ELEG 5203 Syllabus for 8-week online session

Semiconductor Devices

Text Book: Principles of Semiconductor Devices

Sima Dimitrijev, 2nd Edition, Oxford University Press 2012

ISBN 10: 0195388038/ ISBN 13: 9780195388039

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**Homework assignments** are to be solved individually by the student. They are due in one week from the time of assignment. Only one randomly selected problem will be graded from each assignment.

Term papers are **required** for **graduate credit**. They are to extend the knowledge gained in class about the physics of junction diodes and transistors to understand the working of other semiconductor devices, (such as, Photodetectors, Solar Cells, Light Emitting Diodes, Solid State Laser Diodes, Microwave Generators, such as, IMPATT and Gunn Diodes, Nuclear, X-ray and Gamma Detectors, Switching and Power Devices.) The student is required to submit a 5-page research paper on one of the topics. Term paper will be due on the last day of classes.

There will be **two** **exams** during the course—one mid-term and the other at the completion of the session. In these exams you will be responsible for the subject matter covered during that period.

Grading Policy:

A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: 59 and below

Grade Breakdown:

Homework: 25%

Midterm Exam 25%

Final Exam 25%

Term Paper 25%

**Study and EXAM Schedule**

Week#1 Chapter 1, 2 Intro to Crystals, Energy Bands

Week# 2 Chapter 3 Drift

Week# 3 Chapter 4 Diffusion

Week# 4 Chapter 5 Generation/Recombination

MIDTERM EXAM II (Ch. 1-5)

Week# 5 Chapter 6 P-N Junctions

Week# 6 Chapter 7 MOS

Week# 7 Chapter 8 MOSFET

Week# 8 Chapter 9 Bipolar Junction Transistors

FINAL EXAM III (Ch. 6-9)

Home Work Assignments:

HW#1 1.1, 1.8, 1.14, 1.24, 2.1, 2.18, 2.27, 2.31

HW#2 3.1, 3.7, 3.10, 3.15, 3.20, 3.24

HW#3 4.3, 4.6, 4.8, 4.11, 4.14

HW#4 5.5, 5.6, 5.7, 5.9, 5.10, 5.11

HW#5 6.3, 6.6, 6.9, 6.11, 6.13, 6.15

HW#6 7.3, 7.6, 7.9, 7.18, 7.25, 7.29

HW#7 8.1, 8.5, 8.7, 8.14, 8.18, 8.23

HW#8 9.4, 9.6, 9.7, 9.8, 9.10, 9.13