

**Instructor:** Professor Phillip Messersmith  
Office: 218 Hearst Memorial Mining Building  
**Office Hours:** 1:15-3:15 pm Monday, or by appointment.

**GSIs:** Patrick Kwon ([jkwon@berkeley.edu](mailto:jkwon@berkeley.edu)) Office Hours: Tu/Th 5-6pm  
Jose Javier Fonseca Vega ([jose.j.fonseca@berkeley.edu](mailto:jose.j.fonseca@berkeley.edu)) Office Hours: Th 9-11am  
All GSI office hours will be in 350 HMMB.

**Meeting place for Discussions and Lab 0:** 350 HMMB  
**Meeting place for Labs 1-6:** 230 HMMB

**Course Website:** bCourses

**Textbook:** W.D. Callister, Jr. & D. G. Rethwisch, Materials Science and Engineering an Introduction, 9<sup>th</sup> Edition, Wiley (2014). This book as well as the 8<sup>th</sup> edition will be on reserve in the engineering library. This is the textbook for the E45 lecture course. It is not required for the lab but may be a useful resource.

**SD Card:** An SD card for storing and transferring photos is helpful but not mandatory. In the absence of an SD card you can take photos using a cellphone camera.

**Description:** This 1-unit course consists of one (1) 3-hour laboratory safety training session, six (6) 3-hour laboratory experiences occurring every other week taught by GSIs and Laboratory Staff and overseen by the lead instructor, six (6) 1-hour mandatory discussion sessions (occurring the week prior to each laboratory experience) in which fundamental information about the laboratory experiments will be taught, and one (1) 2-hour ethics training session.

**Objectives:** The objectives of this course are to provide undergraduate engineering and science students hands-on experiences in foundational materials science topics and to serve as a practical extension to the lecture-based course E45 – Properties of Materials. E45 provides broad coverage of the field for non-majors who may not be able to take another course in materials science & engineering, and it serves as the introductory course in the major field, laying the foundation for understanding the relationship between the internal structure of matter and the properties of materials that make them attractive for engineering applications. This course will apply these basic principles in a laboratory setting while providing practical experience in writing, ethics, and other skill sets.

**Connection to E45:** E45L is laboratory-based experience that augments the topics of the E45 lecture class with hands-on practical experiences. Students taking E45 are not required to take E45L, but those taking E45L must have already completed or be taking E45 concurrently.

**Grading Policy:** Lab Reports (7) 91%  
Participation 9%

There are no individual thresholds assigned to the different components of your grade. All components are scored, weighted, pooled, then mapped onto a curve for a course grade determination at the end of the semester.

**Homework and Exams:** There are no homework or exams for this course.

There are 4 laboratory sections for E45L each week (as noted in the table below).

E 45L Sections	M	Tu	W	Th	F
8:00-11:00AM		004			
2:00-5:00PM		001	002	003	

### **Proposed Lab Schedule (subject to change)**

Date	Lab	Assignments Due
Jan 16-20	No Lab	
Jan 23-27	Lab 0, Lab 1 Discussion	
Jan 30-Feb 3	Lab 1	Lab 0 Report
Feb 6-10	Lab 2 Discussion	Lab 1 Report
Feb 13-17	Lab 2	
Feb 20-24	Lab 3 Discussion	Lab 2 Report
Feb 27-Mar 3	Lab 3	
Mar 6-10	Lab 4 Discussion	Lab 3 Report
Mar 13-17	Lab 4	
Mar 20-24	Lab 5 Discussion	Lab 4 Report
Mar 27-31	Spring Break	Spring Break
Apr 3-7	Lab 5	
Apr 10-14	Lab 6 Discussion	Lab 5 Report
Apr 17-21	Lab 6	
Apr 24-28	TBD	Lab 6 Report
May 1-5		

All discussions and Lab 0 meet in room **350 HMMB** unless otherwise noted by the GSIs.

All laboratory sections for Labs 1-6 meet in room **230 HMMB** unless otherwise noted by the GSIs.

- The seven laboratory exercises complement the lectures offered in E45 in biweekly experiments investigating the properties of materials. Refer to the *Laboratory Guide* and *Laboratory Manuals* on bCourses. The labs include:
  - Laboratory 0: Laboratory Safety and Ethics
  - Laboratory 1: Basics of Mechanical Behavior
  - Laboratory 2: Recovery, Recrystallization, and Grain Growth
  - Laboratory 3: Binary Alloy Phase Diagrams
  - Laboratory 4: Heat Treatment of Steel
  - Laboratory 5: The Uniaxial Tensile Test
  - Laboratory 6: Electronic Properties of Materials

- Each laboratory will be staffed by a primary Graduate Student Instructor (GSI) who is responsible for grading laboratory reports and providing a lesson at the start of the session and a secondary GSI who assists with safety and staffing of experimental stations.
  - Reports must be completed following the guidelines outlined in the **Laboratory Guide** (available online).
  - Laboratory reports are to be submitted electronically through bCourses and are due 1 week from the beginning of your laboratory. Example: laboratory section 002 reports will be due online by 2:00PM the following Wednesday.
  - Laboratory grading concerns – After your graded lab reports are returned, you may notice differences in scoring between lab sections. Sometimes one GSI may appear to be stricter in the grading than another. This is a natural result of the variability of the graders. To account for this, at the end of the semester all lab scores are normalized and treated based on average values for the different sections. This removes any variations in grading styles among lab sections.
- **Laboratory and Discussion Section Participation (9% of total grade)**
    - Your attendance in Discussion and Laboratory is essential to the success of this class.
    - You will be assessed based on participation in those sections for a portion of your grade.
    - Your laboratory notebook will also be assessed for best practices in note taking.

### **Late Assignments**

No late assignments will be accepted unless prior arrangements are made with the instructor for valid excuses. Valid excuses include, but are not limited to, deaths in the family, jury duty, hospitalization for illness, etc. Non-valid excuses include, but are not limited to, oversleeping, “my printer didn’t work,” “I wasn’t here when you assigned it,” “my internet service at home is out so I could not submit my assignment online”, etc. If you have concerns I am happy to discuss with you about your specific situation and clarify any questions you have.

### **Re-grading Policy**

Re-grading of reports is a timely and serious undertaking. In order to assure only valid cases are addressed, the following procedure should be taken. Failure to follow this approach will mean that your request will go unheeded:

1. Students are required to type up a written request for re-grading. This request should include the following information:
  - Student Name and ID
  - Assignment in question
  - A written description, using complete sentences, out-lining the suspected mis-grading. This includes a detailed description of what you have done and why you think it merits a re-grade.
2. Re-grade request along with the original assignment/exam should first be emailed to the Instructor for consideration. At this point the Instructor can reject re-grade requests that do not meet the above standards. Compliant requests will then be handled as follows:
  - Simple fixes such as addition errors will be rectified immediately.
  - More extensive requests will go to the appropriate grader or GSI who will then consult with the Instructor with one of two outcomes: 1) a complete re-grade of the entire assignment or 2) rejection of the appeal. Note that complete re-grading may uncover other errors that could lower or increase your grade further.
3. The results of this re-grading will be final and binding.
4. Attempts to “doctor” or manipulate assignments after grading to enhance scores will be dealt with under the auspices of the Academic Code of Conduct.

**Academic Code of Conduct**

This course has a “zero-tolerance” policy concerning cheating and plagiarism. Students are referred to the University of California, Berkeley [Student Code of Conduct](#) for complete details on expectations. Special attention should be given to Section V and Appendix II. Cheating and plagiarism will be dealt with according to established campus policy. Students caught cheating will receive a failing grade and a report to the [Center for Student Conduct](#) will be filed. The following is a partial list of common cheating/plagiarism situations to avoid:

1. Attempts to “doctor” or manipulate assignments after grading to enhance scores will be considered academic dishonesty and dealt with as described above.
2. Submitting the same work as another student in E45L.
2. Partial or full replication of lab reports from students that have previously taken E45.