

Syllabus

Instructor: Prof. Carmen S. Menoni

Email: carmen.menoni@colostate.edu (Subject line should contain ECE 415)

Class times: TR 9.30-10.50 AM – B2

Office hours: TR 9.00 – 9.30 AM at Menoni's office C101E. Microsoft Teams is also available by appointment.

Textbook: "Semiconductor Physics and Devices", Donald A. Neamen, Fourth Edition – Chapters 1-8 – Hard copy or approved Bookstore copy.

Course Description:

Course credits: 2

Course pre-requisites: PH142; MATH340 or MATH345

Grading and exams:

2 quizzes: at the end of chapter 3, and chapter 6	30%
Final exam (covers chapters 1-8)	40%
HW discussion in-class (on Thursday)	30%

Homework will be assigned once a week. The homework will not be graded. Instead, it will be discussed in class. Each student will get a turn to present the solution to a problem randomly assigned by Prof. Menoni. This discussion will be graded. In case, a student is sick on a Thursday, the student needs to notify Prof. Menoni ahead so she can share a link to participate in HW discussion. For remote participation, students need to be prepared to present using for example, OneNote, Powerpoint, Word, Notability, etc. Students absent during HW discussion earned a zero mark if called.

Quizzes: There will be 2 in-class quizzes at the end of chapter 2, and 4. **Final Exam:** It is comprehensive, open book; formula sheet will be provided. It will take place on the last day of class, March 28, 2024.

Course Outline

Week No.	Chapter
1	Chapter 1: Crystal structure of Solids Chapter 2: Introduction to Quantum Mechanics
2-3	Chapter 3: Introduction to Quantum Theory of Solids
3-4	Chapter 4: The semiconductor in equilibrium
5	Chapter 5: Carrier Transport Phenomena
6-7	Chapter 6: Nonequilibrium Excess Carriers in Semiconductors
8	Chapter 7: The p-n junction
9	Chapter 8: The p-n junction diode

The pace of this class requires students to read each chapter ahead before they are discussed in class. On Tuesdays Prof. Menoni lectures. On Thursday HW solutions are discussed.

Class Etiquette: The class is face-to-face. Lectures and HW solutions are recorded using Echo360 for later viewing. In case of illness, please communicate with Prof. Menoni ahead of the class. Prof. Menoni will share a Zoom link for off site participation. On HW discussion days, those absent due to illness will be able to present solutions via Zoom. Students can present using OneNotes or similar software

All electronics must be turned off at the beginning of the class and remain off during the duration of the class.