

Syllabus

Instructor: Carmen S. Menoni

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Class Times: TR, 9:30am - 10:50am, ENG B2

Office: Engineering C 101E

Office Hours: By appointment. Send an email to Prof. Menoni to Carmen.Menoni@colostate.edu to set up an appointment

Text: "Semiconductor Physics and Devices"

Donald A. Neamen, Fourth Edition (Chapters 8-14) – *Print copy ONLY, approved by CSU Bookstore*

Course description: Quantitative analysis of electric field, carrier and current distributions in MOSFETs and bipolar junction transistors; scaling, non-idealities.

Course Credits: 1

Prerequisites: ECE 331 with a C or better; ECE 471B, ECE 415 or concurrent registration

Grading and Exams:

Quizzes	40%
Homework discussion	40%
Final Review Paper	20%

Homework: will be assigned once a week. There will be discussion of the homework in class. Each student will discuss her/his solution to one problem. Homework discussion takes place every Thursday. Attendance is mandatory. The in-class solution is graded, unless otherwise stated in the homework guide.

Quizzes: In class; open print textbook and Course Notes. Prof. Menoni will provide a formula sheet.

Material for the class will be stored in CANVAS

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

Week No.	Chapter	Topic
1	8	Chapter 8
	8	Homework Solution Chapter 8
2	9	Metal –Semiconductor Junction
2	9	Homework Solutions Chapter 9
3	10	Fundamentals of MOSFET Sections 10.1 -10.5
3		Homework Solutions Chapter 10 Quiz Chapter 8,9
4	11	MOSFET additional concepts
4		Homework Solutions Chapter 11 Quiz Chapter 10
5	14	Other devices (if time available)
5		Homework Solutions Chapter 14
Finals Week		Term Paper due April 9, 5 PM. Upload on Canvas

Term Paper: This monograph will answer one or more of the following questions:

- Where is the Si MOSFET technology today, what advances are being considered?**
- What other materials platforms are used to fabricate FET devices; what is state-of-the-art?**
- Applications of FET technologies based on their performance**

This monograph is individual work. It needs to contain an introduction motivating the topic, a summary of the papers you have read and a list of references.