Course Syllabus
EMA 6416: Organic Electronics
Spring 2015
Sections: 0408 (non-EDGE); 0409/041A (EDGE)

1. Catalog Description (3 credits): Basics of semiconductors, electronic structures, charge transport properties, and optoelectronic devices based on organic semiconductors.
2. Pre-requisites: EMA 3413 or equivalent
3. Course Objectives:
    a. Understand the basic principles of semiconductor physics and semiconductor device physics
    b. Understand the fundamental material properties of organic electronic materials, particularly the electronic and optical processes in these materials
    c. Understand the applications of organic electronic materials in various electronic and optoelectronic devices
4. Instructor: Dr. Jiangeng Xue
    a. Office location: 180 RHN
    b. Telephone: 846-3775
    c. E-mail address: jxue@mse.ufl.edu
    d. Class Web site: https://lss.at.ufl.edu/ (e-Learning in Sakai)
    e. Office hours: Thursdays 1:00-2:00 pm
5. Teaching Assistant: N/A
6. Meeting Times: Tuesdays 3rd period, Thursdays 3rd and 4th periods
7. Class/laboratory schedule: 3 classes per week
8. Meeting Location: CSE E112
9. Material and Supply Fees: $24
10. Textbooks and Software Required - *None*
11. Recommended Reading:
    a. Physics of Semiconductor Devices (3rd ed.), by S. M. Sze and K. K. Ng (Wiley, 2006)
    b. Electronic Processes in Organic Crystals and Polymers (2nd ed.), by M. Pope and C. E. Swenberg (Oxford, 1999)
    c. Organic Molecular Crystals: Interactions, Localization, and Transport Phenomena, E. A. Silinsh and V. Capek (AIP Press, 1994)

12. Course Outline

The topics listed below may be subject to change and be presented in a slightly different order.

Part	Week	LECTURE TOPICS
I. Semiconductor Physics and Devices	1	Introduction/Basics of Semiconductors
	2	p-n junctions
	3	Heterojunctions
	4	Semiconductor devices I
	5	Semiconductor devices II
II. Fundamental Properties of Organic Semiconductors	6	Electronic states in organic semiconductors
	7	Charge transport, generation, recombination
	8	Interfaces
	9	*Spring break, no classes*
	10	Organic thin film growth
III. Applications of Organic Semiconductors	11	OLEDs I
	12	OLEDs II
	13	Organic PV I
	14	Organic PV II
	15	Organic thin-film transistors
	16	Other organic devices

13. Attendance and Expectations: attendance 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 (Sakai) 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.

14. Grading: Grading in this course will consist of four components:

One Exam (covering Part I): 30%
Student Presentation: 30%
Homework assignment: 10%
Written research proposal: 30%

There will be an in-class exam after the conclusion of Part I (Semiconductor Physics and Devices). Students will perform a critical review of a recent journal article on organic materials and/or devices, and give presentations (~15 minutes) during class. As homework assignments, students need to provide written peer evaluations of other students' presentations. In lieu of a final exam, students need to complete a written original research proposal at the end of the semester. Detailed instructions on the presentation, peer evaluation, and proposal will be given separately.

15. Grading Scale: Final letter grade will be assigned based on a student's overall performance during the semester. The following scale will be used as a guideline: A(100-92), A-(91-88), B+(87-84), B(83-80), B-(79-77), C+(76-74), C(73-71), C-(70-68), D+(67-65), D(64-62), D-(61-60), E(59-0)

"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 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 (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

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/.