Instructor: Gon Namkoong
Office: 231 Kaufman Hall & Applied Research Center (#717)
Office Hours: 2:50-4:20 PM (Tuesday)
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Class: Tuesday 4:20-7:00 PM

Course Objective: This course deals with understanding of the fundamental principles of electronic and optoelectronic devices. This class will cover from underlining material science and device physic of modern semiconductor devices. Particularly, this class will cover the theory and design of p-n junction devices, bipolar transistors, photonic devices, unipolar devices, and photovoltaic cells. The following topics will be supplemented with latest research results.

Student Learning Objectives/Outcomes:

1. Ability to analyze carrier statistics and densities in semiconductors.
2. Ability to analyze biased and unbiased operations of pn junction diodes and Schottky contacts.
3. Ability to analyze biased and unbiased operations of field effect transistors and bipolar junction transistors.
4. Knowledge about contemporary devices including microwave diodes, quantum-effect, hot electronic, and photonic devices.

Pre-requisites: ECE 313, 323 and 332

Grading scheme: Course grades will be determined from exams, quizzes and homework.

ECE 473: grade matrix
Homework (10%), Quiz1 (10%), Quiz2 (20%), Quiz3, (20%), Final (40%)

ECE 573: grade matrix
Homework (10%), Quiz1 (10%), Quiz2 (20%), Quiz3, (20%), Final written report from literature research survey (10%), Final (30%)

**Text Book**  

**Honor Code**  
Students who are taking this class should follow the ODU honor code.

**Lecture Topics**

1. **Chapter 4**: p-n junction (Two weeks) => Quiz
2. **Chapter 5**: Bipolar Transistor and related Devices (2 weeks) => Quiz
3. **Chapter 6**: MOSFET and related Devices (2 weeks) => Mid-term exam
4. **Chapter 7**: MESFET and related Devices (2 weeks) => Quiz
5. **Chapter 8**: Microwave Diodes, Quantum-Effect, and Hot Electronic Devices (2 Weeks if time is allowed )
6. **Chapter 9**: Photonic Devices (2 weeks) => Final