MECH 1321: STATICS

Class Reference Number:	17468
Textbook:	**Engineering Mechanics: Statics 12nd ed.** by R.C. Hibbeler
Class/Lab Meeting:	MWs, 9 am to 10:20 am
Class Room:	LART 107
Prerequisite:	MATH 1411 Calculus
Instructor:	Yirong Lin, Ph.D. Department of Mechanical Engineering Office: A111 E-mail: ylin3@utep.edu Office Hours: 1 pm to 2 pm MWs
Teaching Assistant:	*To be announced*

Course Objectives

At the end of the course, students will learn the principles that govern the behavior of rigid-body mechanical engineering systems in static equilibrium. Specifically, students will be able to do the following:

1. Identify an engineering problem appropriate for engineering mechanics analysis;
2. Draw a free-body diagram and identify all forces and moments acting on an object at rest;
3. Represent force and moment systems with equivalent systems;
4. Perform an analysis to identify all forces and moments acting internally or externally on an object;
5. Determine geometric properties of one, two and three dimensional objects

Topics covered

1. General Principles	(Chapter 1)
2. Force Vectors	(Chapter 2)
3. Equilibrium of a Particle	(Chapter 3)
4. Force System Resultants	(Chapter 4)
5. Equilibrium of a Rigid Body	(Chapter 5)
6. Structural Analysis	(Chapter 6)
7. Internal Forces	(Chapter 7)
8. Friction	(Chapter 8)
9. Center of Gravity and Centroid	(Chapter 9)
10. Moment of Inertia	(Chapter 10)

Grades

Your grade for this course will be assessed based on your performance in quizzes (10 %), mid-term exams (50 %), homework including course portfolio (10 %), and final departmental exam (30 %). Several quizzes will be given throughout the semester. The content of a quiz could be the materials covered in previous sessions or to be covered that day. There will be no make-up quizzes. Four exams will be given during the semester. Make-up exams will be given only for extremely credible reasons. **The worst exam will be dropped from your final grade**. Every student is required to take the departmental final exam at the end of the semester.

Your final grade will be calculated based on the points you have accumulated as follows:

A	$\geq$90
B	$\geq$80 but <90
C	$\geq$70 but <80
D	$\geq$60 but <70
F	<60

The instructor reserves the right to revise this grading plan. However, students will be informed of any changes during the semester.

Allowed Calculators

The following will be the only calculators allowed in exams:

- Casio: All fx-115 models. Any Casio calculator must contain fx-115 in its model name.
- Hewlett Packard: The HP 33s and HP 35s models, but no others.
- Texas Instruments: All TI-30X and TI-36X models. Any Texas Instruments calculator must contain either TI-30X or TI-36X in its model name.

These are the same calculators that are currently being allowed in the Fundamental of Engineering (FE) and Professional Engineering (PE) exams (http://www.ncees.org/exams/calculators/). It is your responsibility to get acquainted with the features of the calculator you decide to use. I recommend that you use this calculator for all your work (including other courses) since this will help you learn how to use all the features of your calculator.

Homework (Optional)

Students are encouraged to solve all problems contained in the book. However, only assigned homework problems are **due at the beginning of the first class of the following week**. Late homework problems will not be accepted, except in unusual cases.

Start a problem with one new sheet. Use only one side of a sheet. Write down the course number, problem number, and student name on the top line of each sheet. Staple each set of homework problems. Discuss the problems with your classmates, the teaching assistant, or the instructor, but do not copy homework from each other. **Both (or all) parties involved in copying homework will automatically receive zero grades for that set of assignment**. You will do well in the class if you understand thoroughly all the problems you solved.

All problems should contain a free body diagram. Neatness is essential. Give necessary details in the

solution so that people can easily follow your calculations.

Course Portfolio

Students are required to prepare a course portfolio documenting all materials relevant to the course. The portfolio shall contain the Student's Class Record (see attached), classnotes, quizzes, exams, homework, study notes, and any relevant materials accumulated during the semester. **Students should submit their course portfolio to the instructor at the final exam**. All portfolios will be returned to the students before the end of the final week. The instructor believes the students will benefit from the portfolio years later when they need to review the learned subjects for advanced courses or professional engineer licensure exam.

Attendance and Tardiness

Attendance is mandatory. Absence can be checked by the instructor through quizzes, exams, roll calling, randomly picked names for problem solving in class, or other mechanisms. **You could receive an F grade if you miss more than three classes without the instructor's consent.** Everyone is required to attend the lab session. **Two absences from the lab will result in an F grade for the whole class**. The instructor appreciates all efforts to attend the class. There will be no penalty for being late. **However, exams and quizzes may be given at the beginning of the classes. No additional time will be allowed for late attendees**.

Study Aids

Instructor's Office Hour

During the specified office hours, you can drop by the office for any questions regarding the subjects discussed in the class without making an appointment. Of course, you are always welcomed to visit me at any other times, but I may not be available for discussion because of other commitments. Leave me a note, call for an appointment, or send me an e-mail will be the most effective way to catch me for your questions. Remember, do not pile up questions and expect me to answer all your questions the day before an exam.

Teaching Assistant

There will be a teaching assistant (TA) assigned to each session. The TA will assist the instructor in grading homework, proctoring exams, and answering questions. In addition to the instructor's office hour, there will be TA's office hours to answer your questions. The TA's schedule will be announced in the second week of the class.

ACES and the Tutoring Center

Students are reminded of the tutoring services available in the ACES and the library. The University provides these services to you. Check the schedules and make use of the services.

Study Guide

Read the text to be discussed prior to the scheduled class and review the subject thoroughly after the class. Read the textbook carefully. Work on all examples given in the text and solve as many unassigned problems as you can. Expect to spend 10 to 15 after-class hours each week on the subject. Establish a good studying habit and you will do very well in the class.

Policy on Cheating

Students are expected to be above reproach in all-scholastic activities. Students who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the university. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts@ (Regents= Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22). Scholastic dishonesty harms the individual, all students, and the integrity of the university; policies on scholastic dishonesty will be strictly enforced.

References

Students are encouraged to study materials related to the subjects discussed in the class. There are many books that can help students to improve their understanding of the subjects and their problem solving skills. Some of the books that you can find in the library are:

Wolstenholme and Cantab, *Elementary Vectors*. QA433.W64
Davis and Snider, *Introduction to Vector Analysis*. QA433.D38
Jensen and Chenoweth, *Statics and Strength of Materials*. TA351.J4
Spiegel and Limbrunner, *Applied Statics and Strength of Materials*. TA351.S64
Beer and Johnston, *Vector Mechanics for Engineers: Statics and Dynamics*. TA350.B3552
Meriam and Kraige, *Engineering Mechanics: Statics*. Fourth Edition. TA350.M458, 1997
D. Rylance, *Mechanics of Materials*. TA405.R794, 1996
R. Craig, *Mechanics of Materials*. TA405.C89, 1996
W. Riley, L.D. Sturges, and D.H. Morris, *Mechanics of Materials*. TA450.R55, 1999

Updates and Internet Learning

One of the web sites the students may want to visit is http://cw.prenhall.com/hibbeler/. There are many exercise (multiple-choice and true-or-false) problems designed to help the students. Select a chapter number in the pull down manual and you are ready to go.

Class Schedule

Week	Date	Chapter	Sections	Assigned Problems	Due Date (at Class)
1	8/22 – 8/24	2	2.1 - 2.6	2.2, 2.3, 2.10, 2.17, 2.26, 2.33, 2.37, 2.42, 2.47, 2.55, 2.59, 2.62, 2.66, 2.73, 2.82	8/31
2	8/29 – 8/31	2	2.7 – 2.9 **Quiz 1 (W)**	2.86, 2.90, 2.95, 2.107, 2.110, 2.113, 2.115, 2.122, 2.127, 2.134,	9/07
3	9/05 – 9/7	4	4.1 – 4.5 **EXAM 1(W)**	4.4, 4.9, 4.11, 4.17, 4.25, 4.30, 4.35, 4.38, 4.42, 4.43, 4.46, 4.49, 4.53, 4.55, 4.60, 4.67	9/14
4	9/12 – 9/14	4	4.6 – 4.9	4.74, 4.75, 4.87, 4.91, 4.99, 1.106, 4.110, 4.113, 4.117, 4.120, 4.123, 4.130, *4.142, 4.144, 4.155*	9/21
5	9/19 – 9/21	3 & 5	3.1 – 3.4 5.1 – 5.4 **Quiz 2 (W)**	3.1, 3.6, 3.12, 3.19, 3.29, 3.36, 3.47, 3.58, 3.63, 3.67 5.2, 5.5, 5.8, 5.9, 5.21, 5.26, 5.29, 5.32 , 5.34, 5.42, 5.58	9/28
6	9/26 – 9/28	5	5.5 – 5.7 **EXAM 2(M)**	5.64, 5.67, 5.69, 5.70, 5.72, 5.81, 5.84	10/5
7	10/3 – 10/5	6	6.1 – 6.4	6.2, 6.7, 6.10, 6.21, 6.27, 6.31, 6.34, 6.35, 6.41, 6.42, 6.44, 6.49	10/12
8	10/10–10/12	6	6.5 – 6.6	6.54, 6.62, 6.67, 6.70, 6.74, 6.77, 6.8, 6.83, 6.87, 6.95, 6.100	10/19
9	10/17 – 10/19	7	7.1 – 7.2 **Quiz 3 (W)**	7.2, 7.5, 7.6, 7.10, 7.15, 7.20, 7.25, 7.33, 7.41, 7.43, 7.47, 7.51, 7.57	10/26
10	10/24 – 10/26	7	7.3	7.65, 7.67, 7.70, 7.72, 7.74, 7.78, 7.81, 7.86	11/2
11	10/31 – 11/2	8	8.1 – 8.2 **EXAM 3 (W)**	8.1, 8.5, 8.13, 8.18, 8.21, 8.30, 8.34, 8.37, 8.43, 8.49	11/9
12	11/7 – 11/9	9	9.1 – 9.3	9.1, 9.3, 9.5, 9.10, 9.22, 9.23, 9.32,9.38, 9.42, 9.46, 9.51, 9.55, 9.59, 9.68, 9.73, 9.76	11/16
13	11/14– 11/16	9 & 10	9.3 10.1 – 10.5 **Quiz 4 (W)**	9.86, 9.89, 9.91, 9.94, 9.97 10.1, 10.5, 10.6, 10.9, 10.16, 10.27, 10.31, 10.36, 10.37, 10.50, 10.58	11/23

14	11/21 – 11/23	10	10.5 – 10.6 10.8	10.61, 10.65, 10.68, 10.71, 10.78, 10.81, 10.90, 10.95, 10.101, 10.103, 10.108, 10.111	11/30
15	11/28 – 11/30		**EXAM 4(M)** Review		
16	12/07 Wednesday			**Final Exam: December 7, 2011 at 10:00 am.**	

The above schedule, policies, and assignments in this course are subject to change in the event of extenuating circumstances or by mutual agreement between the instructor and the students.

Quizzes/Exams Schedule

Week	Date	Quiz
1	8/22	
2	8/29	Quiz 1
3	9/7	Exam 1
4	9/12	
5	9/21	Quiz 2
6	9/26	
7	10/05	Exam 2
8	10/10	
9	10/19	Quiz 3
10	10/24	
11	11/02	Exam 3
12	11/7	
13	11/16	Quiz 4
14	11/21	
15	11/28	Exam 4
16	12/07 Wednesday	Final Exam