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UNIVERSITY OF SOUTHERN CALIFORNIA
AME 408, Computer-Aided Design of Mechanical Systems
Fall 2010

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Time and Location:	T 6:30 PM to 9:10 PM	SAL 127
	Th 6:30 PM to 8:30 PM	SAL 127

Instructor: Babak Boloury
bboloury@hotmail.com

Office Hours: TTh 4:00 PM to 5:00 PM
RRB 215

Web site: https://blackboard.usc.edu/

TA: Mr. Giacomo Castiglioni (castigli@usc.edu)
RRB 215
MW 4:00 PM to 6:00 PM

Textbook: There is no official textbook for the course. Handouts will be distributed on Blackboard as necessary. An official textbook may be announced later.

Reference and Supplemental books: They will be announced later during the semester.

Goals: To develop student's understanding of the design of mechanical systems using advanced graphics techniques; design optimization, solids modeling and FEA methods. The course will develop the ability to effectively utilize commercial CAE software as a tool for better productivity in design. This semester SolidWorks and SolidWorks Simulation (CosmosWorks) packages will be used.

Prerequisites: AME 308, Statics, Strength of Materials, Stress Analysis, Heat Transfer, Dynamics and Vibrations, Matrix Algebra, Senior Standing

Grading:

Final Project:	20%
2 Exams:	15% each
Projects:	35%
Labs:	15%

Late lab reports and projects will not be accepted under any circumstances. Also, make-up exams will not be given under any circumstances.

Every week, labs will be assigned. However, not all problems will be graded. Only a handful of them will be graded randomly throughout the semester. You are required to turn in all lab problems. I will not announce in advance which problems will be graded. All labs are due Tuesday of the following week.

The two exams are closed note and consist of modeling problems.

- For the first exam, you are required to draw parts and assemblies parametrically and correctly with all design intents being met. When the dimensions of the object changes, the object should adjust accordingly and build without any errors. The problems will ask for the physical properties of the object, such as weight, moment of inertia, centroid, etc. Most of the problems on this exam are multiple choice questions (therefore, no partial credit will be given).

- The second exam is usually made up of finite element analysis questions. You will be asked to mesh the part or assembly correctly with a proper type of element. Then find the stress, displacement, temperature, frequency, etc. This exam usually has partial credit.

The final project is a group project. You will be asked to design a part with certain restrictions, such as size, stress, displacement, etc.

Other Issues:

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. During class and lab, you are not suppose to surf the web nor do homework for other classes.

Regular class attendance is obviously recommended.

Course Outline:

1. Introduction
2. Introduction to CAD (Solid Modeling) and FEA
3. Part and assembly modeling using SolidWorks
4. Basic concepts of engineering analysis
5. Linear Static Analysis
6. Adaptive Analysis and Mesh Control
7. Thermal Analysis
8. Dynamic Analysis
9. Design Optimization
10. Linear Buckling Analysis