



University of Nicosia, Cyprus

Course Code CEE-320	Course Title Structural Analysis II	ECTS Credits 5
Department Engineering	Semester Fall, Spring	Prerequisites CEE-220
Type of Course Required	Field Civil & Environmental Engineering	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 3 rd	Lecturer(s) Dr Panayiotis Polycarpou
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- To provide the student with a clear and thorough presentation of the theory and application of structural analysis as it applies to indeterminate trusses, beams and frames.
- Develop the student's ability to both model and analyze indeterminate trusses, beams and frames.
- Provide realistic applications to trusses, beams and frames encountered in professional practice.

Learning Outcomes:

After completion of the course students are expected to:

- Grasp the way loads are transmitted through structures and obtain a more complete understanding of the way structures deform under loads.
- Understand the theory of structural analysis of indeterminate structures.
- Apply classical methods to analyze structures and further develop problem-solving skills.
- Gain the means of checking computer results for the analysis rather than simply relying on the generated output.

Course Contents:

- Statically determinate and indeterminate structures. Degree of indeterminacy.
- Analysis of indeterminate structures. Compatibility of deformations. Force method of analysis: Beams, frames and trusses.
- Composite Structures. Symmetric Structures. Influence lines for statically indeterminate beams and frames.
- Deflections. Diagrams and the elastic curve. Elastic-beam theory. Moment-area theorems. Castigliano's theorem for trusses, beams and frames.
- Displacement method of analysis: Slope-deflection equations. Moment

distribution.

- Fundamentals of the stiffness method. Formation of the stiffness matrix truss, Beam and Frame Analysis using the Stiffness Method.
- Kinematic indeterminacy. Cross method.

Learning Activities and Teaching Methods:

- Discussion relevant to a particular theory so that a “procedure for analysis” is provided to the student to be used as a systematic approach for applying the theory.
- Lectures on the related theory through power point presentation.
- Provide example problems and solutions to clarify the numerical application of the important concepts providing example problems and solutions.
- Tutorials offering a concise yet thorough presentation of the related free body diagrams of idealized models as a mastering skill required for a complete solution of any equilibrium problem.
- Project assignments for students to handle structural issues through the development of his or her own procedure gaining confidence and judgment.

Assessment Methods:

Homework, Project(s), Mid-term exam, Final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
R.C.Hibbeler.	STRUCTURAL ANALYSIS	Prentice Hall/ Pearson Education	2006	0-13-197641-9

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Daniel Lewis Schodek, Harvard University Martin Bechthold, Harvard University	Structures, 6/E	Prentice Hall	Copyright: 2008	ISBN-10: 0131789392 ISBN-13: 9780131789395
Russell C. Hibbeler	Engineering Mechanics STATICS	Prentice Hall	2006	013-124-844-8, 013-127-844-4