



Introduction to Structural Mechanics: Spring 2007

Course #MEC K114

Technologies Department

Course Description:

The ability to analyze problems using the basic principles of static systems is developed in order to provide a foundation for stress analysis. The forces on structures in equilibrium and concepts of centroids, center of gravity, and moment of inertia are studied. The concept of stress and strain in axial torsional and bending loading is also introduced.

Instructor:

PROF Patrick H. Knowles Jr. Room 203B (TV) ph: 885-2379 pknowles@trcc.commnet.edu

Text Book:

1. Hibbeler, R.C., *Engineering Mechanics, Statics*, Tenth Ed., Prentice-Hall, 2003.

Reference Books:

Any statics or structural mechanics text.

Course Topics:

- I VECTORS
- II EQUILIBRIUM
- III RESTRAINTS
- IV STRUCTURAL ANALYSIS
- V INTERNAL FORCES
- VI FRICTION
- VII CENTROIDS

Instructor Assistance:

Seeking help from the instructor outside of class is encouraged if you are having difficulty understanding course material. Feel free to Email/call for an appointment during office hours.

Homework:

Homework is not mandatory in the sense that failure to complete will detract from your course average. However, completing homework has been found to be extremely helpful in understanding and reinforcing the concepts covered in class. Those who attempt and complete (to the best of their ability) the homework *using the proscribed format* can expect to receive up to 10% added to the final average (after quizzes, exams and the final exam). The grade will be assigned on a 10 pt. scale. Homework is due on the assigned due date at the beginning class. Late homework **will not** receive credit.

If you cannot attend a lecture due to extraordinary events, notify the instructor in advance of the meeting you will miss. Unless special arrangements have been made with the instructor in advance, the due date for written work **will not change**. You are responsible for obtaining the information covered at any meeting you miss.

You may work with others on nightly homework assignments to determine analysis methods, but you must indicate on your paper from whom you have received assistance.

Academic Integrity Policy:

Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person's ability to succeed in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. In this class and in the course of your academic career, present only your own best work; clearly document the sources of the material you use from others; and act at all times with honor.

Grading Policy:

Three Exams and a Final Exam will be given during the semester. The dates of the exams are noted in the Lecture Schedule. Approximately one hour of the class meeting will be devoted for each exam; the exam will be given at the beginning of the lecture period. You may exempt the final exam if your cumulative grade after the last exam is 90% or greater AND in the opinion of the instructor you have demonstrated mastery in all topics covered during the semester. Final grades will be based on a normal distribution of all students taking the course based on the following weighting:

Project	20%
Exams	60%
Final Exam	20%

Withdrawal:

A student who finds it necessary to discontinue a course must complete a "Withdrawal Request Form" available in the Registrar's office within the time limits of the semester calendar. Students who do not withdraw, but stop attending will be assigned an "F" signifying a failing grade. The last day to withdraw from classes without an instructor's signature is 30March2007.

Disabilities Statement:

If you have a hidden or visible disability that may require classroom or test-taking modifications, please see the course instructor as soon as possible. If you have not already done so, you may choose to notify and consult with the Disabled Student Counselor.

Attendance

This course is designed in such a way that a student should get more from the in-class activities than from the textbook alone. Therefore, students who are registered for this course are naturally expected to attend class regularly. Over the span of a semester the instructor expects to become familiar with the attendance habits of individual students. Therefore, these habits cannot help but be a factor in the evaluation of class participation and student contribution.

Lecture Schedule – Spring 2007

Date	Topics	Reading	Assignment	HW#
Jan22	Introduction; Trig Revue	trig HO	trig problems	1
Jan24	Vector addition of forces	1.1-1.5; 2.1, 2.4, 2.5	1-1; 1-3; 1-17; 2-1; 2.1; 2.3; 2.7	
Jan29	2D particle equilibrium	3.1-3.3	2.50; 2.55	2
Feb05	Moment of a force	4.1	3-1; 3-2; 3-9	3
Feb12	Equiv. systems	4.6, 4.7	4.5, 4.9, 4.13	
Feb12	Distributed loads	5.2	4.98; 4.102; 4.139; 4.146; 4.154	4
Feb19	2D FBDs, 2D Rigid body equilibrium, 2FM	5.3-5.4	5.2; 5-12; 5-13; 5-19; 5-25	5
Feb26	Exam 1			
Mar05	Trusses MOJ, ZFMs	6.1-6.3	6-1; 6-7; 6-13	6
	Trusses MOJ			
Mar12	Trusses MOS	6.4	6-30; 6-35; 6-38	7
Mar26	Exam 2, Friction	8.1, 8.2	8-1; 8-2	8
Apr02	Friction – Tip or slip	8.1, 8.2	8-3; 8-9	9
	Pulleys, Frames & machines	3.2, 6.6		
Apr09	Internal forces; Shear and moment diagrams	7.1, 7.2	7-6; 7-7	10
Apr16	Shear and moment diagrams	7.2	7-42; 7-49	11
Apr23	Exam 3			
Apr30	Review			
May07	Final Exam			