

EEE 236 Advanced Semiconductor Devices

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Office Hours: Tuesday and Thursday to be determined
Or by appointment

Text:

(Required) J.P. Colinge, C.A. Colinge, Semiconductor Physics and Devices, Kluwer Publishing
(Suggested) Donald Neamen, Semiconductor Physics and Devices, McGraw Hill Publishing

Grading:

Homework	10%
Three Exams	75%
Project Report/Presentation	15%

Homework will not be accepted late. It must be neat, easy to follow, and stapled in order to receive a grade. There are no make-up exams.

	Topics by Week
Week 1	Crystal Structures Quantum Mechanics
Week 2	Quantum Mechanics
Week 3	Energy bands, Direct/Indirect semiconductors Electrons and Holes Fermi Level
Week 4	Integrated Circuit Fabrication
Week 5	Carrier Transport Drift and Diffusion Nonequilibrium Excess Carriers EXAM 1
Week 6	p-n junctions Contact Potential (Drift/Diffusion Currents at Equilibrium) Space Charge

Week 7	p-n Junctions Forward Bias Reverse Bias
Week 8	Biasing (Minority and Majority Carrier Currents) Stored Charge (Capacitance, Recovery Time) Ohmic and Schottky Contacts
Week 9	Practical Applications of Diodes EXAM 2
Week 10	MOSFETs
Week 11	MOSFETs
Week 12	MOSFETs
Week 13	MOSFETs (Secondary effects -- short channel, hot electrons, high K dielectrics, gate work functions)
Week 14	MOSFETS and Bipolar Junction Transistors
Week 15	(Term Presentations Due)
Finals Week	EXAM 3