

<b>1. Course Information</b>	
Course Number and Title:	EE-215, Electronic Devices and Circuits
Credits:	4 (3+1)
Instructor(s)-in-charge:	Asst Prof M Anis Ch
Course type:	Lecture + Lab
Required or Elective:	Required
Course pre-requisites	EE-111 Linear Circuit Analysis
Degree and Semester	DE-36-CE, Semester 3
Month and Year	Fall 2015

<b>2. Grading Criteria*</b>		
Grading:*	Quizzes:	7%~12%
	Assignments:	4%~8%
	Two Sessional Exams:	22%~30%
	Final Exam:	30%~38%
	Lab/Semester Project:	25%

\*Grading Criteria can change without notice

<b>3. Course book and Related Course Material</b>	
<b>Textbooks:</b>	Microelectronic Circuits, 6th Edition, by Adel S. Sedra and Kenneth C. Smith, Oxford University Press 2009.
<b>Reference Books:</b>	Fundamentals of Microelectronics, 2nd Edition, by B. Razavi, Wiley 2013.

<b>4. Catalog Descriptions</b>
The course is designed to acquaint students with physical operation and terminal characteristics of diodes, modeling of forward and reverse characteristics of diodes, zener diodes, rectifiers and limiting circuits. Physical structure and principle of operation of BJTs and MOSFETs. Analysis of dc circuits and biasing of transistors, small/large signal models of BJTs and MOSFETs. Small signal model, design and analysis of various amplifier configurations. In addition to class lectures, comprehensive laboratory exercises are also designed so that theoretical knowledge may be consolidated with practical examples.

<b>5. Course Objectives</b>
a) Learn principle of operation and characteristics of electronic devices namely diodes, BJTs and MOSFETs. b) Design and analysis of electronic circuits based on diodes, BJTs and MOSFETs. c) Develop hands-on skills through Lab and project work. d) Develop physical insight and intuition for problem solving. e) Use of SPICE simulation as a verification tool.

<b>6. Topics covered in the Course and Level of Coverage</b>	
Diodes	
1. The Ideal Diode	1 hrs
2. Terminal Characteristics of PN Junction Diodes	2hrs
3. Modeling the Diode Forward Characteristic	3hrs
4. Operation in the Reverse Breakdown Region (Zener Diodes)	1.5hrs
5. Rectifier Circuits	3.5hrs
6. Limiter Circuits	1 hrs
BJTs	
7. Device Structure and Physical Operation	4hrs
8. Current-Voltage Characteristics	2hrs
	3hrs

9. BJT Circuits at DC	
10. Applying the BJT in Amplifier Design	3hrs
11. Small-Signal Operation and Models	3hrs
12. Basic BJT Amplifier Configurations and Discrete-Circuit BJT Amplifiers	3hrs
MOSFETs	
13. Device Structure and Physical Operation	3hrs
14. Current Voltage Characteristics	1 hrs
15. MOSFET Circuits at DC	2hrs
16. Applying the MOSFETs in Amplifier Design	3hrs
17. Small-Signal Operation and Models	2hrs
18. Basic MOSFET Amplifier Configurations	2hrs
19. Biasing in MOS Amplifier Circuits and Discrete-Circuit MOS Amplifiers	5hrs