Revised: 1/6/16

Course Syllabus
EMA 6114: Advanced Materials Principles II
Spring 2016
Sections: 4785 (non-EDGE); DEPT (EDGE)

1. Catalog Description (3 credit hours): Structure, properties, processing, and applications of semiconductors, metals, ceramics, polymers, and biomaterials. Structure and properties of thin films, surfaces, and interfaces.

2. Pre-requisites: EMA 6313

3. Course Objectives: To gain an understanding of the principles underlying the structure and properties of materials. The specific objectives for the course include understanding the electronic, magnetic, and optical properties of materials, how processing affects structure and properties, and the selection of materials for particular applications.

4. Instructor: Dr. Brij M. Moudgil
   a. Office location: 205E Particle Science and Technology Building (205E PS&T)
   b. Telephone: 352-846-1194 (office)
   c. E-mail address: bmoudgil@perc.ufl.edu
   d. Class Web site: login to e-Learning (Canvas) at https://lss.at.ufl.edu/
   e. Office hours: TBA, or by appointment (for appointment contact Ms. Hollie Starr, Administrative Support Assistant at hstarr@ufl.edu; Ph: 352-846-1194)

5. Teaching Assistant: Juan Tanquero
   a. Office location: 205 PS&T Building
   b. E-mail address: jgt2292@ ufl.edu
   c. Office hours: TBA

6. Meeting Times: MWF 8:30-9:20pm (2nd period)

7. Class/laboratory schedule: 3 classes per week

8. Meeting Location: NEB 100

9. Material and Supply Fees: None

10. Textbooks and Software Required

    An Introduction to Materials Engineering and Science for Chemical and Materials Engineers
    By Brian S. Mitchell, 2004
    Publisher: John Wiley & Sons, Inc.
    ISBN-13: 978-0471436232

11. Recommended Reading:
    - Materials Science and Engineering: An Introduction, William D. Callister, Wiley (Note that there are several versions and editions available – any will suffice)
    - Principles of Electronic Materials and Devices, 3rd Edition, S. O. Kasap, McGraw-Hill, 2006
    - The Physics and Chemistry of Materials, by Joel I. Gersten and Frederick W. Smith, Wiley, 2001
        - (available online: ftp://ftp.wiley.com/public/sci_tech_med/materials)
    - Terrence Cosgrove, "Colloid Science Principles, Methods and Applications," Blackwell Publishing Co; 2010 (e-book available on line in the UF library).
    - Milton J. Rosen, "Surfactants and Interfacial Phenomena," 3rd Edition; Wiley-Interscience, 2004.
    - Robert J. Stokes, D Fennell Evans, "Fundamentals of Interfacial Engineering", Wiley-VCH © 1997.
    - Other material assigned and/or posted on the e-Learning (Canvas) system.

12. Course Outline: General topics include surface/interface/nanostructures, electronic, dielectric, optical, magnetic properties of materials; surfaces, interfaces, composites, and nanostructures; materials processing and selection. List of specific topics covered in lectures will be provided.

13. Attendance and Expectations: Attendance is strongly encouraged.
    Sections of this course are offered on UF EDGE. Lectures will be recorded, and the lecture videos are available on the UF e-Learning (Canvas) website for all students (not just those who registered for the EDGE section) to review at any time. However, attendance is strongly encouraged for all non-EDGE students to enhance classroom learning and interaction. 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.

14. Grading: Homework 5% for on –campus students;
    Homework: 10% for off-campus students to compensate them for optional pop quizzes; (Homework grades based on submission being on time. Submitted homework would be randomly graded);

Group project presentation: 10% (Topics TBD; Off-campus students can join any of the on–campus groups aligned with their interests)

Three exams: 35% of the best exam, 25% each of the other two exams

Optional pop quizzes may be given in class that could add up to 5 extra points to the above total. No make- up quizzes will be given for missed pop quizzes.

Homework deadlines will be provided during the semester. Homework assignments will be posted on the course website. All homework assignments must be submitted as a PDF file through the website.

It is your responsibility to ensure that you upload the file before it is due. It is highly recommended you upload it well ahead of the deadline in case there are any technical problems. No late homework will be accepted for any reason, including technical issues with the submission process.

There are three semester exams (no final exam). Lack of attendance at any exam will result in automatic failure in the course. Semester exams will be held in class, tentative exam dates will be announced, and posted on the course website.

15. Grading Scale: Final letter grade will be assigned based on a student's overall performance during the semester. The grading scale is indicated below.

Percentage	≥92	≥88	≥84	≥80	≥76	≥72	≥68	≥65	≥62	≥59	≥56	<56
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0

"Graduate students need an overall GPA of 3.00 truncated and a 3.00 truncated GPA in their major (and in the minor, if a minor is declared) at graduation." For more information on grades and grading policies, please visit:
http://gradcatalog.ufl.edu/content.php?catoid=4&navoid=907#grades

16. Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Except for emergencies, make-up exams are only allowed if requested at least one week before the regular exam time AND approved by the instructor. Make-up exams will differ from regularly-scheduled exams.

17. 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 UF, 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 (http://www.dso.ufl.edu/sccr/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.

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

- Cheating is a very serious offense and will not be tolerated. All instances of cheating, no matter how minor it may seem to you, will be reported to the Dean of Students Office and prosecuted. Penalties for cheating are severe and may include a grade of E for the semester. Actions that are considered cheating include, but are not limited to:
- Copying of homework solutions from another source or another student. Students are encouraged to work together to solve the homework, and thus it is expected that in some

cases the homework solutions of two students will be the same. However, blatant copying can be identified and will be considered cheating.

- Copying from another student during an exam, or using disallowed resources (including programming information into a calculator) during an exam. Calculators will be spot-checked during exams.
- Plagiarism on any written assignment. Plagiarism is the practice of copying the text or information from other sources and presenting it as your own. Any phrase of more than four words that is taken directly from another text needs to be placed into quotation marks and properly attributed.
- Attempting to change answers or marked grades on homework assignments or exams after they have been graded and returned.
- Any other action which is an attempt to modify your grade for an assignment in a way that does not actually reflect your work or abilities.

18. 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.

19. 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, http://www.counseling.ufl.edu/cwc/Default.aspx, counseling services and mental health services.
    - Career Resource Center, Reitz Union, 392-1601, career and job search services. University Police Department 392-1111

20. 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.

21. Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. 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/.