UNIVERSITY OF SOUTHERN CALIFORNIA
<u>AME 201, Statics</u>
Spring 2010

Time and Location   TTh 5:00 PM to 6:15 PM, GFS 116 (section 1, 28716R)

Instructor: Babak Boloury
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Office Hours: TTh 4:00 PM to 5:00 PM, and by appointment
                     RRB 215

TA: Mr. Brian Justusson (justusso@usc.edu)
                     RRB 215
                     M: 2:00 PM to 4:30 PM
                     W: 12:00 PM to 2:30 PM, and by appointment

Textbook: Ferdinand P. Beer; J. E. Russell Johnston; Elliot R. Eisenberg, David
                     Mazurek, <u>Vector Mechanics for Engineers - Statics</u>, McGraw-Hill, 9th
                     edition, 2010

Prerequisite: Math 125.

Recommended   AME 101, PHYS 151L
Preparation:

<u>Grading:</u>

    Homework: 15%
    2 Midterm Exams: 25% each
    Final Exam: 35%

    Homeworks will be collected and graded randomly. Late homework will not be accepted.

    The midterm exams are at the end of chapters 3 (6th week) and 6 (10th week).

    All exams are closed book and closed notes. Make-up exams will not be given under any
    circumstances.

    Generally, an average score of mid to high 60's (out of 100) is a C.

<u>Other Issues:</u>

    Be respectful to your classmates and the instructor. Students are expected to be on time for
    class and to remain once class starts. Cell phones and pagers should be turned off during
    class.

    Regular class attendance is obviously recommended.

    Final Exam is on Thursday, December 9, 2010, from 4:30 PM to 6:30 PM

    Thursday November 25, 2010 is a school holiday (Thanksgiving).

Topics (Reading)	Problems Assigned
1. Introduction 1.1 – 1.6	--------------------

2. Statics of Particles
   – Forces in a Plane (2.1 – 2.11)
   – Forces in Space (2.12 – 2.15)
	2.5, 19, 23, 25, 26, 36, 37, 43, 54, 56, 67, 69, 77, 81, 86, 90, 106, 114, 125, 131

3. Rigid Bodies: Equivalent systems of Forces 3.1 – 3.21	3.3, 7, 10, 24, 25, 31, 35, 39, 45a, 48, 54, 72, 75, 80, 82, 94, 101, 114, 119, 122, 155

4. Equilibrium of Rigid Bodies
   – Equilibrium in Two Dimensions (4.1 – 4.7)
   – Equilibrium in Three Dimensions (4.8 – 4.9)
	4.2, 19, 22a, 25, 27, 30, 43, 49, 61 (use graphical methods), 69, 71 (use graphical methods), 116, 117, 142, 145

5. Analysis of Structures
   – Trusses (6.1 – 6.5, 6.7)
   – Frames and Machines (6.9 – 6.12)
	6.3, 5, 12, 47, 57, 59 (solve for HG), 63, 79, 88, 92, 102, 126, 139 (Do not turn in), 146, 156

6. Friction 8.1 – 8.5, 8.10	8.3, 12, 15, 18, 27, 46, 48, 102, 110, 134

7. Distributed Forces : Centroids and Center of Gravity
   – Areas and Lines (5.1 – 5.8)
   – Volumes (5.10 – 5.11)
	5.2, 8, 22, 35, 36, 40, 68, 69, 71, 101, 103, 105, 137

8. Distributed Forces : Moments of Inertia
   – Moments of Inertia of Areas (9.1 – 9.7)
   – Moments of Inertia of a Mass (9.11 – 9.15)
	9.2, 9, 18, 26 (Do not turn in), 31, 32, 33, 34, 36, 42, 44, 53, 111, 114, 117, 131, 134, 136, 142, 144

9. Forces in Beams
   – Internal Forces in Members (7.1 – 7.2)
   – Beams (7.3 – 7.6)
	7.5, 6, 7, 11, 15, 21, 29, 35, 40, 49, 52, 80, 81

10. Method of Virtual Work (Time Permitting) – 10.1 – 10.9	Assigned later

Homework Suggested Format:

Work only one problem per page. Do **NOT** use the back of the page. The homework should be done and presented very clearly and neatly. Sloppy work on homework assignments, as well as the exams, will be harshly graded or not graded at all.

It is recommended that all homework problems to contain the following:

(a) Problem Number and Page Number, or Chapter Number and Problem Number.

(b) **Given:**   List the data given in the problem statement; often a sketch with appropriate dimensioning and labeling contains most, if not all the given information. Missing a given piece of information or a key word will result in you not being able to solve a problem which you might otherwise have been able to solve.

(c) **Find:**   State what you are trying to find in this problem.

(d) **<u>Solution:</u>**   Solve the problem in a neat and logical manner. Sketch all required free-body-diagrams (FBD), if applicable. Write each general equation before substituting in the appropriate values in a specific equation. This procedure allows you and others to follow what you have done. Enclose the answer(s) in a box including the appropriate units and direction (if applicable).

(e) Always include units with all calculations. <u>Each calculated value should have a unit</u>.