

**Lecture Schedule and Reading Assignments:** NOTE: Syllabus will be continually updated and posted on the course web page: HW and GW assignments will be marked and specific reading assignments updated. \*Topics and dates are tentative and subject to change. Exam dates will not change. **Completed at time of posting.**

| #   | Dates                | Topic   | Corresponding Reading Assignment & Other Assignments   |
|---|----------------------|---|--|
| <b>Structure of Materials</b>   |                      |   |  |
| 1   | August 31 (M)        | Introduction  | Chapter 1  |
| 2   | September 2 (W)      | Atomic Structure and Bonding  | Chapter 2  |
| 3   | September 4 (F)      | Atomic Structure and Bonding  | Chapter 2  |
| 4   | September 7 (M)      | Atomic Structure and Bonding  | Chapter 2  |
| 5   | September 9 (W)      | Structures of Metals  | Chapter 3 (Sections 3.1-3.10, 3.12, 3.17 (excluding pp 54-55 and 59-60 hcp)                        |
| 6   | September 11 (F)     | Structure of Metals   | Chapter 3 (see sections above) <b>GW#1</b> due date for HW#1 moved to 9/14/08                      |
| 7   | September 14 (M)     | Structure of Metals   | Chapter 3 (see sections above) <b>HW#1 due</b>   |
| 8   | September 16 (W)     | Structures of Metals  | Chapter 3 (see sections above); Begin Ceramics   |
| 9   | September 18 (F)     | NO 😊 CLASS  | Independent Review Day   |
| 10  | September 21 (M)     | Structures of Ceramics and Bioactive Glasses                                | Chapter 12 (Sections 12.1-12.4) and supplemental information (posted article on Bioactive Glasses) |
| 11  | September 23 (W)     | Structure of Polymers   | Chapter 14 (Sections 14.1-14.12)   |
| 12  | September 25 (F)     | Structure of Polymers   | <b>HW#2 due</b><br>Chapter 14 (Sections 14.1-14.12)  |
| 13  | September 28 (M)     | Structure of Polymers   | Chapter 14 (Sections 14.1-14.12)<br>Chapter 15 (Sections 15.12 and 15.13)                          |
| 14  | September 30 (W)     | Structure of Polymers<br>Review for Exam                                    | Chapter 14 (Sections 14.1-14.12) Chapter 15 (Section 15.12 and 15.13) <b>GW#2</b>                  |
| 15  | <b>October 2 (F)</b> | <b>EXAM #1</b>  | <b>On all information covered in Lectures # 1-14</b>   |
| <b>Imperfections, Diffusion, and Mechanical Properties of Materials</b> |                      |   |  |
| 16  | October 5 (M)        | Review Exam 1, Imperfections  | Sections 4.1-4.8, 3.14, 12.5, and 14.13  |
| 17  | October 7 (W)        | Imperfections   | Sections 4.1-4.8, 3.14, 12.5, and 14.13  |
| 18  | October 9 (F)        | Imperfections, Diffusion  | Chapter 5  |
| 19  | October 12 (M)       | Diffusion   | Chapter 5  |
| 20  | October 14 (W)       | Mechanical Properties of Metals   | Sections 6.1-6.10  |
| 21  | October 16 (F)       | Mechanical Properties of Metals   | Sections 6.1-6.10 <b>HW#3due</b>   |
| 22  | October 19 (M)       | Dislocation & Strengthening Mechanisms                                      | Sections 7.1, 7.8-7.13, 11.4   |
| 23  | October 21 (W)       | Dislocation & Strengthening Mechanisms<br>Mechanical Properties of Ceramics | Sections 7.1, 7.8-7.13, 11.4<br>Sections 12.8 – 12.11, 13.11                                       |
| 24  | October 23 (F)       | <b>Guest Lecture – Prof. Hahn</b>   | Must attend for <b>HW#5</b> credit (no make-ups)   |
| 25  | October 26 (M)       | Mechanical Properties of Polymers   | Sections 15.1-15.4, 15.6-15.9 <b>HW#4 due</b>  |
| 26  | October 28 (W)       | Mechanical Properties of Polymers   | Sections 15.1-15.4, 15.6-15.9  |

|                                     |                                |  |  |
|-------------------------------------|--------------------------------|--|--|
| 27                                  | October 30 (F)                 | Mechanical Properties of Polymers  | Sections 15.1-15.4, 15.6-15.9  |
| 28                                  | November 2 (M)                 | Mechanical Properties of Polymers  | Sections 15.1-15.4, 15.6-15.9 <b>GW#3</b>  |
| 29                                  | November 4 (W)                 | Mechanical Properties of Polymers<br>Review for Exam 2   | Sections 15.1-15.4, 15.6-15.9  |
| 30                                  | <b>November 6 (F)</b>          | <b>EXAM #2</b> 🍌   | <b><u>On all information covered in Lectures # 16-29</u></b>   |
| <b>Applications of Biomaterials</b> |                                |  |  |
| 31                                  | November 9 (M)                 | Review Exam, Metallic Biomaterials   | Sections 9.18-9.19 (pp 290-295); 10.5 (basic concepts only per lecture notes); pp. 364-365<br>Handout: Metallic Biomaterials (pp. 36-50) |
| 32                                  | November 11 (W)                | Metallic Biomaterials  | Sections 11.4, 11.5<br>Handout: Metallic Biomaterials (pp. 36-50)  |
| 33                                  | November 13 (F)                | Metallic Biomaterials for<br>Hard Tissue Fixation/Repair   | Handout: Hard Tissue Replacements (pp. 9-1 – 9-10)   |
| 34                                  | November 16 (M)                | Ceramic Biomaterials, Heart Valves   | Handout: Joint Replacement (pp. 9-10 – 9-15)   |
| 35                                  | November 18 (W)                | Pyrolytic carbon, heart valves   | Handout: Pyrolytic Carbon (pp. 1308-1318)<br>Handout: Heart Valve Prostheses (pp. 8-2 – 8-10)  |
| 36                                  | November 20 (F)                | PEEK, silicone elastomers, IOLs, soft contact lenses, hydrogels, thermal-responsive hydrogel (PNIPAAm) | <i>Reading: lecture slides only</i>  |
| 37                                  | November 23 (M)                | Biodegradable polymers   | Handout: Biomaterials journal article (Middleton)  |
| 38                                  | November 25 (W)                | Biodegradable polymers   |  |
| 39                                  | November 27 (F)                | <b>Thanksgiving Holiday- no class</b> 🍌  |  |
| 40                                  | November 30 (M)                | Biodegradable polymers<br>Sterilization of implants  | Handout: Sterilization of implants (pp. 415-420)   |
| 41                                  | December 2 (W)                 | Sterilization of implants  | Handout: Sterilization of implants (pp. 415-420)   |
| 42                                  | December 4 (F)                 | Host reaction to implanted biomaterials  | Handout: Host reactions (pp.165-173)   |
| 43                                  | December 7 (M)<br>(LAST CLASS) | Review for Final   | We will do a short in-class “practice quiz” (will NOT be for a grade) for a review   |
| <b>December 16</b>                  |                                | <b>FINAL EXAM (comprehensive)</b>  | <b>WEDNESDAY @ 10:30 am – 12:30 pm</b>   |

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The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit <http://disability.tamu.edu>.

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**Aggie Honor Code: "An Aggie does not lie, cheat, or steal, or tolerate those who do."**

It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty (*Student Rule 20. Scholastic Dishonesty*, <http://student-rules.tamu.edu>). New procedures and policies have been adopted effective September 1, 2004. Details are available through the Office of the Aggie Honor System (<http://www.tamu.edu/aggiehonor/>). An excerpt from the Philosophy & Rationale section states: "Apathy or acquiescence in the presence of academic dishonesty is not a neutral act -- failure to confront and deter it will reinforce, perpetuate, and enlarge the scope of such misconduct. Academic dishonesty is the most corrosive force in the academic life of a university."