

Course Syllabus
EMA 6313
Advanced Materials Principles I (AMP I)
Section 2E62, Fall 2017

Catalog Description - Conceptual perspective for origin of materials behavior - structure/property/performance interrelationships. Fundamentals of materials properties-thermodynamics, kinetics and mechanical behavior. Differentiation of materials classes- metals, ceramics, polymers, composites, biologics. 3 credit hours.

Prerequisites and Co-requisites – graduate status

Instructor – Dr. Scott Perry; Office: 206 Rhines; Telephone: 846-3333; e-mail: ssp@ufl.edu

Office hours – WF, 1:45-2:45 pm; 206 Rhines, or by appointment.

Teaching Assistant – Gibson Scisco, gpscisco@ufl.edu

Meeting Times and Locations – MWF, Period 8; NEB 201

Textbooks Required –

An Introduction to Materials Engineering and Science for Chemical and Materials Engineers, Brian S. Mitchell, Wiley-Interscience, © 2004, ISBN-10: 0471436232

Sources: Amazon.com

<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471436232.html>

Review Material – *Materials Science and Engineering: An Introduction*, William D. Callister, Wiley. Note that there are several versions and editions available- any will suffice.

Course Outline –Topics will be addressed throughout the semester considering the atomic scale nature of materials and its relationship to macroscopic materials properties. A list of topics is found on the following page.

Attendance and Expectations - Attendance is not part of the course grade; however, all students are expected to attend class. The class is taught in an interactive lecture format, and includes discussion and practice problems. Cell phones should be turned off in 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 class time.

| <u>Assignment</u> | <u>Date</u> | <u>Credit</u> |
|--------------------------|------------------------|----------------------|
| Exam 1 | Sept. 25 (in class) | 30% |
| Exam 2 | Oct. 30(in class) | 30% |
| Exam 3 | Dec. 6 (in class) | 30% |
| Final Exam | Dec. 15 (7:30-9:30 am) | 40% |

The final course grade will be calculated based on the highest two of the first three exams and the required final.

Grading Scale - Final grades will be assigned according to the following scale: Less than 60 = E; 60-62.99 = D; 63-65.99 = D+; 66-69.99=C-; 70-73.99 = C; 74-77.99 = C+; 78-81.99=B-; 82-85.99 = B; 86-88.99 = B+; 89-91.99= A-; 92-100=A. Grades will not be curved.

Make-up Exam Policy - Make-up exams are given only for reasons of illness and in accordance with University of Florida regulations.

Topics of Interest

Structure of Materials

Structure of Metals and Alloys
Structure of Ceramics and Glasses
Structure of Polymers
Structure of Composites
Structure of Biologics

Thermodynamics of Condensed Phases

Thermodynamics of Metals and Alloys
Thermodynamics Ceramics and Glasses
Thermodynamics Polymers
Thermodynamics Composites
Thermodynamics Biologics

Kinetic Processes in Materials

Kinetics of Metals and Alloys
Kinetics of Ceramics and Glasses

Kinetics of Polymers
Kinetics of Composites
Kinetics of Biologics

Transport Properties of Materials

Momentum Transport Properties of Materials
Heat Transport Properties of Materials
Mass Transport Properties of Materials

Mechanics of Materials

Mechanics of Metals and Alloys
Mechanics of Ceramics and Glasses
Mechanics of Polymers
Mechanics of Composites
Mechanics of Biologics

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/scrr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students 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.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.