Course Code: EE4350  
Course Title: Special Topic - Integrated Circuits and Semiconductor Devices
Classification: Special Topics Course  
Credits: 3

Prerequisites: EE 3329  
Co-requisites: 
Schedule: Two - 80 minutes lectures/week

Instructor: Deidra R. Hodges, drhodges@utep.edu  
Phone: 915-747-7950  
Office and Hours: A-304 Mon. & Wed. 10:30 AM -12:30 PM

Course Description:
The impact of integrated circuits (ICs) and semiconductor devices on engineering and on the broader society continues to grow. ICs contain tens-of-millions of active devices on a chip. The majority of chips are formed of silicon and the majority of devices are metal-oxide-semiconductor (MOS) field-effect transistors (MOSFETS), which displaced the formerly dominant bipolar junction transistors (BJTs). This course provides an overview of the physical electronics of semiconductors, silicon technology, IC fabrication, pn junctions, bipolar transistors, and MOSFETS.

Textbook:


Course Objectives:
The objective of this course is to emphasize electronic processes that govern the behavior of the solid-state devices used most frequently to build integrated circuits. Device physics will be outlined for pn junctions, MOSFETs and Bipolar transistors. Students will learn:

1. The basic and fundamental theory of semiconductor electronics and silicon technology.
2. IC fabrication theory and semiconductor devices.
THE UNIVERSITY OF TEXAS AT EL PASO
ELECTRICAL AND COMPUTER ENGINEERING CURRICULUM
COURSE SYLLABUS
(EE4350 continued)

Topics Covered:

<table>
<thead>
<tr>
<th>Wk.</th>
<th>Topics</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>9</td>
<td>Bipolar Transistors I</td>
</tr>
<tr>
<td>2</td>
<td>Semiconductor Electronics</td>
<td>10</td>
<td>Bipolar Transistors II</td>
</tr>
<tr>
<td>3</td>
<td>Silicon Technology</td>
<td>11</td>
<td>Properties of MOS Systems</td>
</tr>
<tr>
<td>4</td>
<td>Metal Semiconductor Contacts</td>
<td>12</td>
<td>MOSFETS I</td>
</tr>
<tr>
<td>5</td>
<td>$pn$ Junctions</td>
<td>13</td>
<td>MOSFETS II</td>
</tr>
<tr>
<td>6</td>
<td>Currents in $pn$ Junctions</td>
<td>14</td>
<td>nanoHUB Simulations MOSFETS</td>
</tr>
<tr>
<td>7</td>
<td>nanoHUB Simulations $pn$ Junctions</td>
<td>15</td>
<td>Device Demonstrations</td>
</tr>
<tr>
<td>8</td>
<td>Midterm Exam: Oct. 16, 2019</td>
<td>16</td>
<td>Final Exam: Dec. 11, 2019</td>
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Evaluation Criteria:

Instruments for course evaluation will be used to measure established course objectives.

EE4350

Grade Composition     Grade Scale
25% Homework          A = 90 - 100
25% Quizzes           B = 80 – 89
25% Midterm Exam      C = 70 - 79
25% Final Exam        D = 60 - 69
                      F = 0 – 59

Course Drop Deadline: The deadline to drop this course with an automatic W is Nov. 1st.
Homework – NO LATE WORK ACCEPTED. NO MAKE-UPS.

Quizzes – Several unannounced and announced quizzes will be given 10 minutes after the start of class.

Exams – A midterm exam will be given Oct. 16, 2019.

Final Exam – The final exam is comprehensive and is given in accordance with the University’s Final Exam schedule,
             Wednesday Dec. 11, 2019, 10:00 am -12:45 pm.
             NO USE OF CELL PHONES, LAPTOPS, TABLETS OR OTHER DEVICES ON EXAMS.
             NO RESTROOM BREAKS DURING EXAMS.

Academic Dishonesty:
As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self-responsibility. Acts of scholastic dishonesty such as cheating, plagiarism, collusion, the submission for credit of any work or material that are attributable in the whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts will not be tolerated. Any case involving academic dishonesty will be referred to the Engineering Dean’s Office and the Office of the Dean of Students. The Dean of Students will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as severe as dismissal from the University. See the Office of the Dean of Students’ home page at www.utep.edu/dos/academic.htm for more information.