

## CEE 3320 Structural Mechanics

### Required Course

#### Catalog Description:

Lec. 2. Rec. 2. Credit 3.

Prerequisite: CEE 3110 . Analysis of statically determinate and indeterminate structures; influence lines; and moving loads. Classical and computer methods.

Math & Basic Sciences: 0 credits

Engineering Topics: 3 credits

Contains significant design

General Education: 0 credits

Other: 0 credits

Course Coordinator: R. Craig Henderson

Updated: 09/17/2013

#### Text Book(s) and Supplemental Material(s):

McCormac and Nelson, *Structural Analysis using Classical and Matrix Methods, latest edition.*

#### Course Goal(s):

The goal of CEE 3320 Structural Mechanics is to reinforce and extend the student's knowledge in the analysis of structures encountered in the practice of Civil Engineering.

#### Instructional Outcomes for the Course:

Students will be expected to:

1. calculate the appropriate load case for structures using dead loads, live loads, and impact loads;
2. analyze beams, frames, and trusses for both specific static load cases and moving load cases; become proficient in determining the maximum shear and moment in beams and frames (shear and moment diagrams);
3. calculate kinematic unknowns (deflections and/or rotations) of beams, frames and trusses;
4. solve for reactions and draw shear and moment diagrams for statically indeterminate structures solved by a variety of methods; and
5. conduct computer solutions of structures and interpret results.

#### Criterion 3 Student Outcomes addressed by this Course:

(3a) Knowledge of math, science, and engineering (Level 3)

(3e) Identify, formulate, and solve engineering problems (Level 4)

3k) Techniques, skills, modern tools for engineering practice (Level 3)

#### Program Criteria addressed by this Course:

- Apply knowledge of math and sciences (Level 3)
- Apply knowledge of four technical areas appropriate to civil engineering (Level 4)

#### Course Topics:

- Introduction to structures (5%)
- Computation of external reactions and construction of shear and moment diagrams (15%)

- Truss member forces (12%)
- Influence lines (15 %)
- Computer applications (5 %)
- Deflections (8 %)
- Indeterminate structures by Consistent Deformations (12 %)
- Indeterminate structures by Slope-deflection (12 %)
- Indeterminate structures by moment-distribution (12 %)
- Introduction to the Stiffness Method (4 %)

**Additional Topics/Assignments for dual-level (4000/5000) courses:**

N/A