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

CST-201	**: Electrical Circuits**	**Fourth Semester**
Text book	**:** Engineering Circuit Analysis (8th Edition)	
Period	**: 45** periods for 15 weeks (3 periods/week)	

CATALOG DESCRIPTION:

Fundamental concepts in electrical circuits; circuit analysis and network theorems; linearity and superposition; series/parallel combinations of R, L, and C circuits; sinusoidal forcing; complex frequency and Bode plots; mutual inductance and transformers; two port networks.

COURSE OBJECTIVES:

To provide an introduction to sophomores in the field of electrical engineering to the fundamental concepts in the sub-area of electrical circuits. This course will be one of five fundamentals courses required of all electrical engineering majors. Another objective is to prepare students to take some more advanced courses in the area of circuits and electronics.

Learning Objectives: At the end of this course, students will be able to:

1. Identify linear systems and represent those systems in schematic form
2. Explain precisely what the fundamental circuit variables mean and why the fundamental laws governing them are true.
3. Apply Kirchhoff's current and voltage laws, Ohm's law, and the terminal relations describing inductive and capacitive energy-storage elements to circuit problems.
4. Simplify circuits using series and parallel equivalents and using Thevenin and Norton equivalents
5. Perform node and loop analyses and set these up in standard matrix format
6. Explain the physical underpinnings of capacitance and inductance.

Assessment Plan for the Course

Paper Exam: 60%

Attendance: 10%

Test/ Quiz: 10%

Lab/ Assessment:	10%
Lab Exam:	10%

Tentative Lecture Plan

No.	Chapter	Page	Period	Detail Lecture Plan
	Chapter 1 Introduction	1-8	**1**	
1.	1-1 to 1-6	9-38	1	Explain for Concept
	Chapter 2 Basic Components and Electric Circuits		**2**	
2.	2-1 Units and Scales 2-2 Charge, Current, Voltage and Power	9-17	1	All Examples & Practices Ex 10-21, 22, 29, 31, 33-37
3.	2-3 Voltage and Current Sources	17-22		
4.	2-4 Ohm's Law	22-29	1	
	Chapter 3 Voltages and Current Laws	39-78	**6**	
5.	3-1 Nodes, Paths, Loops and Branches 3-2 Kirchhoff's Current Law	39-42	1	All Examples & Practices Ex 8-13, 19-21, 23, 26-28, 30-34, 37-40, 46-48, 56, 57
6.	3-3 Kirchhoff's Voltage Law	42-46	1	
7.	3-4 The Single Loop Circuit	46-49	1	
8.	3-5 The Single Node-Pair Circuit	49-51	1	
9.	3-6 Series and Parallel Connected Sources	51-55	1	
11.	3-8 Voltage and Current Division	61-66	1	
	Chapter 4 Basic Nodal and Mesh Analysis	79-122	**10**	
12.	4-1 Nodal Analysis	80-89	1	All Examples & Practices Ex 8-13, 16, 17, 18, 20, 24-28, 29-33, 38-41, 42, 43, 47, 48, 49, 55, 57
13.	4-2 The Supernode	89-91	2	
14.	4-3 Mesh Analysis	92-98	1	
15.	4-4 The Supermesh	98-101	2	
	Chapter 5 Handy Circuit Analysis Techniques	123-174	**6**	

16.	5-1 Linearity and Superposition	123-133	2	All Examples & Practices Ex 5, 6, 11, 12, 16, 18, 19, 24, 27-30, 32, 33, 35, 36, 39-41, 43, 44, 50, 52, 53
17.	5-2 Source Transformations	133-140	2	
18.	5-3 Thevenin and Norton Equivalent Circuits	141-151	2	
	Chapter 7 Capacitors and Inductors	217-260	**6**	
19.	7-1 The Capacitor	217-225	1	All Examples & Practice 2, 3, 10, 11, 14, 15, 17, 21, 23, 28, 30, 37, 40-43, 45-50, 60-63
20.	7-2 The Inductor	225-234	2	
21.	7-3 Inductance and Capacitance Combinations	235-238	1	
22.	7-4 Consequence of Linearity	238-240	1	
23.	**Chapter 8 Basic RL and RC Circuits**	261-320	**8**	
24.	8-1 The Source-Free RL Circuit	261-267	1	All Examples and Practices All Odd Exercises
25.	8-2 Properties of the Exponential Response	268-272	1	
26	8-3 The Source-Free RC Circuit	272-275	1	
27.	8-4 A More General Perspective	275-282	1	
28	8-5 The Unit Step Function	282-286	1	
29.	8-6 Driven RL Circuit	286-289	1	
30.	8-7 Natural and Forced Response	289-295	1	
31.	8-8 Driven RC Circuits	295-300	1	
	Lab		**6**	