<table>
<thead>
<tr>
<th>Time/Location</th>
<th>T/R 11:00 AM – 12:15 PM, HFH (Engineering I), 1104</th>
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</table>
| Text               | William D. Callister, Jr.  
|                    | David G. Rethwisch  
|                    | Materials Science and Engineering  
|                    | An Introduction - 8th Edition  
|                    | Wiley  
| Instructor         | James S. Speck  
|                    | Engineering II, 1347A (use only this office)  
|                    | speck@mrl.ucsb.edu |
| Instructor Office Hours | W, 9:30 – 11:00 AM (Engineering II, 1347A) |
| Discussion Sections| 31393 M 3:00 - 3:50 PM HSSB 1214  
|                    | 31401 M 6:00- 6:50 PM PHelps 1417  
|                    | 31419 M 4:00- 4:50 PM BUCHN 1934  
|                    | 31427 R 4:00- 4:50 PM PHelp 1444  
|                    | 31435 M 5:00- 5:50 PM PHelp 1420  
|                    | 31443 M 4:00- 4:50 PM PHelp 1444  
|                    | Discussion sections begin 2nd week of class |
| TAs/Grader         | Jason Douglas  
|                    | Problem 1 Grader  
|                    | jedouglas@umail.ucsb.edu  
|                    | Clayton Jackson  
|                    | Problem 2 Grader  
|                    | clayadamjackson@gmail.com  
|                    | Alan Liu  
|                    | Problem 3 Grader  
|                    | ayliu01@umail.ucsb.edu  
|                    | Abby Goldman  
|                    | Problem 4 Grader  
|                    | abbygoldman@umail.ucsb.edu  
|                    | Michael Cantore  
|                    | Problem 5 Grader  
|                    | cantore@umail.ucsb.edu  
|                    | Erin Kyle  
|                    | Overall Scoring  
|                    | kylee5042@gmail.com |
| TA Group Office Hours | Fridays, 3:00 – 4:00 PM  
|                    | Tuesdays, 5:00 – 8:00 PM  
|                    | Phelps 1417 |
| Problem Sets | Due at the beginning of class on the due date

**Problem sets and solutions will be posted at:**


Study groups are encouraged, but you are expected to work out and write problem set solutions individually. Copying answers directly from classmates will be grounds for referral to the Committee on Student Conduct

**Late problem sets will not be accepted. The lowest problem set score will be dropped** |
|---|---|
| Course Website | The course website is:


The website will include course material, problem set solutions, lecture vugraphs, announcements, deadlines, ... |
| Exams | **Midterm exam (75 minutes) – Tues. Feb. 21 (in-class)**
Closed book and note
1 page, handwritten (by you!) note page allowed!

**Final exam (3 hours) – Wed, March 21, noon – 3 PM**
Comprehensive final
1 page, handwritten (by you!) note page allowed!

Entrance to the Mid-term or Final Exams will require you to show a picture identification card with your ID number on it. |
| Grades | **Problem sets:** 25%
**Midterm exam** 30%
**Final exam** 45% |
Bibliography

- Van Vlack, Elements of Materials Science and Engineering, sixth edition (Addison-Wesley)
- W. D. Callister, Materials Science and Engineering: An Introduction (Wiley)
- J. F. Shackelford, Introduction to Materials Science for Engineers (Prentice Hall)
- P. Jones, Materials Science for Electrical and Electronic Engineers (Oxford)
<table>
<thead>
<tr>
<th>Dates</th>
<th>Lectures, Events, Reading</th>
<th>Problem Sets</th>
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| Week 1     | Reading: Callister, Chapters 1 (all); 2 (all) 3.1 – 3.7  
Lectures: Bonding; Crystal Structures; Bravais Lattices; Analysis of Crystal Structures | No problem set |
| Jan. 10, 12|                                                                                          |              |
| Week 2     | Reading: Callister, Chapters 3.8 – 3.17; 12.1 – 12.4; 14.1 – 14.12  
Lectures: Crystallographic Planes and Directions; Polycrystals; Ceramic Crystal Structures; Polymer Structures | No problem set |
| Jan. 17, 19|                                                                                          |              |
| Week 3     | Reading: Callister, 14.1 – 14.12 (cont’d); Chapter 4 (all).  
Lectures: Polymer Structures (Cont’d); Imperfections in Crystalline Solids (cont.d); Microscopy Techniques | PS1  
Due: Jan. 24 |
| Jan. 24, 26|                                                                                          |              |
| Week 4     | Reading: Callister, Chapter 6.1 – 6.5  
Lectures: Stress and Strain; Elastic properties | PS2  
Due: Jan. 31 |
| Jan. 31, Feb. 2 |                                                                                          |              |
| Week 5     | Reading: Callister, Chapter 6.6 – 6.10  
Lectures: Plastic Deformation; Hardness | PS3  
Due: Feb. 7 |
| Feb. 7, 9  |                                                                                          |              |
| Week 6     | Reading: Callister, Chapter 7.1 – 7.7  
Lecture: Role of Dislocations in Plastic Deformation | PS4  
Due: Feb. 14 |
| Feb. 14, 16|                                                                                          |              |
| Week 7     | Reading: Callister, Chapter 7.8 – 7.13; Chapter 5.1 – 5.6  
Lectures: Strengthening Mechanisms; Recrystallization; Grain Growth; Diffusion |              |
| Feb. 23    |                                                                                          |              |
| Week 8     | Reading: Callister, Chapters 9, 10, 11  
Lectures: Phase Diagrams and Transformations; Alloys | PS5  
Due: Feb. 28 |
| Feb. 28, March, 1 |                                                                                          |              |
| Week 9     | Reading: Callister Chapter 12.8 – 12.11; Chapter 15; Chapter 8  
Lectures: Mechanical Properties of Ceramics ( Brittle Fracture) and Polymers (Viscoelastic Deformation) | PS6  
Due: Mar. 6 |
| Mar. 6, 8  |                                                                                          |              |
| Week 10    | Reading: Callister Chapter 16  
Lectures: Composites | PS7  
Due: Mar. 13 |
| Mar. 13, 15|                                                                                          |              |
| March 21 (Wed.) 12:00 – 3:00 PM | Final Exam |              |