Theory of Structures
Course Schedule

No.	Date	Topics	Reading	HW
1	8/23 (M)	Role of Structural Engineers/History and Materials	1.1-1.2	
2	8/25 (W)	Loads	1.3-1.4	
3	8/27 (F)	Statically Determinate Structures 1	2.1-2.3	HW 1
4	8/30 (M)	Statically Determinate Structures 2	2.4-2.5	
5	9/1 (W)	Trusses 1	3.1-3.3	
6	9/3 (F)	Trusses 2	3.4-3.5	HW 2
7	9/6 (M)	**NO CLASS (Labor Day)**		
8	9/8 (W)	Shear and Moment 1, 2	4.1-4.3	
9	9/10 (F)	Shear and Moment 3, 4	4.4-4.5	HW 3
10	9/13 (M)	Deflections of Beam	8.1-8.3	
11	9/15 (W)	Moment Area Method	8.4	
12	9/17 (F)	Conjugate Beam Method 1	8.5	HW 4
13	9/20 (M)	Conjugate Beam Method 2	8.5	
14	9/22 (W)	Review		
15	9/24 (F)	**EXAM I**		HW 5
16	9/27 (M)	Method of Virtual Work 1: Trusses	9.1-9.4	
17	9/29 (W)	Method of Virtual Work 2: Beams and Frames	9.5-9.6	
18	10/1 (F)	Method of Least Work 1: Trusses	9.7-9.8	HW 6
19	10/4 (M)	Method of Least Work 2: Beams and Frames	9.9	
20	10/6 (W)	Influence Lines 1	6.1-6.3	
21	10/8 (F)	Influence Lines 2	6.4-6.5	HW 7
22	10/11 (M)	Influence Lines 3	6.6	
23	10/13 (W)	Review		
24	10/15 (F)	Review		HW 8
25	10/18 (M)	**EXAM II**		
26	10/20 (W)	Review of Linear Algebra		
27	10/22 (F)	Stiffness of Beams 1	14.1-14.9* 15.1-15.4*	HW 9
28	10/25 (M)	Stiffness of Beams 2		
29	10/27 (W)	Stiffness of Beams 3		
30	10/29 (F)	Stiffness of Beams 4		HW 10
31	11/1 (M)	Stiffness of Beams 5		
32	11/3 (W)	Degrees of Freedom		
33	11/5 (F)	Stiffness of Beams 6		HW 11
34	11/8 (M)	Stiffness of Frames 1		
35	11/10 (W)	Stiffness of Frames 2		
36	11/12 (F)	Spring Supports		HW 12
37	11/15 (M)	Computer Application: Ftool		
38	11/17 (W)	Review		
39	11/19 (F)	**EXAM II**		
40	11/22 (M)	Moment Distribution Method 1	12.1-12.5	HW 13
41	11/24 (W)	Moment Distribution Method 2		
42	11/26 (F)	**NO CLASS (Thanksgiving Break)**		
43	11/29 (M)	Moment Distribution Method 3		HW 14
44	12/1 (W)	Review		
45	12/3 (F)	Review		
		Final – TBA		

*12/4 (S) is the final instructional day. * Textbook and class-notes approaches are not very similar

4300:306-001 Theory of Structures
Fall 2010: 08/23~12/06

Instructor
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TAs:
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TAs Office: ASEC 51B (Basement of ASEC)

Office Hour
Time: Tuesday 9:30 AM ~ 11:30 AM
Office: ASEC 209F (Dr. Yun's Office)

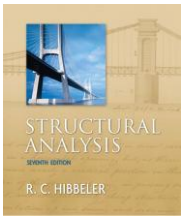
Extra Office Hour
Pre-appointment is required to meet the instructor at other time slots. Email (gy3@uakron.edu) is preferred for appointment.

General Information
Class hour: MWF 9:55 AM ~ 10:45 AM
Classroom: Leigh Hall 208
Class web site: Springboard ***https://springboard.uakron.edu/index.asp***
Classnotes, exams, homework, sign-off problems solutions and handouts will be posted in Springboard. You can also check your updated final grades.

Requisites
The prerequisites for this course are 4300:201 Statics and 4300:202 Mechanics of Solids. This course is prerequisite for courses 4300:401 (Steel Design) and 4300:403 (Reinforced Concrete Design).

Course Description
Analysis, behavior, and design of trusses and framed structures under static loads; analysis topics include member forces in trusses, shear and moment diagrams, deflections, simple applications of the stiffness method for beams and frames and moment-distribution method; introduction to computer applications. Class time will be divided between lecture, student-led partner and group discussions, and in-class problem solving.

Textbook
Russell Hibbeler, Structural Analysis 7th Edition, Prentice Hall.



Keys to Success
Attend class and participate, bring your book to class, bring your calculator to class, work with others, do your homework, and summarize-log the key skills you learn. In fact, you will be REQUIRED to document your problem approach on 4" x 6" index cards (I will refer to them as "Process Cards") which may be used to complete assignments, in-class problems, and perhaps exams. Lastly, please differentiate between difficulties with math-calculus and difficulties with structural analysis – my job is to teach you structural analysis.

Homework (20%)
Problem formulation and solving are the keys to successful learning in this course. A proper solution format is required (see attached homework guidelines). Late assignments will be accepted but penalized by 20% reduction. Students are encouraged to work together on homework assignments and analysis in the interest of gaining additional understanding. Exam questions will be used to measure individual student comprehension. In accordance with University policy, however, any evidence of direct copying of homework assignments will result in a zero for that assignment and/or University disciplinary action.

Sign-off Problems (10%)
More than 10 sign-off problems will be given during in-class problem solving session. You are encouraged to work out the sign-off problems with your classmates. So if you have any question or help, please ask your classmates or me. You should submit your solution of the given sign-off problem before class ends.

3 Mid-term Exams (40%)
A total of three one-hour exams will be given as indicated in the course schedule throughout the semester. All exams are closed book. The lowest one will be dropped automatically. There is no make-up exam.

Final exam (30%)
Final exam covering the entire course will be given. Final is also closed book and notes. Date and Time: TBA.

Class attendance policy
Attendance is very important for success in this course. So attendance sheet will be passed around almost every class. If you can not attend class inevitably, please send an email with reasons for your absence before the class. Medical condition, emergency or more time for other courses or projects and any other unavoidable reasons will be accepted. Absence without pre-notice will deduct 0.5% from your final grade. For example, if your total grade is 93% (A) and you missed classes eight times from your negligence, then your final grade will be $93\% - 8 \times 0.5\% = 89\%$ (A-).

Class Rules
- Turn off cell phones, laptops and pagers while in class
- Class starts at 9:55 PM not 10:00 AM!
  - Coming in late is *rude* and *disrupts* class
  - If you arrive late, please enter as quietly as possible
  - You *forfeit* the right to turn in homework with a late arrival

- Sleeping is disrespectful to everyone – especially when you snore!
- Talking in class is very rude, disrespectful of me and other students. I will stop lecturing and wait for talking to cease.
- Please ask questions if you don't understand – you will *NOT* be criticized for asking questions!
- I am more than willing to answer questions outside of class.

Instructor Note on Plagiarism

Copying others' homework or cheating in exams is academic dishonesty in this course. Please note that any form of academic misconduct in this course may result in the penalties of formal disciplinary probation, suspension, or dismissal. If you are unfamiliar with what constitutes plagiarism, I would advise that you read the University policy.

Grading

90 and above: A
87~89: A-
85~86: B+
80~84: B
75~79: C+
70~74: C
65~69: D+
60~64: D
Below 60: F

Homework Guidelines for Structural Analysis

*Recommended format **USING ENGINEERING PAPER (OR REVISED ENGINEERING PAPER)**:*

Date: 13 April 2010 HW#6 Name

Problem 1. Problem Title

Problem Statement: State the reason for doing the problem. Note all the given information and draw any necessary figures. Clearly state the desired result.

Solution Procedure: Outline the approach you will use to solve the problem.

Solution: Write out in detail the formulation of the solution. Text (i.e. print - don't free hand) and figures must be neat throughout. Use a straight edge for any hand-drawn figures and reference all equations. Box or double-underscore the final answer. Finally, add any additional comments to justify your answer, i.e. does the answer make sense?

Additional Instructor Notes:

1. Neat and orderly homework does not come without work. Continuous effort from you will be necessary to produce quality work. Well-organized homework problems, however, are useful for many years. Remember that each problem set should stand-alone so that you could return to the write-up later and have all of the necessary information to understand the problem. **For simple problems, it may take you much longer to write your solution procedures than to solve the problem.**

2. One continuous complaint from consulting engineers and industry is that new graduates no longer can produce acceptable calculation sheets. Time is money in engineering. Calculations will be checked by colleagues or supervisors and therefore must be clear, thorough, and presentable.

3. **SUBMITTED** homework will be reviewed for format upon receipt. Suggestion may be made by the instructor/TAs to improve quality. However, if very disorderly homework is submitted, or continual disregard is given for formatting, homework will be returned without being graded. The grade for submitted homework will be based on the guidelines stated above, **as well as the correctness of the solution**.

4. Homework Grading - Each Problem will be graded according to the following (10 points per problem):
   0 Points - No effort made to solve the problem or extremely sloppy work
   5 Points - Attempted to solve problem but incorrect answer and/or work is sloppy
   9 Points - Solution is close (simple error?), solution procedure is clear, and work is not sloppy
   10 Points - Same as previous but the solution is correct

Process Card Guidelines for Structural Analysis

Process Cards are intended to be a record of the key calculation skills and concepts you will learn this semester. Creating Process Cards is a useful exercise in all engineering course. Several key items to note for effective and useful Process Cards:

1. Create them as you work on problems – not AFTER you work them.
2. Use your own words – the textbook gives solution procedures but they are often wordy or too technical.
3. Write them such they can handle any problem in that subject area, NOT just a specific problem.
4. Revise them as needed.