Syllabus
ECE 471B Semiconductor Junctions
Spring 2021
February 22- April 4

Instructor: Carmen S. Menoni
e-mail: carmen.menoni@colostate.edu
tel: (970) 491-8659

Class Times: TR, 9:30am - 10:50am, B3
Office: Engineering C 101E
Office Hours: By appointment – and via zoom – Send an email to Prof. Menoni
Text: "Semiconductor Physics and Devices"
Donald A. Neamen, Fourth Edition (Chapters 5-8)

Course description:
This course introduces basic concepts of carrier transport phenomena in a semiconductor, understanding of the behavior of excess carriers and the basics of the pn junction electrostatics and current-voltage behavior.

Course Credits: 1
Prerequisites: ECE331 with a minimum grade of C; ECE471A, may be taken concurrently

Grading and Exams:
Homework Submission 10%
Quizzes 65%
In class HW discussion 25%

Homework will be assigned once a week. It will not be graded, it will be checked for completion. There will be in-class discussion of the homework that is graded. Quizzes. There will be a CANVAS Quiz provides a formula sheet for use during tests.

Material for the class is stored in CANVAS.

The pace of this class requires student read each chapter before they are discussed in class
### Course Outline

<table>
<thead>
<tr>
<th>Lecture No.</th>
<th>Week No.</th>
<th>Chapter</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>4</td>
<td>Review</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>5</td>
<td>Carrier Transport Phenomena</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>5</td>
<td>Carrier Transport Phenomena</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>6</td>
<td>Nonequilibrium Excess Carriers in Semiconductors</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>6</td>
<td>Nonequilibrium Excess Carriers in Semiconductors</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>6</td>
<td>Nonequilibrium Excess Carriers in Semiconductors</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>7</td>
<td>PN Junction</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>8</td>
<td>PN junction Charge transport</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>8</td>
<td>PN Junction Charge transport</td>
</tr>
</tbody>
</table>

### Class Etiquette

Phones and other electronic devices must be turned off at the beginning of the class and remain off during the duration of the class. This applies in classroom and the virtual space.