

## Tentative EE 3300 Daily Coverage and Reading Materials - Fall 2024

Suggested Reading Materials are listed on a weekly basis. Chapter references are to the Weste Harris test. See Table of Contents for specific sections.

### Topics (exam dates not shown)

			Period	
Week	26-Aug	1		<a href="#">Chapter 1, Notes</a>
			1	Electronic systems overview, economic opportunities
			2	Design approaches, yield and cost of semiconductor products
			3	Physical characteristics, soft faults
Week	2-Sep	2		<a href="#">Chapter 1, Notes</a>
				Holiday
			4	Digital systems - basic gates, switch-level MOS models
			5	Digital systems - complex logic gates, pass transistor logic, Improved switch-Level MOS model
Week	9-Sep	3		<a href="#">Chapter 1, Notes</a>
			6	Parameter extraction for Imp. switch-level model, propagation delay in logic, placement, stick diagrams
			7	Technology files, design rules, layout
			8	Fabrication technology, processing steps
Week	16-Sep	4		<a href="#">Chapter 1 Chapter 3, Chapter 6, Notes</a>
			9	Fabrication technology, processing steps
			10	Interconnects - resistive and capacitive
			11	Back-end technology ; packaging, bonding, basic semiconductor Processes
Week	23-Sep	5		<a href="#">Chapter 2 Chapter 6, Notes</a>
			12	Devices/Device Models in semiconductor processes - resistors, diodes
			13	Diode operation, diode model (diode equation), simplified diode models
			14	Exam 1
Week	30-Sep	6		<a href="#">Chapter 2, Chapter 3, Notes</a>
			15	Diode applications, capacitor types and models, MOSFET operation
			16	MOSFET Operation - square law model, short channel model, BSIM model (brief)
			17	MOS process description - (n-channel, p-channel, capacitors, resistors)
Week	7-Oct	7		<a href="#">Notes</a>
			18	Small feature MOS processes, bipolar devices, operation, device models
			19	Bipolar process description - (vertical and lateral devices, JFET, diffused resistor, varactor, diode)
			20	Bipolar devices - JFET and Thyristors
Week	14-Oct	8		<a href="#">Notes</a>
			21	Bipolar devices - JFET and Thyristors
			22	Thyristors
			23	Amplification in transistor circuits
Week	21-Oct	9		<a href="#">Notes</a>
			24	Amplification in transistor circuits
			25	Small-signal principles, ss equivalent circuits, ss diode model
			26	Exam 2
Week	28-Oct	10		<a href="#">Notes</a>
			27	Small-signal models of n-terminal devices, MOSFET and BJT ss models
			28	Application of ss models, graphical analysis of nonlinear transistor circuits, comparison of MOS and BJT amplifiers
			29	Basic amplifier structures-CS/CE, CD/CC, CG/CB
Week	4-Nov	11		<a href="#">Notes</a>
			30	High gain amplifiers - cascoding, cascading
			31	Current source biasing, darlington configuration
			32	Current sources and mirrors
Week	11-Nov	12		<a href="#">Chapter 9, Notes</a>
			33	Differential amplifiers (brief), bipolar and MOS mappings
			34	Hierarchical digital design - behavioral, structural, physical, digital design flows
			35	Basic gates, characteristics of logic families
Week	18-Nov	13		<a href="#">Chapter 9, Notes</a>
			36	Inverter pair, analysis of CMOS inverter
			37	Other CMOS logic circuits, static power dissipation, propagation delay
			38	Exam 3
Week	2-Dec	14		<a href="#">Chapter 4, Notes</a>
			39	The Reference Inverter, sizing of gates
			40	Propagation delay in multiple levels of logic, asymmetric overdrive, optimally driving large capacitive loads
			41	Optimally driving large capacitive loads
Week	9-Dec	15		<a href="#">Chapter 4, Notes</a>
			42	Logic effort, Elmore delay, power dissipation in logic circuits
			43	Sequential logic - latches, flip flops, shift registers, array logic, memory structures
			44	High frequency MOS model