

University of Computer Studies, Yangon
B.C.Sc./B.C.Tech.

CT-304	: Electronics I	First Semester
Text book	: Electronic Devices (9th Edition)	
Period	: 45 periods for 15 weeks (3 periods/week) (Lecture + Lab)	

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 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.

Course Objectives

The student should be made to be exposed to basic electronic devices and to be familiar with the theory, construction, and operation of basic electronic devices. Another objective is to prepare students to take some more advanced courses in the area of circuits and electronics. Student should understand troubleshooting of electronic circuits.

Assessment Plan for the Course

Paper Exam:	60%
Attendance:	10%
Test/ Quiz:	10%
Lab:	10%
Lab Assessment:	10%

Tentative Lecture Plan

No.	Chapter	Page	Period	Examples and Exercises	
	Chapter 1 Introduction to Electronics	2-29	3		
1.	1-1 The Atom 1-2 Materials used in Electronics	2-11	1	Explain Concept	
2.	1-3 Current in Semiconductors 1-4 N-Type and P-Type Semiconductors	11-16	1	Explain Concept	
3.	1-5 The PN Junction	16-18	1	Explain Concept	
	Chapter 2 Diodes and Applications	30-111	8		
4.	2-1 Diode Operation 2-2 Voltage-Current (V-I) Characteristics	30-36 36-39	3	All examples Exercises 2-5 to 2-8, 2-9 to 2-14, 2-15 to 17, 2-22 to 2-30, 2-31 to 40	
5.	2-3 Diode Models	39-44			
6.	2-4 Half-Wave Rectifiers 2-5 Full-Wave Rectifiers	44-50 50-57	3		
7.	2-6 Power Supply Filters and Regulators	57-64	2		
8.	2-7 Diode Limiting and Clampers	64-70			
	Chapter 3 Special-Purpose Diodes	112-172	5		
9.	3-1 The Zener Diode	113-120	2		E.g.3-5,6,7,8
10.	3-2 Zener Diode Applications	120-127	1		Exercises
11.	3-3The Varactor Diode	128-132	1	3-6 to 3-15	
12.	3-4 Optical Diodes	133-147	1	3-18 , 3-19 3-20 to 3-23	
	Chapter 4 Bipolar Junction Transistors	173-227	7		
13.	4-1 Bipolar Junction Transistor (BJT) Structure 4-2 Basic BJT Operation	174-177	2	E.g. 4-2,4,6,7,8,9,10,11 Exercises 4.12 to 4-20	
14.	4-3 BJT Characteristics and Parameters	177-190	2	4.24 to 4-28, 4-29, 30	
15.	4-4 The BJT as an Amplifier	190-192	1		
16.	4-5 The BJT as a Switch	192-195	2		
	Chapter 5 Transistor Bias Circuits	228-270	5		
17.	5-1 The DC Operating Point	229-235	2	E.g., 5-1 to 5-10	
18.	5-2 Voltage-Divider Bias	235-241	2	Exercises 5-5 to 31	
19.	5-3 Other Bias Methods	241-248	1		
	Chapter 6 BJT Amplifiers	271-338	9		

20.	6-1 Amplifier Operation 6-2 Transistor AC Models	272-278	2	E.g. 6-3,4,5 E.g. 6-7 to 6-12
21.	6-3 Common-Emitter Amplifier	278-291	2	All Exercises
22.	6-4 Common-Collector Amplifier	291-298	2	
23.	6-5 Common-Base Amplifier	298-300	1	
24.	6-6 Multistage Amplifiers	301-304	1	
25.	6-7 Differential Amplifier	304-310	1	
	Chapter 7 Power Amplifiers	339-383	6	
26.	7-1 Class A Power Amplifier	340-346	2	E.g. 7-1, 2 Related Exercises
27.	7-2 Class B and Class AB Push-Pull Amplifiers	346-357	2	E.g. 7-3, 4, 5 Related Exercises
28.	7-3 Class C Amplifier	357-365	2	E.g. 7-7, 8, 9 Related Exercises
29.	Revision		2	All Chapters