

## E 25 – Visualization and Graphics for Design, Spring Semester 2020

**Instructor** Prof. D.K. Lieu ([dlieu@me.berkeley.edu](mailto:dlieu@me.berkeley.edu))  
5128 Etcheverry Hall, 642-4014  
Office Hours: MW 10 – 12

### **Description:**

Development of 3-dimensional visualization skills for engineering design. Sketching as a tool for design communication. Presentation of 3-dimensional geometry with 2-dimensional engineering drawings. This course will introduce the use of 2-dimensional CAD on computer workstations as a major graphical analysis and design tool. 2 units.

Lectures: W 3-4, 106 Stanley Hall

Laboratory: Section 101, Th 3-5, 10 Jacobs Hall  
Section 102, Fr 3-5, 10 Jacobs Hall

GSI: Jungpyo Lee ([jungpyolee@berkeley.edu](mailto:jungpyolee@berkeley.edu))  
Office Hours: M 1-3

Reader: Massimiliano (Max) de Sa ([mz.desa@berkeley.edu](mailto:mz.desa@berkeley.edu))  
Office hours F 4-5

### **Textbooks:**

Lieu, D.K., and Sorby, S.A., Visualization, Modeling, and Graphics for Engineering Design, 2<sup>nd</sup> Edition, Cengage Publishers, 2016. ISBN-13: 978-1285172958 . **Required.**

A variety of good manuals on AutoCAD are available from amazon.com and the many bookstores around campus, and may be used as reference material for those with little or no CAD experience.

### **Organization:**

15 weeks of lecture. Homework will be assigned weekly in lecture will be due in class before lecture begins the following week. The midterm examination is scheduled for the evening (7:00 – 9:00 PM) of Friday, 6 March. Availability for lectures, laboratories, and all examinations is required for enrollment in the class.

### **Laboratory:**

The purpose of the laboratory is to provide a forum where students can receive assistance with lecture and homework material from the instructors and other students. At the beginning of each lab session, the GSI will usually present a short review of the week's lecture material, and provide useful hints for the homework assignment that week. The GSI will also provide a series of exercises to be done during the lab period. Attendance of the lab is mandatory and will be checked by submission of the lab exercises.

The labs are locked after 6:00 PM and on the weekends and the building is locked at 7:00 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 key activation may be obtained from <https://www.me.berkeley.edu/accounttool/> for a \$10 activation fee (through CARS) if you are an ME student. Otherwise you can get card key access with \$10 check or money order to UC Regents, from room 6161 Etcheverry during key hours (9 AM to 11 AM Tu-Fri).

The CAD workstations in rooms 10 Jacobs Hall and 1171 Etcheverry Hall are provided for student use in this, and other courses, except when a class is in session. The student stations in each laboratory are networked to a printer and a fileserver, where personal files (up to 1 Gb) may be stored. Each student can use their CalNet ID (student ID) and their passphrase to logon to the computers. Only students who are on the official class list AND have their card key activated will be allowed to login. There will be a grace period of three weeks from the start of the semester before students without cardkeys activation will be denied access. Sometimes actual activation gets delayed, but as long as you have signed up for activation your computer account will remain active. Each student should obtain a USB drive for file transfer and back-up. Many homework assignments and the project will require the use of a computer. It is recommended that students use their own computers and software for doing their homework and project outside the laboratory. The software used for this course is AutoCAD 2020, which is available at no cost for students. Instructions for downloading the software will be given during Lab.

If problems are encountered with a machine in the Lab, place a note under the keyboard describing the problem, and move to another machine; otherwise the instructors will not know that a machine is down. Keep the room secure; do not allow unauthorized access. Please notify 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.**

**Scoring:**        25% Homework  
                          5% Attendance  
                          30% Midterm Examination #1 (2 hrs.)  
                          40% Final Examination (3 hrs.)

**WEEKLY AGENDA:**

| <b>Week</b> | <b>Dates</b> | <b>Topic</b>                             | <b>Reading</b>              |
|-------------|--------------|--|-----------------------------|
| 1           | 1/22         | Introduction to graphics and design      | Lieu & Sorby Chapter 1      |
| 2           | 1/29         | Sketching and visualization              | Lieu & Sorby Chapter 2      |
| 3           | 2/5          | Coded plans, rotation exercises          | Lieu & Sorby Chapter 3      |
| 4           | 2/12         | Cutting and reflection exercises         | Lieu & Sorby Chapter 3      |
| 5           | 2/19         | Orthogonal projection and standard views | Lieu & Sorby Chapter 8      |
| 6           | 2/26         | Pictorial views from orthogonal views    | Lieu & Sorby Chapter 9, 17  |
| 7           | 3/4          | 2D CAD drawing, Midterm Exam ( 8 Mar)    | Lab notes                   |
| 8           | 3/11         | Dimensioning                             | Lieu & Sorby, Chapter 12    |
| 9           | 3/18         | Section views                            | Lieu & Sorby Chapter 10     |
| 10          | 4/1          | Auxiliary views                          | Lieu & Sorby Chapter 11     |
| 11          | 4/8          | Parametric drawing                       | Lieu & Sorby Chapter 5      |
| 12          | 4/15         | Fasteners, Engineering drawings          | Lieu & Sorby Chapter 14, 18 |
| 13          | 4/22         | Engineering drawings                     | Lieu & Sorby Chapter 14     |
| 14          | 4/29         | Structural drawings                      | Lieu & Sorby Chapter 14     |
| 15          | 5/6          | Review                                   |                             |

\* Notes: 17 February is an academic holiday.  
23-27 March is Spring Break. No Lecture or Labs.