ECE 5833 (Approved): Organic and Printed Flexible Electronics

Course Description
Conducting organic small molecules and polymers (structural, optical and electrical properties); printable metal-oxide semiconductors; Printing techniques, organic light emitting diodes; transport and carrier injection; organic transistors; organic lasers.

Prior Course Number: 835.02
Transcript Abbreviation: Flexible Electroni
Grading Plan: Letter Grade
Course Deliveries: Classroom
Course Levels: Undergrad, Graduate
Student Ranks: Senior, Masters, Doctoral
Course Offerings: Spring
Flex Scheduled Course: Never
Course Frequency: Odd Years
Course Length: 14 Week
Credits: 3.0
Repeatable: No
Time Distribution: 3.0 hr Lec
Expected out-of-class hours per week: 6.0
Graded Component: Lecture
Credit by Examination: No
Admission Condition: No
Off Campus: Never
Campus Locations: Columbus
Prerequisites and Co-requisites: Prereq: 3030 (432), or permission of instructor for non-ECE majors; or Grad standing in engineering, biological sciences, or math and physical sciences.
Exclusions: Not open to students with credit for 7833 (835.02) or 5194.04.
Cross-Listings:

Course Rationale: Existing course updated to better capture the content included. No changes to content other than giving it the proper and representative name.

The course is required for this unit's degrees, majors, and/or minors: No
The course is a GEC: No
The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.1001
Subsidy Level: Doctoral Course

Course Goals

Gain a fundamental understanding of the field of organic and printed electronic materials, fabrication techniques and devices and their potential impact

Course Topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Lee</th>
<th>Rec</th>
<th>Lab</th>
<th>Cli</th>
<th>IS</th>
<th>Sem</th>
<th>FE</th>
<th>Wor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation for study of organic and printed flexible electronics</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Representative Assignments

- **In-class Discussion**
- **Powerpoint Presentations of State-of-the-Art issues**
- **Term Paper**

### Grades

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Discussions</td>
<td>20%</td>
</tr>
<tr>
<td>Class presentations</td>
<td>40%</td>
</tr>
<tr>
<td>Term Paper</td>
<td>40%</td>
</tr>
</tbody>
</table>

### Representative Textbooks and Other Course Materials

**Title**: Organic and Printed Electronics: Fundamentals and Applications  
**Author**: G. Nosatp, D. Kupo, S. Ganz, P. Stanford  
**ISBN-13**: 978-9814669740

### ABET-EAC Criterion 3 Outcomes

<table>
<thead>
<tr>
<th>Course Contribution</th>
<th>College Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>***</td>
<td>a. An ability to apply knowledge of mathematics, science, and engineering.</td>
</tr>
<tr>
<td>*</td>
<td>b. An ability to design and conduct experiments, as well as to analyze and interpret data.</td>
</tr>
<tr>
<td>*</td>
<td>c. An ability to design a system, component, or process to meet desired needs.</td>
</tr>
<tr>
<td></td>
<td>d. An ability to function on multi-disciplinary teams.</td>
</tr>
<tr>
<td></td>
<td>e. An ability to identify, formulate, and solve engineering problems.</td>
</tr>
<tr>
<td>*</td>
<td>f. An understanding of professional and ethical responsibility.</td>
</tr>
<tr>
<td>***</td>
<td>g. An ability to communicate effectively.</td>
</tr>
<tr>
<td>***</td>
<td>h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.</td>
</tr>
<tr>
<td>***</td>
<td>i. A recognition of the need for, and an ability to engage in life-long learning.</td>
</tr>
<tr>
<td>***</td>
<td>j. A knowledge of contemporary issues.</td>
</tr>
<tr>
<td>*</td>
<td>k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.</td>
</tr>
</tbody>
</table>
Additional Notes or Comments
Updated prereqs, exclusions, goals and topics to conform to university format 3/29/12
renumber from 7833
Modified prereqs to include ECE seniors and graduate students from Chemistry, Physics, etc.

Changed semester of offering to autumn odd and spring odd. 3/23/15.CED

Correct prereqs, to include grad students, and add "seniors" as level; 2/18/14

Captialized "Graduate" in prereqs to match university version.

Clarify prereqs to Prereq: 3030 (432), or permission of instructor for non-ECE majors; or Grad standing in engineering, biological sciences, or math and physical sciences. 8/26/14 BLA

Changed text to Nisato et all 3//16 BLA

title change, adjustments to goals and topics 1/15/19 BLA

Prepared by: Paul Berger