

King Fahd University of Petroleum & Minerals  
Electrical Engineering Department  
EE203: Electronics I (072)

Instructor Information	Dr. Alaa El-Din Hussein	Office 59-0058	Phone 4868	Email: husseina@kfupm.edu.sa	Office Hours S, M & W 09:00-09:55 am, M 11:00-11:55 am
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Course Information	Text Microelectronic Circuits 5 <sup>th</sup> ed Sedra & Smith	Grading				Attendance	
		HW+Quizzes 15%	Project 5%	Two Exams 30%	Lab 20%	Final Exam 30%	6 unexcused absences → Warning 9 unexcused absences → DN

Week	Topics to cover	Ch	Sec	Lab Activity	
1	Feb 16 – 20	Diodes: Introduction, Ideal diode, PN junction, Terminal characteristics of the diode, Physical operation of the diode.	3	1, 2, 7	No Lab
2	Feb 23 - 27	Graphical and analytical diode circuits analysis, Diode Models, the Zener diode.	3	3.1-3.3, 3.5, 3.6, 4.1, 4.2	Exp 1: Lab Equipment
3	March 1 - 5	Diode applications: half and Full-wave rectifiers, Limiting and Clamping circuits and voltage doublers. Field-Effect Transistors (FETs): Device structure and operation.	3 4	5.1-5.4, 6 1.1-1.5	Exp 2: Pspice
4	March 8 - 12	PMOS structure and operation, CMOS structure, Current –Voltage Characteristic, Role of substrate, MOSFET Circuits at DC.	4	1.6-1.8, 2.1-2.5, 3	Exp 3: Diode Applications

**Exam 1 Wed March 19 (6:00-8:00 pm)**

5	March 15 - 19	The MOSFET as amplifier, Biasing, small signal operation and models, Single stage amplifier (CS, CG and CD).	4	4-7	No Lab
6	March 22 - 26	Single stage amplifier (Continued) (CS, CG & CD).	4	7	Exp 4: DC Power Supply
7	March 29 - April 2	Bipolar Junction Transistors (BJTs): structure and operation, types, symbols and conventions, transistors current-voltage characteristics.	5	1.1-1.3, 1.5, 1.6, 2, 3	Exp 5: MOSFET Amplifiers
8	April 5 - 9	BJT circuits at DC, Biasing, Small signal models and analysis.	5	4-6	Exp 6: BJT Characteristics

**Midterm Vacation April 12-16**

9	April 19 - 23	Single stage amplifier (CE, and CB).	5	7.1-7.5	No Lab
10	April 26 - 30	Single stage amplifier (CC). Differential Amplifiers: MOS.	5 7	7.6, 7.7 1, 2	Exp 7: BJT CE Amplifiers
11	May 3 – 7	BJT Differential amplifiers. Digital Circuit design overview, the CMOS inverter.	7 10	3 1.1, 1.2, 2.1, 2.2	No Lab

**Exam 2 Wed May 14 (6:00-8:00 pm, Building 10)**

12	May 10-14	CMOS Logic circuits, CMOS transistor sizing.	10	3.1-3.8	Exp 8: Differential Amp.
13	May 17-21	Pass transistor logic circuits (PTL), Basic concept of dynamic logic circuits. BJT as a switch, The basic BJT inverter.	10 5	4.1, 4.2, 5.6.1 3.4, 10	Exp 9: CMOS Inverter
14	May 24-28	RTL circuits, maximum fan-out calculation, ECL logic circuits.	11	7.1, 7.3, 7.4, 7.7	Exp 10: BJT Logic Gates
15	May 31 - June 4	TTL Basic Inverters and NAND gate, BJT vs. MOS Logic: advantage/disadvantages.	11	Handout	Lab Final

**Final Exam Monday June 9, 2008 @ 7:00PM**