

**Course Syllabus**  
**EMA 6313**  
**Advanced Materials Principles I (AMP I)**  
**Section 7165, Fall 2013**

**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](mailto:ssp@ufl.edu)

**Office hours** – MW, 10:45-11:45 am; 206 Rhines

**Teaching Assistants** –Kevin Gilley, [veduo@ufl.edu](mailto:veduo@ufl.edu)

**Meeting Times and Locations** – MWF, Period 3; NEB 100

**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, UF Bookstore

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

**Supplementary 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. 20	30%
Exam 2	Oct. 25	30%
Exam 3	Dec. 4	30%
Final Exam	Dec. 12 (10 am- 12 pm)	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.

***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.

***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.

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

- University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling.
- SHCC Mental Health, Student Health Care Center, 392-1171, personal counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

***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.

### ***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