
SCHOOL OF ENGINEERING

COURSE SYLLABUS

COURSE TITLE: Engineering Mechanics -
Statics

TERM: Spring
YEAR: 2014

COURSE: ENGR 2214
SECTION NO.: 004

TIME: MW 7:00 – 8:15 pm
PLACE: M-137

INSTRUCTOR: Dr. M. A. Karim, P.E.

OFFICE LOCATION: M-162B

OFFICE HOURS: M W 02:00 - 05:00 pm
*Other hours by appointment

OFFICE PHONE: (678) 915-3026
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DEPARTMENTAL PHONE: (678) 915-4220;

MY WEBSITE: <http://educate.spsu.edu/mkarim>

NUMBER OF CREDIT HOURS: 3-0-3 (Lecture-Lab-Total)

PREREQUISITS: PHYS 2211K (or concurrent enrollment)

COURSE DESCRIPTION: Study of force vectors, equilibrium of particles, equilibrium of rigid bodies in two and three dimensions; trusses, friction, centroids, and moments of inertia.

REQUIRED or ELECTIVE: Required

REQUIRED TEXT: Engineering Mechanics: Statistics by Russell C. Hibbeler, Prentice-Hall, 13th Edition, ISBN-13: 978-0-13-291554-0, ISBN-10: 0-13-291554-5.

REFERENCES: Vector Mechanics for Engineers: Statics by F. Beer and E. Johnson, McGraw-Hill Book Company, Current Edition.

OTHER MATERIALS: Handouts may be provided as needed. It is recommended that students take notes in a three ring binder since they may be receiving handouts throughout the semester. SPSU email and Desire 2 Learn (D2L) systems will be used for message and content delivery, respectively. Students should access these sites regularly.

COURSE LEARNING OUTCOMES: Upon successful completion of this course, students shall be able to:

1. Demonstrate proficiency in Cartesian vector analysis of force systems in two-/three-dimensions;

2. Draw free body diagram of force systems on particles and rigid bodies;
3. Determine the moment about a point and an axis;
4. Reduce a system of forces to a force-couple system and to a single force;
5. Develop and apply the equations of equilibrium for solving equilibrium problems, such as beams, frames, and machines;
6. Analyze plane trusses using the method of joints and the method of sections;
7. Determine the internal forces of pin-connected structural members;
8. Apply Coulomb's theory of dry friction to solutions of equilibrium problems;
9. Determine the center of mass, and the centroids of plane areas; and
10. Determine the moments of inertia of composite areas using the parallel-axis theorem.

COURSE REQUIREMENTS:

1. **Attendance:** Students are expected to attend class. Advance notice of an absence should be provided whenever possible. Makeup exams, quizzes, and acceptance of late assignments will be considered only for documented medical reasons, emergency circumstances, or other university sponsored activities. The instructor can initiate withdrawal of a student from the course or fail the student in the course if a student is absent in 3 classes without any valid reason/excuse.
2. **Homework:** All problem assignments must be submitted in the next class following the class in which the topic is discussed. Late homework WILL NOT be accepted. Exceptions may be considered in case of illness, serious emergencies, or other university sponsored activities. However, appropriate evidence must be presented in order to qualify for exceptions. All homework must be submitted on 8½"x11" white paper or on engineering design paper (preferable) with a cover page. Cover page should include student's name, course number and name, assignment number, assignment date, and due date. Show the detail works for full credit. Graded homeworks will be returned to students; however, students need to preserve them until the grades are finalized and show them to the instructor if there is any dispute in grades. Homework numbers are usually in the last slide of the topic presentation or in the syllabus.
3. **Exams/Quizzes:** All exams/Quizzes are closed books and notes unless advised otherwise. NO make-up exams will be given. Exceptions may be considered in case of illness, serious emergencies, or other university sponsored activities. However, appropriate evidence must be presented in order to qualify for exceptions. Graded exams/Quizzes will be returned to students; however, students need to preserve them until the grades are finalized and show them to the instructor if there are any disputes in grades. There will be a quiz on each topic on the day the homework for this topic is due.
4. **Cheating:** Cheating on assignment and particularly on the examinations will not be tolerated. If you are caught cheating, you will get zero on the exam. You will be asked to move if you are caught looking at another student's work. The instructor reserves the right to remove any student from the class if the student's behavior is of a disruptive nature or if there is an evidence of academic dishonesty.

5. **Term Paper/Presentation:** No term paper/presentation for this course.
6. **Class Decorum:** No cell phone use, eating, and/or multitasking are allowed during the class. For emergency, cell phone can be operated in vibration mode; however, students can receive an emergency call only stepping out of the class room. No feet on the table and/or on the nearby chair are allowed during the class. It is also encouraged not to bring any foods in the class.
7. **Honor Code:** SPSU has an Honor Code and a procedure for handling cases when academic misconduct is alleged. All students should be aware of them. Information about the Honor Code and the misconduct procedure may be found at <http://www.spsu.edu/honorcode/>.
8. **Grade Dispute/Appeal:** Final grade dispute/appeal must be submitted within a week of the final exam. The procedure has been outlined in the SPSU website that can be accessed via the link at http://www.spsu.edu/business/faq_suggestions/gafaq.htm.
9. **ADA Provisions:** “Students with disabilities, as defined by the Americans with Disabilities Act (ADA) of 1990, should contact the instructor during the first week of the semester regarding the accommodations necessary to complete the requirements of this course. The instructor, with the help of SPSU, will make reasonable adjustments to take into consideration the specific handicap of each student covered under the ADA. The students can also contact SPSU ADA coordinator at 678-915-7244 for additional help.”
10. **Communications, Grading, and Response Timeframe:** The best way to communicate with me is by SPSU email or D2L email, then by telephone. Grading of homeworks/ assignments may take up to a week. I will try to respond to any comments/questions within 24 hours. However, I may not be available during the weekend.
11. **Contacts to get Help:**
 - For D2L Technical Support, go to <http://spsu.edu/d2l>
 - For Wimba Technical Support, go to <http://www.wimba.com/services/support/>
 - SPSU Help Desk Phone Number: (678) 915-HELP(4357).

GRADING POLICY: All exams and assignments must be completed satisfactorily in order to pass the course. The evaluation process described below is subject to change by the instructor. Changes will be announced in the class.

<u>Class Work:</u>		<u>Total Grade:</u>				
1. Homework	- 10%	Scale, Letter Grade, and GPA				
2. Quiz	- 20%	90%	-	100%	A	4.0 (Excellent)
3. Midterm 1	- 20%	80%	-	90%	B	3.0 (Good)
5. Midterm 2	- 20%	70%	-	80%	C	2.0 (Satisfactory)
5. Final Exam	- 30%	60%	-	70%	D	1.0 (Passing)
				< 60%	F	0.0 (Failure)
					WF	0.0 (Withdrawn after deadline)
TOTAL	- 100%	--	--			

The following symbols are approved for use in the cases indicated, but will not be included in the determination of the grade point average.

"I" This symbol indicates that the student was doing satisfactory work but, for non-academic reasons beyond his control, was unable to meet the full requirements of the course. The requirements for removal of an "I" are left to the respective institutions; however, if an "I" is not satisfactorily removed after three quarters of residence, the symbol "I" will be changed to the grade "F" by the appropriate official. (See Southern Tech policy - Removal of an Incomplete "I", on page 2).

"W" This symbol indicates that a student was permitted to withdraw without penalty. Withdrawals without penalty will not be permitted after the mid-point of the total grading period (including final examinations) except in cases of hardship as determined by the appropriate official of the respective institution.

"V" This symbol indicates that a student was given permission to audit this course. Students may not transfer from audit to credit status or vice versa.

"K" This symbol indicates that a student was given credit for the course via a credit by examination program approved by the respective institution's faculty (CLEP, AP, Proficiency, etc.).

SCHEDULE: Two 75-minute classes or 3-50 minute classes or 1-150 minutes class per week.

TENTATIVE LECTURE TOPIC/OUTLINE: The following lecture topic/outline is subject to change by the instructor. Changes will be announced in the class.

Class/Week	Tentative Lecture Topic/Outline	Homework	Chapter
Week 1	Topic 1: General Principles	HW # 1: 1-2, 6, 12, 19, and 20 = 5 problems.	Chapter 1
Week 2	Topic 2: Force Vectors	HW # 2: 2-10, 17, 22, 27, 33, 37, 45, 51, 57, and 93 = 10 problems.	Chapter 2
Week 3	Topic 3: Equilibrium of Particles.	HW # 3: 3-6, 11, 14, 29, 39, and 46 = 6 problems.	Chapter 3
Week 4-5	Topic 4: Force System Resultants.	HW # 4: 4-8, 20, 24, 33, 49, 53, 67, 71, 78, 90, 100, 108, 123, 140, and 147 = 15 problems.	Chapter 4
Week 5	Midterm 1 Exam		---
Week 6-7	Topic 5: Equilibrium of a Rigid Body.	HW # 5: 5-2, 4, 6, 11, 18, 37, 58, 71, 78, and 92 = 10 problems.	Chapter 5
Week 8	Topic 6: Structural Analysis.	HW # 6: 6-5, 9, 19, 23, 30, 41, 52, 64, 70, and 81 = 10 problems.	Chapter 6
Week 9	Spring Break (March 3 – 7, 2014) – No Class		---
Week 10-11	Topic 7: Internal Forces.	HW # 7: 7-2, 6, 11, 15, 24, 31, 44, and 46 = 8 problems.	Chapter 7
Week 11	Midterm 2 Exam		---

Class/Week	Tentative Lecture Topic/Outline	Homework	Chapter
Week 12	Topic 8: Friction.	HW # 8: 8-5, 10, 17, 24, 35, 64, 84, 88, 97, and 100 = 10 problems.	Chapter 8
Week 13-14	Topic 9: Center of Gravity and Centroid.	HW # 9: 9-4, 10, 14, 35, 60, 64, 78, and 123 = 8 problems.	Chapter 9
Week 15-16	Topic 10: Moments of Inertia.	HW # 10: 10-4, 6, 16, 29, 35, 41, 95, and 104 = 8 problems.	Chapter 10
Week 17	Final Exam – Comprehensive (Common to all Sections)		---

ABET CATEGORY: Engineering science: 100%