

A-Term 2023			ECE 2201 Microelectronics I	¹ Textbook Sedra&Smith (8th ed)	Last Update 08/07/2023 Due Dates
Date	Day	Lec	Topic		
8/24	Thu	1	Introduction to Semiconductors Conductors vs. Non-Conductors Chemistry Review	3.1 - 3.3	
8/25	Fri	2	The PN Junction Doping / P & N Type Silicon PN Junction Diode / Physical Model Electrical Model / Modes of Conduction Forward / Zero / Reverse Bias Diffusion and Drift Currents	3.4, 3.5 4.1 - 4.3	
8/28	Mon	3	Diode V-I Characteristic William Shockley's Diode Equation Diode Circuit Analysis / Diode Models Load Line Technique / Graphical Analysis Numerical Methods / Exact Analysis	4.2, 4.3	
8/29	Tue	4	Diode Signal Processing Limiting and Clamping Circuits Lab1 Prep - Voltage Transfer Characteristic	4.7	
8/30	Wed	Lab 1	Diode Characteristics Diode Wave Shaping Circuits		Prelab 1
8/31	Thu	5	Diode Circuit Analysis HW Examples		
9/1	Fri	6	Diode Applications / DC Power Supplies XFMR / Half-Wave Rectifier / Filter Cap Voltage Regulator	4.6	Homework 1
9/4	Mon	-	Labor Day		
9/5	Tue	7	Lab1 Report Details Prelab2 Zener Diode Regulator Ripple Voltage Derivation Lab2 Overview	4.6	
9/6	Wed	Lab 2	Diode Applications DC Power Supplies		Prelab 2 / Lab Report 1
9/7	Thu	8	DC Power Supply Topologies Half-Wave / Full-Wave / Full-Wave Bridge Capacitor Selection when using a Linear Voltage Regulator		
9/8	Fri	9	Voltage and Current in Rectifier Circuits Practical Diode Specifications Piece-Wise Linear Diode Models HW2 Examples	4.4	
9/11	Mon	10	MOSFET Introduction Three Terminal Device Concept MOSFET V-I Characteristic MOSFET Operating Regions	5.1, 5.2	Homework 2
9/12	Tue	11	MOSFET Equations MOSFET Turn-On Resistance (r_{DS}) Extracting MOSFET Parameters NMOS Logic Inverter w/ Resistive Load	5.1, 5.2 16.1. 16.2	

9/13	Wed	Lab 3	MOSFET Fundamentals		Prelab 3 / Lab Report 2
9/14	Thu	12	Load Capacitance Propagation Delays, tpHL, tpLH Exam1 Review	16.1, 16.2	
9/15	Fri	EXAM	EXAM 1 - Diodes		
9/18	Mon	13	NMOS Logic Inverter Review / Drawbacks P-Channel MOSFET CMOS Logic Inverter CMOS Logic Gates (NAND, NOR)	16.1, 16.2	Homework 3
9/19	Tue	14	Pulse Width Modulation Motor Speed Control		
9/20	Wed	Lab 4	CMOS Switching Applications		Prelab 4 / Lab Report 3
9/21	Thu	15	Amplifier Concept MOSFET Common Source Amplifier	1.1 - 1.5 7.1, 7.2	
9/22	Fri		Wellness Day		
9/25	Mon	16	MOSFET Models MOSFET Amplifier Example Lab5A Prep / HW Examples	7.1, 7.2	Homework 4
9/26	Tue	17	Introduction to BJT's / BJT Demo Lab5B Prep - Beta Meter	6.1	
9/27	Wed	Lab 5	MOSFET Amplifier BJT Fundamentals		Prelab 5 / Lab Report 4
9/28	Thu	18	BJT Operating Regions / V-I Characteristic BJT Large Signal Models DC Analysis Examples Exam2 Review	6.1, 6.2, 6.3	
9/29	Fri	EXAM	EXAM 2 - MOSFETS		
10/2	Mon	19	BJT Common Emitter Amplifier	7.1, 7.2	Homework 5
10/3	Tue	20	BJT Common Emitter Amplifier (Prelab6) Voltage Divider Bias / Capacitive Coupling Frequency Response of BJT Amplifier	7.4, 7.5	
10/4	Wed	Lab 6	BJT Common Emitter Amplifier		Prelab 6 / Lab Report 5
10/5	Thu	21	BJT (CE) Amplifier (Lab6 Follow-up) Adding Bypass Capacitor C_E Small-Signal BJT Model (g_m , r_e)		
10/6	Fri	22	Voltage Amplifier Topology (R_{in} , R_{out} , A_v) Applied to BJT (CE) Amp Multi-Stage Amplifier Solution Emitter Follower / Push-Pull Pair	1.1 - 1.5 7.5	
10/9	Mon	23	Negative Feedback, BJT Differential Pair & Multistage Amplifier Design	9.2, 11.1 12	Homework 6

10/10	Tue	24	Audio Amplifier Design (Prelab7)		
10/11	Wed	Lab 7x	Audio Amplifier (Extra Credit)		Prelab 7 (hw) Lab Report 6
10/12	Thu		Exam 3 Review		
10/13	Fri	EXAM	EXAM 3 - BJTS		
(1) Sedra & Smith, <i>Microelectronics Circuits, 8th ed.</i> , Oxford University Press, 2020.					