

*ABET Course Syllabus***Course Information, Textbook and Supplementary Materials**

Course Description: Deformations and deflections of elastic systems; statically indeterminate beams, arches, and frames; secondary stresses.

Required for: BSCE, BSCE-Structural, BSCE-Bldg. Science, and BSCE-Environmental

Prerequisite: CE 225 Mechanics of Deformable Bodies

Co-Requisite: None

Required Textbook: Elementary Theory of Structures, Y. Y. Hsieh, Prentice Hall, Englewood Cliffs, New Jersey 07632 (Third or later edition).

Reference: None

Topics Covered	Learning Outcomes
Stability, determinacy and in general the nature of constraints of structures Composite structures	<p>Students will be able to do the following:</p> <ol style="list-style-type: none"> 1. Identify static determinacy versus static indeterminacy 2. Select the required number of unknown (equations) to solve the problem 3. Distinguish between internal and external determinacy or indeterminacy of the problem
Elastic deformations Beams Deflection equations Unit load method for beams, frames and trusses	<p>Compute:</p> <ol style="list-style-type: none"> 4. Deformed shape of beams using the differential equation 5. Deflections of a point using unit load method 6. Deflections at a point using conjugate beam method 7. Deflections using Castigliano's Theorem
Method of consistent deformations Frames	<ol style="list-style-type: none"> 8. Determine the unknown forces using the method of consistent deformations for beams, frames and trusses
Slope deflection method Method of joints and sections Shear and Bending Moment	<ol style="list-style-type: none"> 9. Compute joint rotations, solve for the moments at all joints 10. Compute reactions using the slope deflection method

Moment-distribution method and applications for one and two translations Conjugate beams	11. Determine moments at joints of statically indeterminate structures using the Moment-distribution method.
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CE 358

Theory of Structures I

3 Units

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Lecture and Lab Schedule			
Lecture		Lab	
Sessions per Week	Duration per Session	Sessions per Week	Duration per Session
2	1.5 hours	n/a	

Relation of Course Objectives to Program Outcomes

The Civil Engineering program is designed to teach beyond the technical content of the curriculum and prepare the students to utilize what they learn in a professional setting.

This course does not contribute to the program outcomes.

Course Contribution to Program Outcomes (a-k)	✓ Key
n/a	

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