Instructor: Prof. Sara McMains  
852-9359  
5145 Etcheverry  
Office Hours: W 12-1, M 2-3, or by appointment

Reaching me: I have an RSI (repetitive strain injury) from typing, so please include a phone number if you email me. Ask questions of general interest (such as homework clarifications) in lecture, lab, or the class discussion board. Ask quick questions not of general interest before or after class. For more in-depth discussions, come to my office hours, or if you have a conflict with office hours, see me before or after class to set up an alternate meeting time. You can also call me at the phone number above. Any email you send needs to include your phone number.

GSI (a.k.a. TA): Sushrut Pavanaskar (sushrut@berkeley.edu)  
GSI Office Hours (in 2105 Etcheverry): TBA, possibly Tuesday 2:30-4:30?

Website:

We will be using bspace for the course website, https://bspace.berkeley.edu/. Use your CalNet ID and password to login. If you are concurrent enrollment, the GSI can give you access during the first lab if you have a Calnet ID.

Description:

Introduction to engineering design graphics. 3-dimensional visualization and spatial reasoning. Engineering sketching. The fundamentals of orthographic projection, with applications. Parametric and feature-based solid modeling. Assembly modeling. Review of basic fabrication processes. Geometric dimensioning and tolerancing. Drawing conventions and presentation of 3-dimensional geometry on 2-dimensional media. This course will introduce and emphasize the use of CAD on the computer workstation as the major graphical analysis and design tool. A design project is required. 3 units.

Lectures: MW 11-12 pm, 60 Evans  
Laboratory: Thursday 3:30-6:30 or Friday 2-5 pm, 2105 Etcheverry

Exams: Midterm 1: Thursday, Feb 23, 6-8 pm  
Midterm 2: Thursday, April 5, 6-9 pm  
Final: Tuesday, 8 May 2012, 7-10 pm

Course Material Fee: There is a $27 course material fee for this class.

Course Materials


AutoCAD 2012 student edition software. Available in the CAD labs or may be downloaded with UCB email account.

SolidWorks 2011/12 Education Edition software. Available in the CAD labs or may be downloaded with UCB code in March.
**Organization:**

All students registered or on the waitlist for a lecture and a lab at the start of the semester are guaranteed enrollment. Students will be randomly assigned to lecture section 001 or 002 based on a proprietary formula that takes Student ID as input. Both lecture sections have the same lecture, exam, and lab times and the same course materials fee. This syllabus is for lecture section 001.

Twice weekly lectures. Weekly laboratories. Weekly homework assignments. One group design project. Two midterm examinations. One final examination. The midterm examinations are scheduled for Thursday, Feb 23, 6-8 pm and Thursday, April 5, 6-9 pm. Availability for lectures, laboratories, and all examinations is required for enrollment in the class. Please see the instructor for accommodation of religious beliefs, disabilities, and other special circumstances before the end of the second week of classes for any foreseeable issues.

**Grading:**

- 20% Homework, laboratory, and class & clicker participation bonus
- 20% Project
- 15% Midterm Examination #1
- 15% Midterm Examination #2
- 30% Final Examination

**Homework:**

Homework sets will be assigned in lecture on Wednesdays and will be due at 5 pm on Wednesday of the following week. Scans of written homework problems and hand drawings, as well the computer files for all CAD homework problems, must be submitted electronically by the due date! Solutions will be discussed in lab the following week. Late homework will be marked off by 50% and will only be accepted up to one week late (unless we need to post the solutions earlier, which may happen before an exam, in which case an announcement will be made). You must turn in all problems together (i.e. you can't turn in some on time and others late).

**Late HW Policy:**

Evaluating the merit of student excuses for late homework is not an activity I enjoy; therefore, all students will automatically be given one "free" late homework (without penalty) and in addition the lowest homework score will be dropped. (You don’t need to tell us ahead of time when you are using your free late homework). Similarly all students will receive two “free” days of participation. Save these for when you really need them!

**Academic Honesty:**

All students should be familiar with the Code of Student Conduct and know that the general rules and student rights stated in that document apply to this class (see http://uga.berkeley.edu/SAS/osc.htm). For the purposes of homework assignments, you are allowed (and encouraged!) to discuss the problems and techniques with other students in this course, but each student must do his or her own version of the CAD solution from scratch on the computer and/or write up their own solution for written problems. Never give a classmate a copy of your computer files, and never have someone else's computer file in your possession.

IF YOU DISCUSSED YOUR WORK WITH OTHER STUDENTS, OR CHECKED YOUR ANSWERS AGAINST THEIRS, YOU MUST DESCRIBE THE COLLABORATION IN YOUR WRITE-UP AND ACKNOWLEDGE THE STUDENT(S) WHO ASSISTED YOU OR WHO YOU ASSISTED (all students will receive full credit in this case). Turning in someone else's work as your own (or letting someone else turn in your work as their own), on the other hand, will be treated as cheating, and will result in a grade of zero on the assignment for all students involved in the incident. Because responding to in-class questions with the clicker is worth course credit, responding for another student will be treated as cheating, and both students will lose all class participation credit for the course. Cheating on a midterm or final exam may result in a failing grade for the entire course. In all cases of cheating, your actions will also be reported to the Office of Student Conduct for administrative review.
Laboratory:

Labs begin with the first week of class. At the beginning of each lab session, activities will include grading the prior week’s homework, a short review of the current week’s lecture material, useful hints for CAD work, and tutorials and other lab activities. The remainder of the lab you will start working on the remaining homework problems while the GSI circulates to answer individual questions. Students are also encouraged to help each other with questions during this second part of lab. The GSI will also be holding office hours in the lab (times TBA).

Most homework assignments will require the use of the computer. The computers in the CAD labs in rooms 2105/2107/2109 Etcheverry Hall are available for use except when a class is in session. The use schedule will be posted on the doors to the labs. The labs are locked after 6PM and on the weekends and the building is locked at 7 pm and on weekends; however, students enrolled in the class can obtain card key activation to access the labs and the building after hours with the proximity card key feature of their student ID card. Card key activation may be obtained from http://www.me.berkeley.edu/accounttool for a $10 activation fee (through CARS) if you are enrolled. Otherwise you can get card key access with a $10 check or money order to UC Regents, from room 6161 Etcheverry, during key hours (9 AM to 11 AM Tu-Fri). This may require you to get my signature on a card key activation form. Always swipe your card key when you enter the CAD labs after hours, even if it is not yet activated, and don't let anyone else into the labs after hours without asking them to also swipe their card key.

Each student can use their CalNet ID and their passphrase to logon to the computers. Storage quota is 500 MB. Please use the networked H: drive for saving the files you are working on in lab, NOT the hard drive of the lab computer. All students are responsible for backing up their own data, so store to USB memory as often as necessary. There is a free print quota of 100 sheets every start-of-semester. When used up, it can be increased in $5 increments (250 sheets, $0.02/sheet) at http://www.me.berkeley.edu/accounttool, charged to CARS. Only ME students and students who are enrolled (or waitlisted during the first 3 weeks) will be allowed to login. There will be a grace period of 3 weeks from the start of the semester before students without enrollment will be denied access. The software used for this course is AutoCAD for computer-assisted-drawing, and SolidWorks Education Edition for parametric solid modeling. Both are installed in the CAD labs. Instructions for downloading to your own PC will be posted as we start using each program.

If problems are encountered with a machine, place a note under the keyboard describing the problem, and move to another machine. Notify the system administrators by emailing mesupport@me.berkeley.edu (this address is ONLY to report computer problems).

Keep the labs secure. Do not allow anyone without a Cal ID access, and make sure they swipe it before entering after hours. Please notify one of the instructors or campus security of any suspicious persons or events in, or near, the labs. Theft of computer equipment and personal property has been a problem in the labs in the past. DO NOT BLOCK OPEN THE DOORS.

NO FOOD OR DRINKS IN THE LABS. Accounts subject to termination for violations of this policy.
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<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Material</th>
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<tr>
<td>1</td>
<td>1/18</td>
<td>Mental visualization, isometric sketching.</td>
<td>Chapter 2</td>
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<tr>
<td>2</td>
<td>1/23, 1/25</td>
<td>Mental rotation, orthographic multiviews &amp; interpretation, line styles and projection angle conventions.</td>
<td>Chapter 3, 10</td>
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<tr>
<td>3</td>
<td>1/30, 2/1</td>
<td>Multiview characteristics, oblique &amp; perspective pictorials, the two principles of orthogonal projection, dimensioning.</td>
<td>Chapter 11, 12</td>
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<tr>
<td>4</td>
<td>2/6, 2/8</td>
<td>Auxiliary views, more dimensioning.</td>
<td>Chapter 14, 15</td>
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<tr>
<td>5</td>
<td>2/13, 2/15</td>
<td>Basic geometric relationships, pt/line distance, line-line relationships.</td>
<td>(supplementary reading)</td>
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<tr>
<td>6</td>
<td>2/22</td>
<td>Edge view of a plane.</td>
<td>(supplementary reading)</td>
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<td>2/23</td>
<td>6 – 8 PM, Midterm Examination #1</td>
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<td>7</td>
<td>2/27, 2/29</td>
<td>Sections, standards, cartooning, projects.</td>
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<td>8</td>
<td>3/5, 3/7</td>
<td>Sections, special cases, shorthand.</td>
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<td>9</td>
<td>3/12, 3/14</td>
<td>SolidWorks, Booleans, design intent, revolutions, base features.</td>
<td>Chapter 6, 9</td>
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<td>10</td>
<td>3/19, 3/21</td>
<td>Datums, true position, MMC.</td>
<td>Chapter 16</td>
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<td>11</td>
<td>4/2, 4/4</td>
<td>Datums, placement, datum independent &amp; optional tolerances.</td>
<td>Chapter 16</td>
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<td></td>
<td>4/5</td>
<td>6 – 9 PM, Midterm Examination #2</td>
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<td>12</td>
<td>4/9, 4/11</td>
<td>Datum related tolerances, working drawings, assemblies.</td>
<td>Chapter 16, 7</td>
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<tr>
<td>13</td>
<td>4/16, 4/18</td>
<td>Design intent, assemblies, fits, joining.</td>
<td>Chapter 17</td>
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<tr>
<td>14</td>
<td>4/23, 4/25</td>
<td>GD&amp;T wrap-up, advice for final project drawings.</td>
<td>Chapter 18</td>
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Project drawings are due Monday, 30 April, 5:00 PM. Final Exam on Tuesday, 8 May 2012, 7-10 PM

* Notes: 20 Feb is President’s Day, 26-30 March is Spring Break. No classes.