# Course Syllabus

## ELCT 582 – Semiconductor Laboratory: Nano-Fabrication for Photovoltaics

<table>
<thead>
<tr>
<th>Course Coordinator:</th>
<th>Dr. MVS Chandrashekhar</th>
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<tbody>
<tr>
<td>Catalog Description:</td>
<td>An introduction to semiconductor fabrication/manufacturing.</td>
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<tr>
<td><strong>Credit Hours</strong></td>
<td>3</td>
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<tr>
<td><strong>Prerequisite(s) by course</strong></td>
<td>PHYS 211 and PHYS 212</td>
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<tr>
<td><strong>Prerequisite by topics</strong></td>
<td>Essentials of Physics</td>
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<tr>
<td><strong>Other Materials</strong></td>
<td>Edited compendium of research from CENR</td>
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</tbody>
</table>

## Course Outcomes:

Students who successfully complete the course will be able to:

- Describe and communicate fundamental and technical concepts of nanotechnology
- Synthesize nanoparticles, measure their properties and fate/transport
- Fabricate and measure planar nanostructures such as PV cells using basic nanofabrication techniques
- Speak meaningfully about the societal and policy implications of the deployment of PV technology

## Course Topics:

- Basics of semiconductor fabrication and manufacturing
- Manufacturing techniques such as photolithography
- Nanoparticle synthesis and nanotechnology based products
- Fabrication of pn junction silicon solar photovoltaic cells
- Metal nanoparticle synthesis
- Solar cell performance
- Environmental effect of nanomaterials

## Course Contribution to Program Outcomes:

ELCT 582 contributes to an achievement of:

- Outcome J – a knowledge of contemporary issues

## General Course Policies

**Academic Integrity**

Unless otherwise stated, assignments and examination work are expected to be the sole effort of the student submitting the work. Students are expected to follow the University of South Carolina Honor Code and they should expect that every instance of a suspected violation will be reported. Students found responsible for violations of the Code will be subject to academic penalties under the Code in addition to whatever disciplinary sanctions are applied.

**Accommodating Disabilities**
Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email sasds@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.

**Diversity**
When scheduling exams, I have attempted to avoid conflicts with major religious holidays. If, however, I have inadvertently scheduled an exam or major deadline that creates a conflict with your religious observances, please let me know as soon as possible so that we can make other arrangements.

**Deviations**
Minor deviations from the syllabus are a normal part of any adaptive teaching and learning process.