ILLINOIS INSTITUTE OF TECHNOLOGY Fall 2011 DEPARTMENT OF CAEE

CAE 303 – STRUCTURAL DESIGN I: STEEL STRUCTURES

Instructor: Jay Shen, Ph.D., P.E., S.E., 215 AM Hall; Phone: (312) 567-5860. E-mail: shen@iit.edu
Instructor office Hours: Wednesday and Thursday 9:00 a.m.-10:00 a.m. Students are strongly encouraged to see the instructor for questions and comments. Questions by e-mail will be answered promptly.
Lectures: Tuesday and Thursday 10:00 a.m. - 11:15 a.m. (first meeting on 08/23, and the last one is on 12/1)
Classroom: LS 111 Auditorium

Course Information and Policies

Textbooks and Other Materials:

Required:
(1) Steel Design (3rd or later Edition) by William T. Segui;

Blackboard Web Site: CAE-303 will make use of Blackboard web site (http://blackboard.iit.edu) to post class notes, announcements, homework solutions, etc. as needed. If you are not familiar with the site, please go to the site, click “login”, and follow the instructions on the site for you to obtain your login name and password. You will need Unified-ID as your login name and Campus-Wide ID (CWID) as your temporary password (you might change your password once you log in).

Homework: The homework will be assigned weekly (except the exam weeks) in class on Thursday and will be due in a week. Please note that homework assignments will be collected at the beginning of the class, and no late homework will be graded except an emergency. All homework assignments are to be submitted on engineering papers with clear text and drawings done neatly using straight edge.

Quizzes: A 10-minute quiz will be given at the beginning of the lecture when a set of homework is due. The quiz will include simple questions from the homework. Students might submit their homework solutions together with their quiz solutions.

Exams: Two midterm exams will be given, the first one in the class on Thursday 9/22, and the second on Tuesday 10/25, as shown in Table 1. The materials covered in the midterm exams will be discussed in the classes prior to the midterm exams. The final examination will be given on the day as scheduled by the University.

Grading System: The final grade for the course will be calculated based on the following weights: 15% for homework assignments, 15% for all quizzes, 15% for the first midterm exam, 15% for the second midterm exam, and 40% for the final exam. 90% or above = A; 80% to 89% = B; 70% to 79% = C; 60% to 69% = D; and so on.

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<td>Behavior and design member in tension members; failure modes and LRFD/ASD specification for tension members</td>
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<td>HW3 Due (Tension)</td>
<td>LRFD/ASD specification for tension members</td>
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No HW due. The first midterm exam is held in the class on 9/23. The format and content of the exam will be discussed on 9/21 class.

No HW due. Fundamental buckling analysis, elastic and inelastic buckling of column; column members design considerations.

Examples of column design in frames.

Applications of column design in framed buildings.

Applications of column design in framed buildings.

The format and content of the exam will be discussed in the 10/21 class.

Failure modes and design strength in welded connections.

Design of welded connections.

Failure modes and design strength in welded connections.

Beam-to-beam and beam-to-column shear connections: failure modes and design considerations.

Examples of Beam-to-beam and beam-to-column shear connections.

Comprehensive exam.
1 8/23, 8/25
Introduction; review of analysis
-- Steel and steel structures; loads and load
combinations; design codes and specifications.

2 8/30, 9/1
Loads; and design codes.
HW1 Due (Loads)

Behavior and design of tension members

3 9/6, 9/8
Tension member and its connection
HW2 Due (Tension)
Behavior and design member in tension members; failure modes and LRFD/ASD specification for tension
members 4 9/13, 9/15

Application of Tension member in structures
HW3 Due (Tension)
LRFD/ASD specification for tension members

5 9/20, 9/22
Review (9/20)

6 9/27, 9/29

Midterm Exam(9/23)
No HW due. The first midterm exam is held in the class on 9/23.
The format and content of the exam will be discussed on 9/21 class.

7 10/4, 10/6
Simple column design
Column design (Cont’d)
HW4 Due (Column)
Examples of column design in frames

8 10/11, 10/13
Column design
(Cont’d)
HW 5 due (Column)
Applications of column design in framed buildings

9 10/18, 10/20
Column design
(Cont’d)

HW6 due (Column)

Applications of column design in framed buildings

10 10/25, 10/27

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Midterm

No HW due The format and content of the exam will be Exam (on 10/25) discussed in the 10/21 class.

11 11/1, 11/3

Introduction to connection design; Welded connections

No HW due Failure modes and design strength in welded connections

12 11/8, 11/10

Welded connections

HW7 due (Connections)

Design of welded connections

13 11/16, 11/18

Bolted connections

HW8 due (Connections)

Failure modes and design strength in welded connections

14 11/22

Design of shear connections

HW 9 due (connections)

Beam-to-beam and beam-to-column shear connections: failure modes and design considerations 15 11/29, 12/1

Design of shear connections and final review

No HW Due

Examples of Beam-to-beam and beam-to-column shear connections

16 Final Exam (week of 12/05)

Final exam based on the University schedule. No HW Due

Comprehensive exam.

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