

SUBJECT: EEE 132 Electronic Devices Lecturers: Dr Norlaili Mohd. Noh, Dr. Mohd Tafir bin Mustaffa Email: eelaili@eng.usm.my, tafir@eng.usm.my			Room: 3.15 Extension: 6023, 6029		PROGRAM OUTCOMES							MEASUREMENT OF LEARNING OUTCOME					
COURSE DESCRIPTION Diodes and transistors are typical devices in electronic circuits. These devices are made of semiconductor materials. To understand the operation of these devices, basic knowledge of the structure of atoms and the interaction of atomic particles in the semiconductor material are necessary. The p-n junction formed by adjacent p and n semiconductors is the basis of the operation of the diodes and transistors. This course discusses on the current flow across the p-n junction that contributes to the characteristics of the diodes, BJTs and FETs. Consequently, the characteristics of these devices determine the performance of the electronic circuits. The FETs covered in this course are the JFET, D-MOSFET and E-MOSFET.			COURSE OBJECTIVES <ul style="list-style-type: none"> To give understanding on how current flows through the p-n junction and relating this phenomena to the characteristics and operation of the diodes, bipolar and field-effect transistors. To expose students to the function and application of the diodes, bipolar junction and field effect transistors in electronic circuits. 		TEXTBOOK: Thomas L. Floyd, 'Electronic Devices', Sixth Edition, Prentice Hall							REFERENCE BOOKS: <ol style="list-style-type: none"> S.M.Sze. "Semiconductor Devices, Physics and Technology," Second Edition, Wiley, 2002 Boylestad and Nashelsky, " Electronic Devices and Circuit Theory," Eighth Edition, Prentice Hall, 2002. 			GRADING: Test 1 10% Test 2 10% Assignments 10% Final Examination 70%		
COURSE OUTCOMES		TEACHING CONTENTS	HRS	Ability to apply knowledge of mathematics and science in Electrical and Electronic Engineering	Ability to use current techniques, skills and engineering tools necessary for solving Electrical and Electronic Engineering problems	Ability to design and develop an Electrical and Electronic Engineering system in fulfilling desired needs within practical constraints	Ability to communicate and function in multi-disciplinary environments	Ability to identify, analyse, formulate, and solve Electrical and Electronic Engineering problems both efficiently and economically	Ability to understand and adhere to professional practices and ethical responsibilities	Ability to understand the impact of engineering solutions in a global, economic, environmental, and societal context	Exam	Test/Viva	Assignment/Mini Projects				
CO1 – Understanding the semiconductor physics of the intrinsic, p and n materials	1	Revision on Semiconductor physics	5	√							70	20	10				
	2	Intrinsic semiconductors		√													
	3	Extrinsic semiconductors		√													
	4	Important semiconductor parameters		√													
	5	Charge density and current in semiconductor		√													
	6	Fermi-Dirac		√													

Chapter No.	Course Outcome	Text
1	Understanding the semiconductor physics of the intrinsic, p and n materials	ThomasL.Floyd , 'Electronic Devices', Sixth Edition, Prentice Hall – Chapter 1 S.M.Sze . "Semiconductor Devices, Physics and Technology," Second Edition, Wiley, 2002 – Chapters 2 and 3 Boylestad and Nashelsky , " Electronic Devices and Circuit Theory," Eighth Edition, Prentice Hall, 2002 – Chapter 1
2	Understanding the characteristics of the p-n junction	ThomasL.Floyd , 'Electronic Devices', Sixth Edition, Prentice Hall – Chapter 1 S.M.Sze . "Semiconductor Devices, Physics and Technology," Second Edition, Wiley, 2002 – Chapter 4 Boylestad and Nashelsky , " Electronic Devices and Circuit Theory," Eighth Edition, Prentice Hall, 2002 – Chapter 1
	Understanding the characteristics of the diode and the diode's application in electronic circuits	ThomasL.Floyd , 'Electronic Devices', Sixth Edition, Prentice Hall – Chapter 2 Boylestad and Nashelsky , " Electronic Devices and Circuit Theory," Eighth Edition, Prentice Hall, 2002 – Chapter 2
	Understanding the characteristics of some special function diodes and the diode's application in electronic circuits	ThomasL.Floyd , 'Electronic Devices', Sixth Edition, Prentice Hall – Chapter 3 Boylestad and Nashelsky , " Electronic Devices and Circuit Theory," Eighth Edition, Prentice Hall, 2002 – Chapter 2
3	Understanding the BJT	ThomasL.Floyd , 'Electronic Devices', Sixth Edition, Prentice Hall – Chapters 4 and 5 S.M.Sze . "Semiconductor Devices, Physics and Technology," Second Edition, Wiley, 2002 – Chapter 5 Boylestad and Nashelsky , " Electronic Devices and Circuit Theory," Eighth Edition, Prentice Hall, 2002 – Chapters 3 and 4
4	Understanding the JFET	ThomasL.Floyd , 'Electronic Devices', Sixth Edition, Prentice Hall – Chapter 7 S.M.Sze . "Semiconductor Devices, Physics and Technology," Second Edition, Wiley, 2002 – Chapter 6 Boylestad and Nashelsky , " Electronic Devices and Circuit Theory," Eighth Edition, Prentice Hall, 2002 – Chapters 5 and 6
5	Understanding the D-MOSFET	
6	Understanding the E-MOSFET	