Time and Location:  
M 9:00 AM to 11:50 AM  SAL 127 (Section 1, 28758)  
W 9:00 AM to 11:50 AM  SAL 127 (Section 2, 28759)  

Instructor:  Babak Boloury  
bboloury@hotmail.com  
Office Hours:  MW 8:00 AM to 9:00 AM,  
BHE 315  

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

TA:  Mr. Keyvan Noury (noury@usc.edu)  
Office hours will be held in the main SAL computer area  
Mon 4:30 to 6:00 PM ,  Tue 2:30 to 5:00 PM ,  Thur 3:45 to 4:45 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:  

**SolidWorks:**  

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>ISBN</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. SolidWorks 2012 Part 2 – Advanced Techniques</td>
<td>Tran</td>
<td>978-1-58503-700-1</td>
</tr>
<tr>
<td>5. Parametric Modeling with SolidWorks 2012*</td>
<td>Schilling &amp; Shih</td>
<td>978-1-58503-699-8</td>
</tr>
<tr>
<td>7. Engineering Design with SolidWorks 2012*</td>
<td>Planchard</td>
<td>978-1-58503-697-4</td>
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**SolidWorks Simulation:**  

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<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>ISBN</th>
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<tbody>
<tr>
<td>1. Engineering Analysis with SolidWorks Simulation 2012</td>
<td>Kurowski</td>
<td>978-1-58503-710-0</td>
</tr>
<tr>
<td>2. Introduction to FEA Using SolidWorks Simulation 2012</td>
<td>Shih</td>
<td>978-1-58503-704-9</td>
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All reference books are from SDC Publications (www.schroff.com)
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:

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<tr>
<td>Final Project</td>
<td>22%</td>
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<tr>
<td>Exams #1</td>
<td>0%</td>
</tr>
<tr>
<td>Exams #2</td>
<td>25%</td>
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<tr>
<td>Projects</td>
<td>33%</td>
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<tr>
<td>Labs</td>
<td>20%</td>
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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 Wednesday of the following week.

Contesting of grading of all assignments and exams must be done within one week after the graded assignment or exam is returned. After 7 days, the work will not be re-graded.

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

- Even though the grade of the first exam does not contribute to your class grade, you are required to take the exam. Also note that if you score less than 50% on the first exam, it will negatively impact your final grade in the class, even though this exam does not have any weight. 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. The questions do not carry any partial credit.

- The second exam is usually made up of finite element analysis questions. You will be asked some theoretical questions as well as 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.

- Tentative Dates for the two exams are (depending on room availability):
  
  Exam I: Friday March 6, 2015 (10:00 AM – 11:50 AM), or
  Exam I: Wednesday March 4, 2015 (7:00 PM – 9:00 PM)
  
  Exam II: Friday April 10, 2015 (10:00 AM – 11:50 AM), or
  Exam II: Wednesday April 8, 2015 (7:00 PM – 9:00 PM)

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. The class hours are dedicated to AME 408 only. Therefore, during class and lab, you are not supposed to surf the web, play games on the web nor do homework for other classes. If you are caught doing so, you will be asked to leave the class.

Regular class attendance is obviously recommended.

The week of March 16 – 21, 2015 is Spring Recess, so the class will not meet. Also, Monday January 19, 2015 and Monday February 16, 2015 are school holidays. As a result, the Monday class will not meet on these two dates. However, makeup sessions may be scheduled for the Wednesday of the same weeks (obviously for the Monday class only), provided a computer lab can be found. The exact times and locations will be announced later on.

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. Introduction to FEA
6. Linear Static Analysis
7. Adaptive Analysis and Mesh Control
8. Finite Element Modeling Strategies
9. Linear Dynamic (Frequency) Analysis
10. Linear Buckling Analysis
11. Thermal Analysis
12. Design Optimization

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and contact information for DSP:
http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX), ability@usc.edu.
Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, (www.usc.edu/scampus or http://scampus.usc.edu) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.