COURSE SYLLABUS (2 Page)

Course Number: CEGR 3122
Course Name: Structural Analysis

Credits and Contact Hours: 3

Instructor: Erika Weber

Textbook: *Title:*   Fundamentals of Structural Analysis (4th ed.)
                  Authors: Leet, Uang, and Gilbert
                  Year: 2010

Catalog Description: Analysis of statically determinate and indeterminate beams, trusses and frames to include shear and moment diagrams, rough deflected shapes and deflections; influence lines and criteria for moving loads; indeterminate analyses to include methods of consistent deflection, slope deflection, and moment distribution.
Most Recently Offered (Day): Spring 2016, Fall 2015, Summer 2015
Most Recently Offered (Evening): Course has not been offered in 3 years

Pre-Requisites/Co-Requisites: MEGR 2144 and MATH 2171 with grades of C or above

Course is: Required (R)

Goals: The objectives of this course are to develop a strong competence in constructing shear and bending moment diagrams along with a qualitative deflected shape diagram coordinated with the curvature dictated by the moment diagram and the structure itself. The students should also have a competence in solving for reactions on determinate structures. They should also be able to use the method of moment distribution to solve for reactions of indeterminate structures. The presentation of work (neatness) and follow-ability of that work is emphasized along with the professional importance related to such presentation. Students should develop a better understanding of how structural analysis fits into the design process and should have a good understanding of how the future design courses (steel, concrete, wood, etc.) will mesh with the analysis requirements. They should have an improved understanding of loads vs. stresses and the physical response of the structure to its loading (shear, moment, and deflected shapes).

Student Outcomes Addressed:
In this course, students will develop the following Student Outcomes:
- A. an ability to apply knowledge of mathematics, science, and engineering
- E. an ability to identify, formulate, and solve engineering problems
- K. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Course Topics:
Introduction to structural analysis; loads on structures; equilibrium requirements and support reactions; plane trusses (pure truss, and, truss with flexural members); shear and bending moment diagrams, rough deflected shapes; influence lines; differential equation for beam deflections; conjugate beam method for beam deflections; virtual work method for deflection of structures; introduction to indeterminate structures; and moment distribution.