

# ESE 273/ EEO 315

# Microelectronics

**Tentative Schedule**

**Summer 2023**

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Week	Date	Topic	Lecture Videos	Textbook
1	7/11	<ul style="list-style-type: none"> <li>Course overview</li> <li>Properties of Semiconductor Materials, doping, current conduction</li> </ul>	Week1 Lec1 Week1 Lec2	p. 1 – 22, chp. 1
	7/13	<ul style="list-style-type: none"> <li>pn junction Characteristics, forward and reverse bias, junction capacitance, built-in voltage</li> <li>Diode Circuit Models, Rectifiers: half-wave, full-wave, bridge</li> </ul>	Week2 Lec1  Week2 Lec2	p. 23 – 34, chp 1  p. 34 – 53, chp 1
2	7/18 Hw1 due	<ul style="list-style-type: none"> <li>Bridge Rectifiers, filter capacitor</li> <li>Clippers and Clampers</li> </ul>	Week3 Lec1 Week3 Lec2	p. 67 – 84, chp 2 p. 90 – 103, chp 2
	7/20	<ul style="list-style-type: none"> <li>Transistors, MOSFET Operation</li> <li>MOSFET large and small-signal model</li> </ul>	Week4 Lec1 Week4 Lec2, Week5 Lec1 Week6 Lec1	p. 125 – 145, chp 3
3	7/25 Hw2 due	<ul style="list-style-type: none"> <li>MOSFET DC Analysis</li> <li>Current source; current mirror and active load</li> </ul>	Week6 Lec1 Week6 Lec2 Week7 Lec1	p. 145 – 164, chp 3 p. 170 – 175, chp 3 p. 707 – 714, chp 10
	7/27	<ul style="list-style-type: none"> <li>Amplifiers, Common Source Amplifier</li> <li>Common source output resistance</li> </ul> <p>Midterm</p>	Week7 Lec2 Week8 Lec1	p. 205 – 226, chp 4  Week5 lec2 review
4	8/1 Hw3 due	<ul style="list-style-type: none"> <li>Frequency response of common-source amplifier, Miller effect</li> <li>Common-drain and common-gate amplifier</li> <li>High gain amplifiers: cascoding and cascading</li> </ul>	Week8 Lec2 Week9 Lec1 Week9 Lec2 Week10 Lec1	p. 469- 482, 514-523, chp.7 p. 227- 238, chp.4 p. 254- 257, chp.4
	8/3	<ul style="list-style-type: none"> <li>CMOS inverter</li> <li>BJT transistor operation and characteristics</li> </ul>	Week10 Lec2  Week11 Lec2	p. 1148- 1162, 1168-1182 chp.16 p. 285 – 301, chp 6

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5	8/8 Hw4 due	<ul style="list-style-type: none"> <li>• BJT DC analysis and Biasing</li> <li>• Small signal model and common-emitter amplifier</li> </ul>	Week12 Lec1 Week12 Lec2	p. 301 – 341, chp 6
	8/10	<ul style="list-style-type: none"> <li>• Common Emitter Amplifier, symmetrical swing, Common Emitter Frequency Response</li> </ul>	Week13 Lec1	p. 369 – 419, chp 6 p. 521 – 523, chp 7
6	8/15	<ul style="list-style-type: none"> <li>• Review</li> </ul>	Week13 lec2	
	8/17	Final		