1/18 2000

AE 333 Mechanics of Materials Spring 2000

9:30 - 10:45 TTh 209WH (Section 12848)

Prerequisites:

AE 223 Statics and MATH 344 Calculus III (the latter may be taken concurrently)

Textbook (Required):

Mechanics of Materials (3rd Edition), R.C. Hibbeler, Prentice Hall, 1997

Course Instructor:

Shigeo Hayashibara (Graduate Teaching Assistant, MSAE) Email: sxhayash@wsuhub.uc.twsu.edu
Office: 214 WH (Phone: 978-5942) / Office Hours: 10:45 – 12:30 TTh or by an appointment

Course Contents:

Hibbeler, Mechanics of Materials (3rd Edition):

- Chapter 1, 2, 3, 4: Concept of Stress and Strain, Axial Load, Thermal Stress
- Chapter 5, 6: Torsion, Power Transmission, Angle of Twist, Bending Stresses of Beams and Shafts
- Chapter 7, 8: Transverse Shear, Thin-Walled Vessels, Combined Loadings
- Chapter 9, 10: Stress and Strain Transformation, Mohr's Circle, Material-Property Relationships
- Chapter 12, 13: Deflections of Beams and Shafts, Buckling of Columns / Special Topics: Stress Concentrations

Homework Assignments:

The homework problems will be assigned (typically two to four problems for each lecture topic) from the textbook. The homework is typically due one week from the date assigned (see the attached class schedule). **No late homework will be accepted**, since I usually provide you complete solutions when I collect your homework assignments. All homework assignments must strictly follow the rules described below:

- Use only 8-1/2" × 11" papers (but **NOT** spiral bound papers with rough edges), and write on one side of the paper **ONLY**. The use of engineering paper (you can purchase it in WSU bookstore) is **highly recommended**.
- Write your full name, student ID number on upper left corner, and write page number / total pages on upper right corner on your homework. Staple your papers together. I cannot be responsible for missing pages, if not stapled.
- Start each problem on a new sheet of paper. Do **NOT** write several problems on one sheet of paper.

Quizzes and Final Exam:

The five in-class quizzes and comprehensive final exam are scheduled to evaluate your performance in this class. All quizzes (as well as final exam) are **OPEN BOOK**, but closed for everything else. It is important to follow the rules described below:

- Enter the classroom five minutes earlier than the scheduled time of quizzes or final exam. Note that a quiz or final exam starts and ends exactly on time (see the attached class schedule). **No extra time will be given for your late arrival**.
- You may use a scientific calculator **ONLY** (no laptop or palm computers) during the quizzes or final exam.

Make-Up Policy:

The make-up quizzes and / or final exam can be arranged if you meet one of the following conditions:

1) Severe illness / Traffic accidents (**documents** required)
2) Participating in one of the out of town athletic events (**prior notification** and **permission** required)
3) Two or more final exams scheduled on the same day (does **NOT** apply to the **quizzes**)

Class Grade:

Homework Assignments		**20 %**
Homework Bonus		**5 %**
Quizzes	**15 % × (5 – 1) =**	**60 %**
Final Exam		**20 %**
Total		**105 %**

- For each assigned homework set, the bonus credit will be granted for those students who solve and turn-in **ALL** assigned homework problems.
- The worst score out of five quizzes will **NOT** be counted in your final class grade.
- The final class grade will be given as: **A (100 – 90), B (89 – 80), C (79 – 70), D (69 – 60), F (59 – 0)**

Presentation of Problem Solutions:

It is important to present your work in effective and organized manner in your homework assignments, quizzes, and final exam. Please note the followings:

- You need to start your presentation from writing the problem statements with known and unknown conditions of the problem. It usually includes appropriate figures to illustrate the conditions.
- You need to state the analytical reasoning of why you choose particular methods or equations, and how to use them to solve the problem.
- You need to show **ALL** intermediate results on your problem solutions.
- You need to clearly show your final conclusive results.

Note that you will obtain **NO CREDIT** for right answers without any explanation of how you got it. Since the answer keys to your homework assignments are given in your textbook (appendix section), I will assume that you have **copied** from them (hence, considered as **cheating**). Also note that you will obtain **NO CREDIT**, if you do not include necessary equations and figures. I will assume that you have **copied** from someone's work or other sources (hence, considered as **cheating** as well). Your handwriting must be neat and organized. You will obtain **NO CREDIT**, if I cannot read your handwriting.

Engineering Professionalism:

As an engineer, you will be asked to solve many complicated problems in the real world situations soon or later. One of the important goals in this class is to build positive attitude as a professional engineer through exercising the problem solutions. I expect you to work consistently with professional manner as an engineer. Note that the following negative attitudes will guarantee you to obtain the poor grade in this class as well as the poor performance as an engineer in the future:

- Not spending time on trying to solve homework by yourself, but trying to copy someone's idea
- Ignoring the reading assignments, but using the textbook as a reference book
- Trying to memorize how to solve the problems, instead of trying to understand the concept behind it

Note that it is **YOUR** responsibility to attend the class as well as to keep all information in the class. It is **NOT** my fault, but yours for missing important information in the class because of your absence from or late arrival for the class.

Academic Dishonesty:

Any cheating will be promptly reported to the college of engineering dean's office, and the grade of **F** for the class (possibly the dismissal from the university) will be the result. I will **NEVER** tolerate academic dishonesty (**copying someone's work and claiming it as your own**). Please note that the following very typical acts are considered as cheating as well:

- Solving homework problems with group and copying the solutions from each other
- Obtaining homework solutions from past semesters and copying from them
- Copying from other students in the class or solutions of past semesters during the quizzes or final exam

I do encourage you to discuss about the homework with your classmates, come see me with your questions during my office hours, and check out guidebooks and other study aid materials. However, all homework assignments, quizzes, and final exam must be **YOUR OWN** work.

AE 333 Mechanics of Materials Spring 2000

Tentative Class Schedule

9:30 - 10:45 TTh 209 WH Section 12848

Instructor: Shigeo Hayashibara (Graduate Teaching Assistant, MSAE)

Email: sxhayash@wsuhub.uc.twsu.edu
Office: 214 WH (978-5942)
Office Hours: 10:45 - 12:30 TTh or by an appointment

Class	Month	Date	Reading Assignments	Lecture Topics	Homework Problems	Due
1	January	18	1.1, 1.2	Introduction / Statics Review	~~1-2~~, 1-5, ~~1-17, 1-26~~	27-Jan ✓ 44/40
2		20	1.3, 1.4, 1.5, 1.6, 1.7	Concept of Stress	1-41, 1-53, 1-82, 1-102	27-Jan ✓
3		25	2.1, 2.2, 3.1, 3.2, 3.3	Concept of Strain / Stress-Strain Diagram	2-3, 2-9, 2-15, 2-26,	3-Feb ✓ 39/40
4		27	3.4, 3.5, 3.6, 3.7, 3.8	Mechanical Properties of Materials	3-9, 3-18, 3-27, 3-30	3-Feb ✓
5	February	1	4.1, 4.2, 4.3	Axial Load-1	4-2, 4-11, 4-19, 4-35	8-Feb ✓ 45/40
6		3	4.4, 4.5, 4.6	Axial Load-2 / Thermal Stress	4-50, 4-51, 4-61, 4-73	8-Feb ✓
7		8	5.1, 5.2, 5.3, 5.4	Torsion-1	5-7, 5-13, 5-33, 5-51	22-Feb ✓
8		10		**Quiz 1 (Chapter 1, 2, 3, 4)** 77/100		
9		15	5.5, 5.6, 5.7	Torsion-2	5-77, 5-90, 5-107	22-Feb ✓
10		17	6.1, 6.2, 6.3	Bending-1	6-7, 6-21, 6-33, 6-49	29-Feb ✓
11		22	6.4, 6.5	Bending-2 / Unsymmetric Bending	6-94, 6-109	29-Feb ✓
12		24	7.1, 7.2, 7.3	Transverse Shear-1	7-9, 7-13, 7-22	9-Mar ✓
13		29	7.4, 7.5	Transverse Shear-2	7-41, 7-47, 7-62	9-Mar ✓
14	March	2		**Quiz 2 (Chapter 5, 6)**	8-4	
15		7	8.1	Thin-Walled Vessels	8-3, 8-7, 8-8	16-Mar ✓
16		9	8.2	Combined Loadings	8-19, 8-21, 8-26	16-Mar ✓
17		14	9.1, 9.2, 9.3	Stress Transformation	9-3, 9-10, 9-13, 9-15	4-Apr ✓
18		16	9.4, 9.5	Mohr's Circle	9-59, 9-62, 9-65, 9-93	4-Apr ✓
19		21		Spring Break (No Class)		
20		23		Spring Break (No Class)		
21		28		**Quiz 3 (Chapter 7, 8)** ✓		
22		30	10.1, 10.2, 10.3, 10.4	Strain Transformation	10-2, 10-7, 10-15, 10-21	11-Apr

*** Last Day to Drop the Class with "W" : March 31 (Friday)**

23	April	4	10.5, 10.6	Material-Property Relationships	10-23, 10-29, 10-37, 10-49	11-Apr
24		6	12.1, 12.2	Deflections of Beams and Shafts-1	12-7, 12-19	20-Apr
25		11	12.3, 12.5	Deflections of Beams and Shafts-2	12-34, 12-42, 12-91	20-Apr
26		13		**Quiz 4 (Chapter 9, 10)**		
27		18	12.6, 12.7	Deflections of Beams and Shafts-3	12-106, 12-109	27-Apr 2-May
28		20	12.9	Deflections of Beams and Shafts-4	12-111, 12-121	27-Apr
29		25	13.1, 13.2, 13.3	Buckling of Columns	13-6, 13-17, 13-22, 13-37	2-May
30		27	4.7, 5.8, 6.9	Stress Concentrations	4-87, 5-113, 6-151	2-May
31	May	2	Handout	Review for Comprehensive Final Exam		
32		4		**Quiz 5 (Chapter 12, 13, Stress Concentrations)**		

*** Comprehensive Final Exam : May 11 (Thursday), 8 - 9:50 AM**

Note: This is only a <u>TENTATIVE</u> schedule. Please be very careful for the announcement in the class.

SHIGEO HAYASHIBARA SCHEDULE Spring 2000

Instructor: AE 333 Mechanics of Materials (Section 12848)

Office: 214 Wallace Hall (978-5942) sxhayash@wsuhub.uc.twsu.edu

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 AM					
9:00 AM					
10:00 AM		**AE 333** **Mech. of Materials** 9:30 - 10:45 TTh 209 WH		**AE 333** **Mech. of Materials** 9:30 - 10:45 TTh 209 WH	
11:00 AM		**AE 333** **Office Hours** 10:45 - 12:30 TTh 214 WH		**AE 333** **Office Hours** 10:45 - 12:30 TTh 214 WH	
12:00					
1:00 PM	**Research** 1 - 4 MTWThF 214 WH				
2:00 PM	CALL (978-5942) and **MAKE an APPOINTMENT**				
3:00 PM					
4:00 PM					
5:00 PM					
6:00 PM					