



South Dakota State University
Department of Civil & Environmental Engineering
Spring 2007

CEE 353 – Structural Theory
CEH 209, MWF 10:00-10:50
Website URL: learn.sdstate.edu/nadim_wehbe

- Instructor: Dr. Nadim Wehbe
- Office: 124 Crothers Engineering Hall
Phone: 688-4291; email: nadim.wehbe@sdstate.edu
- Office Hours: 10:00 a.m.– 12:00 p.m.; Tuesday, Thursday
(You are not limited to seeing me at these hours. Stop by any time if no one else is in my office or call for an appointment).
- Prerequisites: EM 321 (Mechanics of Materials)
- Textbook (Required): *Structural Analysis*, by Hibbeler, Sixth Edition, Prentice Hall, 2006.
- Assignments: Homework problems from textbook and/or handouts. Homework is normally due during the second class meeting following the day the homework is assigned, unless otherwise announced. Teamwork in solving assignment problems is encouraged.
Late homework will not be accepted without a valid excuse.
- Tests: 3 one-hour exams
Comprehensive final
A “no show” will result in a zero grade on the respective exam. A make up exam will not be arranged without a valid excuse and the advance consent of the instructor.
- Grading: Final grades will be based on the following weighting: Homework: 15%
3-Hour Exams: 55%
Final: 30%
- Letter grades will be based on the following distribution: A 90-100%
B 80-89%
C 70-79%
D 60-69%
F ≤ 59%
- Grades will not be curved unless the class grade average falls below 70%
- Attendance: Students must attend all classes.
- Special Needs: Students with disability should alert me or the University’s Office of Disability Services (AD 102; Ph: 688-4504) so that the necessary adaptation can be provided.
- Academic Honesty: Policies regarding academic dishonesty at South Dakota State University are clearly stated in the *Undergraduate Programs 2006-2007 Bulletin* (Page 22). Offenses that lead to disciplinary actions include cheating, plagiarism, fabrication, or facilitating dishonesty.
- Important Dates: Jan. 25 (Thurs) Last day to “add/drop” without charge
Jan. 26 (Fri) “W” grade begins when dropping a course
Apr. 10 (Tue) Last day to drop a course
May 9 (Wed) Final Exam, 9:00-10:40 a.m.

Refer to the University Spring 2007 Course Schedule for other important dates

Freedom in Learning:

Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should first contact the instructor of the course. If the student remains unsatisfied, the student may contact the department head and/or dean of the college which offers the class to initiate a review of the evaluation.

Course Objectives

Students completing this course should be able to:

- determine loads and load distribution to structural members
- identify the load-carrying mechanism of different structural systems (trusses, beams, frames, etc.)
- establish structural determinacy and stability
- determine reactions, member forces, and deformations of determinate structures subjected to external loads and/or temperature change
- determine reactions and member forces of indeterminate structures
- develop shear and bending moment diagrams for beams and frames
- develop influence line diagrams and apply the concept of influence lines to determine the maximum response resulting from moving loads
- perform structural analysis using a structural analysis software and interpret output

Course Outline

1. Overview of Structural Systems and Loads
2. Review of Statics
3. Analysis of Statically Determinate Trusses
4. Analysis of Statically Determinate Beams and Frames
5. Elastic Beam Theory and Flexural Deformations
 - (a) The Double Integration Method-Table of Beam Deflections
 - (b) The Moment-Area Method
6. Deflection of Trusses, Beams and Frames using Energy Methods
7. Analysis of Indeterminate Structures (trusses, beams, frames) – The Force Method
8. Analysis of Indeterminate Structures (beams and frames) – The Displacement Method
9. Analysis of Indeterminate Beams – The Moment Distribution method (time permitting)
10. Influence Lines