

Fall 2013 Syllabus: EMA 3010, Section 5823
Introduction to Materials Science and Engineering

1. **Course Description:** (3 credit hours) – Conceptual perspective for origin of materials behavior - structure/property/performance interrelationships. Materials selection and use of familiar materials - metals, ceramics, polymers, electronic materials and composites in electronics, structural and other engineering applications.
2. **Pre-requisites and Co-requisites:** CHM 2045 General Chemistry
3. **Course Objectives:** This is an introductory course, designed to provide the fundamental concepts of Materials Science and Engineering. To describe the structure, properties, and applications of metallic, ceramic, polymeric and composite materials.
4. **Contribution of course to meeting the professional component:**
This course provides 3 credits towards Engineering Sciences. It is required of all MSE students and of several other engineering disciplines. This course addresses the following MSE Program outcomes:
 - Ability to apply knowledge of mathematics, science, and engineering to materials systems. (High coverage)
 - Ability to identify, formulate, and solve engineering problems.
5. **Instructor:** Dr. Antonio Webb
 - a. Office location: Rhines Hall 135
 - b. Telephone: 352-392-6551
 - c. E-mail address: awebb@mse.ufl.edu
 - d. Class Web site: The course website can be found on the Sakai system <http://lss.at.ufl.edu>. There you can find the course syllabus, lecture notes, grades, and announcements. Check it frequently.
6. **Teaching Assistant:** Henry Aldridge
aldridl@ufl.edu
Office Hours: Mon 1-3, Wed 11-1
Rhines Hall Library
7. **Office hours:** Wednesday 10:00-11:00am and by appointment
The TA's office hours to be announced
8. **Meeting Times:** Tuesday, period 7 (1:55-2:45)
Thursday, period 7 and 8 (1:55-2:45 and 3:00-3:50)
9. **Meeting Location:** Tuesday – Florida Gymnasium Room 210
Thursday – Rinker Hall Room 110
10. **Material and Supply Fees:** None
11. **Textbooks and Software Required:** It is recommended that you get the Integrated Approach textbook. Both books are almost identical, just organized differently. If you have the other book already, you do not need to purchase the Integrated Approach textbook.

Title: Fundamentals of Materials Science and Engineering: An Integrated Approach, 4th Edition
Author: William D. Callister, Jr. and David G. Rethwisch
Publisher: Wiley, ISBN: 9781118061602

Or

Title: Materials Science and Engineering An Introduction, 8th Edition
Author: William D. Callister, Jr. and David G. Rethwisch
Publisher: Wiley, ISBN: 9780470419977

12. **Attendance and Expectations:** Lecture attendance is highly recommended. While attendance is not mandatory, experience has shown that those who attend lectures earn higher grades in the course. Arrival on time is expected. Please turn off all cell phones upon entering class. Reading of newspapers, work on assignments for this or other classes, or other activities that are not part of the class are not allowed during lecture. Students who do not comply with these requirements or who behave disorderly or disrespectfully may be asked to leave the classroom.
13. **Exams:** You will be given 3 exams throughout the semester. Exams will be held during the Thursday class periods 7 and 8. You will be given at least 1-week notice prior to the exams. There will be NO Final Exam. Each exam is weighted equally and each exam will be worth 25% of your final grade. Students have two weeks after test results are posted to resolve questions about scores/grades. No changes to your exam grade will be made after that time.
14. **Exam Conflicts with other course exams:** The exams will be “in class”, meaning the exams will be administered during our normally schedule class time.
15. **Make-up exams:** Make up exams will be provided only with the **approval of the instructor in accordance with university policies.** (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) In general, acceptable reasons for excused absence from an exam include illness, serious family emergencies, special curricular requirements, military obligation, court-imposed legal obligations, and religious holidays. In all cases, you will be required to provide written documentation, and obtain instructor approval. You will not be excused from any exam without following the policy above, with no exceptions. Students not in attendance for the scheduled exam will receive a score of zero. Make-up exams for excused absences as well as exam conflicts must occur within 1 week of the missed exam, and may occur before the missed exam.
16. **Homework Exercises:** Homework exercises will be assigned regularly. These homework questions are essential to your study and some exam and quiz questions will be adapted from them. **No late homework assignments will be accepted.** Please see the TA during his office hours to discuss homework problems.
17. **Quizzes:** You will be given short quizzes throughout the semester; and the lowest 2 quiz grades will be dropped. Make up quizzes will be provided only with the **approval of the instructor in accordance with university policies.**
18. **Grading:** 75%: Three exams (equally weighted)
15%: Homework
10%: Quizzes

19. **Grading Scale:**

Percentage	≥92	≥88	≥84	≥80	≥76	≥72	≥68	≥65	≥62	≥59	≥59	<56
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Grade Points	4.00	3.67	3.33	3.00	2.67	2.33	2.00	1.67	1.33	1.00	0.67	0.00

A "C-" will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is

equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

20. **Honesty Policy:** All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others. Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures. See <http://www.dso.ufl.edu/sccr/procedures/honorcode.php>

21. **Accommodation for Students with Disabilities:** Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

22. **UF Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

23. **Software Use:** All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

24. **Course Outline:**

Week	Class Dates	Day	Topic	Chapter
1	22-Aug-13	Thursday	Introduction and Atomic Structure/Interatomic Bonding	1 and 2
	27-Aug-13	Tuesday	Structures of Metals and Cermics	3
2	29-Aug-13	Thursday	Structures of Metals and Cermics	3
	3-Sep-13	Tuesday	Structures of Polymers	4
3	5-Sep-13	Thursday	Imperfections in Solids	5
	10-Sep-13	Tuesday	Review for Exam 1	-
4	12-Sep-13	Thursday	Exam 1	-
	17-Sep-13	Tuesday	Diffusion	6
5	19-Sep-13	Thursday	Mechanical Properties	7
	24-Sep-13	Tuesday	No Class	-
6	26-Sep-13	Thursday	No Class	-
	1-Oct-13	Tuesday	Mechanical Properties	7
7	3-Oct-13	Thursday	Mechanical Properties/Composites	7, 15
	8-Oct-13	Tuesday	Composites	15
8	10-Oct-13	Thursday	Deformation and Strenthening Mechanisms	8
	15-Oct-13	Tuesday	Deformation and Strenthening Mechanisms/Failure	8, 9
9	17-Oct-13	Thursday	Failure	9
	22-Oct-13	Tuesday	Review for Exam 2	-
10	24-Oct-13	Thursday	Exam 2	-
	29-Oct-13	Tuesday	Phase Diagrams	10
11	31-Oct-13	Thursday	Phase Diagrams/Phase Transformations	10, 11
	5-Nov-13	Tuesday	Phase Transformations	11
12	7-Nov-13	Thursday	Phase Transformations/Types and Applications of Materials	11, 13
	12-Nov-13	Tuesday	Types and Applications of Materials/Synthesis, Fabrication, Processing	13, 14
13	14-Nov-13	Thursday	Synthesis, Fabrication, Processing/Corrosion and Degradation	14,16
	19-Nov-13	Tuesday	Review for Exam 3	-
14	21-Nov-13	Thursday	Exam 3	-
	26-Nov-13	Tuesday	Go over exam and Final Grades	-
15	28-Nov-13	Thursday	No Class (Thanksgiving)	-
	3-Dec-13	Tuesday	Class cancelled	-