ethics, engineering solutions, representation of technical information, engineering estimations and approximations, dimensions, units and conversions with introduction to statistics, mechanics, electrical theory and engineering economics. Prerequisite: CMAT 105.

CEGR 101L Intro to Engineering Lab 0 Credits
ntroduction to the engineering profession and various branches of engineering utilizing audio-visual material, lectures by visiting professionals and trips to plants and factories, emphasis on professionalism and ethics, engineering solutions, representation of technical information, engineering estimations and approximations, dimensions, units and conversions with introduction to statistics, mechanics, electrical theory and engineering economics. LAB Prerequisite: CMAT 105.

CEGR 102 Intro to Engineering Design 2 Credits
Introduction to engineering design process and design concepts; applications to design problems in the various branches of engineering; practical design assignments. Prerequisite: CMAT 105.

CEGR 110 Engineering Graphics 3 Credits
Introduction to engineering graphics and visual communication including freehand sketching, engineering design processes, 2D/3D and solid CAD models, development and interpretation of drawings, projection standards and specifications for product realization. Prerequisite: CMAT 105.

CEGR 110L Engineering Graphics Lab 0 Credits
Introduction to engineering graphics and visual communication including freehand sketching, engineering design processes, 2D/3D and solid CAD models, development and interpretation of drawings, projection standards and specifications for product realization. Lab Prerequisite: CMAT 105.

CEGR 201 Electrical Circuit Analysis 3 Credits
This course is designed to enable students to analyze basic circuits and to understand more advanced circuits that have circuit elements such as resistors, capacitors, inductors, voltage and current sources (using Kirchhoff's laws, mesh and nodal analysis, network theorems to DC and AC circuits and also by computer simulation using PSPICE software). Prerequisites: CMAT 112, CPHY 122.

CEGR 201L Electrical Circuit Anal Lab 1 Credit
This course is designed to enable students to analyze basic circuits and to understand more advanced circuits that have circuit elements such as resistors, capacitors, inductors, voltage and current sources (using Kirchhoff's laws, mesh and nodal analysis, network theorems to DC and AC circuits and also by computer simulation using PSPICE software). LAB Prerequisites: CMAT 112, CPHY 122.

CEGR 211 Engineering Statics 3 Credits
Study of the elements of statics in two and three dimensions using vector algebra, laws of equilibrium applied to particles, rigid bodies and structures, friction, centroids. Prerequisites: CMAT 112, CPHY 121

CEGR 311 Engineering Dynamics 3 Credits
Kinematics of rectilinear and curvilinear motion of particles, kinematics of rigid bodies in plane motion, kinetics (work and energy relations, impulse and momentum principles) of particles, systems of particles, and rigid bodies in plane motion. Prerequisite: CEGR 211.

CEGR 314 Math for Engineers 3 Credits
Application of MathLab/Labview techniques to various engineering problems including numerical methods for solving nonlinear problems. Prerequisites: CMAT 112, CMAT 212.

CEGR 320 Engineering Thermodynamics 3 Credits
Study of the fundamentals of engineering thermodynamics. Topics include the phases of matter and their thermodynamics properties(especially steam), equilibrium, entropy, irreversibility and reversibility, conservation of energy, the second law of thermodynamic and an intriduction to thermodynamic cycles.

CEGR 330 Introduction to Materials 4 Credits
Introduction to the fundamentals of materials. Topics include material structure (atomic bonding, crystalline structures, imperfections); diffusion, phase diagrams, mechanical behavior (stress versus strain, elastic and plastic deformations, hardness and creep), failure analysis and prevention (impact energy, fracture toughness and fatigue); and the selection of materials and appropriate performance indices. Prerequisites: CCHE 111, CPHY 121.

CEGR 362 Chemical Process Principles 3 Credits
Study of material and energy balances with emphasis on steady- and unsteadystate physical and chemical processes. Engineering problem analysis, material balances for single and multiphase systems, energy balances for nonreactive and reactive processes, gas behavior, thermodynamic properties, thermophysical and thermochemical concepts are covered. Prerequisites: CCHE 112, CMAT 112.

CEGR 366 Fluid Mechanics 3 Credits
Fundamentals of fluid mechanics including fluid properties, statics and dynamics of ideal and real fluids (equations of fluid motion), dimensional analysis and similitude, laminar and turbulent flows, boundary layers, flow measurement, turbomachinery, experiments on flow visualization and measurement. Prerequisites: CEGR 314, 320.

CEGR 481 Environmental Engineering 3 Credits
Introduction to environmental engineering, with emphasis on water supply and treatment, sewer design, wastewater treatment, air pollution control, and solid waste management. Students will also be exposed to pertinent environmental laws and policies, and environmental impact assessments. Prerequisite: CEGR 366.

CEGR 490 Engineerining Project 3 Credits
Capstone engineering projects where students utilize their engineering knowledge to independently solve a design problem under faculty supervision. Written and oral reports are required. Prerequisite: CEGR 471

CEGR 499 Engineering Seminar 1 Credit
A series of seminars in chemical, civil, electrical and mechanical engineering for effective presentations; discussions involve analytical, experimental and industrial problems.