

MAE 3324 – STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS

Spring 2013

Course Section: 002

Class Schedule: MW 5:30 p.m.- 6:50 p.m. at WH 311

Instructor: Dr. B. Yang
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Office Hours: MW: 3:00 p.m. - 4:30 p.m., or by appointment

Textbook: Fundamentals of Materials Science and Engineering: An Integrated Approach, 3rd ed. William Callister.

Prerequisites: CHEM 1465, PHYS 1444, and MAE 2312 (or concurrently enrolled)

Objectives: To introduce the interrelationships between processing, structure (crystal and microstructure) and mechanical and chemical properties of engineering materials, with emphasis on the mechanical behavior of metals, polymers and composite materials

Course Outline: It is highly recommended to read the assigned materials before each class. The topics are listed below:

1. Introduction
2. Atomic structure and atomic bonding
3. Structure of metals and ceramics
4. Polymer structures
5. Imperfections in solids
6. Diffusion
7. Phase diagrams
8. Phase transformations
9. Mechanical properties
10. Deformation and strengthening mechanisms
11. Failure mechanisms
12. Composites

Homework: Homework will be assigned on a weekly basis and will be due one week from the date of distribution, or otherwise advised. Late homework will be penalized by 10% per day, and will not be credited if being late for more than a week.

Students are encouraged to work together to discuss and solve homework problems. However, *copying homework (from one*

another or from a solution manual) is not permitted and will be penalized accordingly (on all parties). The final work should reflect the student's understanding, not a copy from others' work/solution.

Quizzes: The purpose of quizzes is to evaluate your understanding of the materials after practicing on the homework. There will be short quizzes during the semester—most of the problems will be closely related to the homework. Please be prepared. **No makeup quiz will be given.**

Exams: There will be two mid-term exams and final exam. All of the exams will be closed book/closed notes. Only a formula sheet and a calculator will be allowed.

Makeup exams will be given only under extreme circumstances. It is expected that the students will contact the instructor sufficiently in advance of an exam or have sufficient reason that they could not do so. Each student is limited to have **only ONE** makeup exam in the course.

Grading: Relative Weighting of the Grades:

Homework	15%
Quizzes	15%
Exam-I	20%
Exam-II	20%
Final Exam	30%

Weighted Grade	Letter Grade
90 or above	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Attendance Policy: Students are required to attend each class. Missing more than one half of the classes automatically leads to letter grade “F”; missing 1/3 to 1/2 of the classes to “D” the best possible; missing 1/5 to 1/3 of the classes to “C” the best possible.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid

administered through the University may be required as the result of dropping classes or withdrawing. Contact the Financial Aid Office for more information.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."

Student Support Services Available: The University of Texas at Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit www.uta.edu/resources for more information.

Electronic Communication Policy: The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at <http://www.uta.edu/oit/email/>. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.