

# Engineering

## **EG 101 Intro to Engineering & Design 2 cr**

A course for first time engineering students that assists with maximizing the student's potential to achieve academic success and to adjust responsibly to the individual and interpersonal challenges presented by college life. Introduction to engineering fundamentals through reading, homework assignments, laboratory investigations, guest lecturers and group discussions on the engineering profession.

Pre-requisite: (MA 113 Minimum Grade of D or MA 172 Minimum Grade of D) or (MA 125 Minimum Grade of C or MA 132 Minimum Grade of D). MA 113 and MA 125 can be taken concurrently with this course.

## **EG 201 Intro to Engr & Prob Solving 0 cr**

A course for first-time transfer students that helps maximize the student's potential to achieve academic success and to address the transition from community college to four-year college. Introduction to engineering fundamentals and problem solving techniques through reading, homework assignments, laboratory investigations, guest lecturers and group discussions on the engineering profession.

Pre-requisite: MA 126 Minimum Grade of C.

## **EG 220 Electrical Circuits 3 cr**

Ohm's and Kirchhoff's laws. Network theorems- superposition, source transformation, Thevenin's and Norton's Theorems. RLC circuits. Sinusoids and phasors and their applications in RLC circuits. RMS values of voltages and currents. Operational amplifiers. Average power and power factor in AC circuits.

Pre-requisite: MA 126 Minimum Grade of C and PH 202 Minimum Grade of C.

## **EG 231 Intro to Ethics and Economics 3 cr**

Introduction to ethics and the use of codes of ethics in developing an ethical profession. Application of engineering economic principles to engineering problems.

Pre-requisite: MA 126 Minimum Grade of C.

## **EG 270 Engineering Thermodynamics 3 cr**

First and second law of thermodynamics with applications.

Pre-requisite: (MA 126 Minimum Grade of C and PH 201 Minimum Grade of C).

## **EG 283 Statics 3 cr**

Use of vector algebra to analyze two and three dimensional forces, moments, and couples. Use of free body diagrams to analyze rigid bodies, beams, trusses, and frames in equilibrium. Calculation of the area and mass moments of inertia, and friction forces.

Pre-requisite: (MA 126 Minimum Grade of C and PH 201 Minimum Grade of C).

## **EG 284 Dynamics 3 cr**

Kinematics and kinetics of particles and rigid bodies. Work/energy and momentum methods.

Pre-requisite: EG 283 Minimum Grade of C and MA 126 Minimum Grade of C.

## **EG 290 Sp Top - 1 TO 5 cr**

Subjects of special interest in engineering. Requires permission of instructor.

## **EG 315 Mechanics of Materials 3 cr**

An introduction to the mechanics of deformable bodies. Analysis of stress and strain. Emphasis on axial, torsional and bending loads. Deflections, deformations, and column stability.

Pre-requisite: EG 283 Minimum Grade of C and (MA 227 Minimum Grade of C and PH 201 Minimum Grade of C).

## **EG 360 Fluid Mechanics 3 cr**

Study of the properties of fluids including fluid statics, kinematics; integral and differential equations of mass, momentum and energy conservation principles; dimensional analysis; flow in ducts; boundary layer flows; and compressible flow.

Pre-requisite: MA 238 Minimum Grade of D and EG 284 Minimum Grade of C.

## **EG 390 Special Topics- 1 TO 3 cr**

This course covers topics of current interest in Engineering.

## **EG 450 Intro to Systems Engineering 3 cr**

This course will explore the history of systems engineering, the problems that contributed to the need for systems thinking, and the systems engineering lifecycle as defined by ISO/IEC/IEEE 15288 Systems and Software Engineering -- System Life Cycle Processes. This course will include a significant reading list and a systems engineering exercise that will run for the duration of the course.

## **EG 490 Special Topics 1 TO 3 cr**

This course covers topics of current interest in Engineering.

## **EG 494 DIS In Engineering 1 TO 3 cr**

Directed study, under the guidance of a faculty advisor of a topic from the field of Engineering not offered in a regularly scheduled course.

## **EG 590 Sp Top - 1 TO 3 cr**

Subjects of special interest in engineering for engineering graduate students. Requires permission of instructor.

## **EG 620 Biomedical Engineering I 4 cr**

Fundamental concepts of medical instrumentation, biomedical imaging and biological systems modeling as used in biomedical engineering. Course is cross-listed with IDL 620. Fee.

## **EG 621 Biomedical Engineering II 4 cr**

Fundamental concepts of transport phenomena, cellular and tissue mechanics, and materials as used in biomedical engineering. Course is cross-listed with IDL 621. Fee.