

King Fahd University of Petroleum & Minerals  
Electrical Engineering Department  
EE203: Electronics I (112)

Instructor	Dr. Oualid Hammi	Office: B 59 / R 0012-5	Phone: 7394	ohammi@kfupm.edu.sa	Office Hours: SMW: 11:00AM –11:50AM
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**Course Outcomes :**

1. An ability to apply knowledge of mathematics, science, and engineering to the analysis of electronic circuits.
2. An ability to apply knowledge of mathematics, science, and engineering to the design of electronic circuits.
3. An ability to identify, formulate, and solves basic electronic engineering problems.
4. An ability to use the techniques, skills, and modern engineering tools such as PSPICE to analysis and design electronic circuits.
5. An ability to conduct experiments, as well as to analyze and interpret data.

Course Information	Text: Microelectronic Circuits 5 <sup>th</sup> ed Sedra & Smith	Grading: Quizzes + HW (10% + 5%), Major Exams (15%+15%), Lab (20%), Final Exam (35%)	Attendance: 6 unexcused absences → Warning 9 unexcused absences → DN
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Week	Topics to cover	Ch	Sections	Lab Activity
1	Jan. 28 – Feb. 1 <b>Operation Amplifiers:</b> The Ideal Op-Amp. ; Inverting and Non-inverting Amplifiers; Effect of Finite Open Loop Gain for the Inverting Amplifier, Negative Feedback Concept.	2	1 – 3	No Lab
2	Feb. 4 – 8 <b>Operation Amplifiers:</b> Difference Amplifier	2	4	Exp. 1: Lab Equipment
	<b>Diodes:</b> The Ideal Diode ; Terminal Characteristics of Junction Diodes; Models	3	1 – 3	
3	Feb. 11 – 15 <b>Diodes:</b> Operation in the Reverse Breakdown Region: The Zener Diode, Zener Diode Regulator, Rectifier Circuits: Half Wave Rectifier.	3	4 ; 5.1	Exp 2: PSPICE : Introduction
4	Feb. 18 – 22 <b>Diodes:</b> Rectifier Circuits: Full Wave Rectifier ; Bridge Rectifier, Peak Rectifier (Basics, DC Output, Ripple and PIV Calculations).	3	5.2 – 5.4	Exp 3: Linear Op Amp
5	Feb. 25 – 29 <b>Diodes:</b> Limiters; Physical Operation of Diodes.	3	6.1 ; 7	<b>Problem Session</b>
<b>Major Exam 1: Saturday March 3, 2012 (6:00PM – 8:00PM). (Location: to be added)</b>				
6	Mar. 3 – 7 <b>Field Effect Transistors:</b> Device Structure and Physical Operation ; Current-Voltage Characteristics MOSFET as an Amplifier and as a Switch.	4	1 ; 2, 4	Exp. 4: Diode Applications
7	Mar. 10 – 14 <b>Field Effect Transistors:</b> MOSFET as an Amplifier and as a Switch ; MOSFET Circuits at DC ; Biasing in MOS Amplifier Circuits.	4	4 ; 3 ; 5	Exp. 5: DC Power Supply
8	Mar. 17 – 21 <b>Field Effect Transistors:</b> Small Signal Operation and Models ; Single Stage MOS Amplifiers (CS).	4	6 ; 7.1 – 7.3	No Lab
<b>Mid-term vacation: March 22<sup>nd</sup> – March 28<sup>th</sup>, 2012</b>				
9	Mar. 31 – Apr. 4 <b>Field Effect Transistors:</b> Single Stage MOS Amplifiers (CS+Resistance, CG, CD).	4	7.4 – 7.7	Exp. 6: MOSFET Amplifiers
10	Apr. 7 – 11 <b>Bipolar Junction Transistors:</b> Device Structure and Physical Operation ; Current-Voltage Characteristics ; The BJT as an Amplifier and as a Switch ;	5	1.1 – 1.3; 1.5 – 1.6 ; 2 ; 3	Exp 7: BJT Characteristics
11	Apr. 14 – 18 <b>Bipolar Junction Transistors:</b> BJT Circuits at DC ; Biasing in BJT Amplifier Circuits (Discrete or With Ideal Current Sources) ; Small Signal Operation and Models.	5	4 ; 5 ; 6	<b>Problem Session</b>
<b>Major Exam 2: Wednesday April 18, 2012 (6:00PM – 8:00PM). (Location: to be added)</b>				
12	Apr. 21 – 25 <b>Bipolar Junction Transistors:</b> Single Stage Amplifiers (CE, CE+Resistance, CB, CC).	5	7.1 – 7.7	No Lab
13	Apr. 28 – May 2 <b>Digital Circuit Design:</b> Introduction, Parameters (e.g. speed, power, and area), CMOS Inverter,	10	1.1 – 1.2 ; 2	Exp 8: BJT CE Amplifiers
14	May 5 – 9 <b>Digital Circuit Design:</b> CMOS-Logic Gate Circuits. Transistors Sizing.	10	3.1 – 3.8	Exp 9: CMOS Inverter
15	May 12 – 16 <b>Digital Circuit Design:</b> Pass-Transistor Logic Circuits (PTL), Review	10	5	Lab Final

**Final Exam: Tuesday May 22, 2012 @ 7:30AM. (Location to be specified by the Office of the University Registrar)**