CIVIL ENGINEERING STRUCTUR (CES)

CES 3100C - Structural Analysis (3 Credits)
This course addresses the analysis and design of basic structural forms such as beams, trusses, and frames, which are found in bridges and buildings. Classical deflection techniques such as direct integration and virtual work; and indeterminate analysis techniques such as the force method and displacement methods (slope deflection, direct stiffness and movement distribution) are used to determine forces and deflections in elastic structures. Structural analysis computer programs are introduced and directly applied in the solution of graded analysis and design problems. Approximate analysis techniques are used to check the general accuracy of computer-based results.
Prerequisite(s): EGN 3331C and EGN 2111C

CES 4605C - Steel Design (3 Credits)
This course teaches the engineering thought process through the design of steel structures. The course synthesizes the fundamentals of statics, mechanics of materials, and structural analysis and applies them to the design of structural members, with emphasis on satisfying real-world needs. Topics include an introduction to the design of structural systems, design of steel tension and compression members, design of beams and beam-columns, and an introduction to connection design. All design is performed in accordance with codes and specifications used in current engineering practice. A comprehensive design problem requires development of a design methodology, consideration of alternative solutions, and design of an optimal steel structure to meet stated functional requirements.
Prerequisite(s): CES 3100C

CES 4702C - Reinforced Concrete Design (3 Credits)
The objective of this course is to analyze and design reinforced concrete structural members. The topics covered in this course include, but are not limited to, flexural analysis and design of beams, properties of concrete and steel, fundamentals of reinforced concrete behavior, T-beams and slabs including flexural and shear behavior, deflections and crack control.
Prerequisite(s): CES 3100C and CCE 3101C