UNITED INTERNATIONAL UNIVERSITY

Department of Computer Science and Engineering (CSE)

Course Syllabus

1.	**Course Title**	Electrical Circuits
2.	**Course Code**	EEE 2113
3.	**Trimester and Year**	Summer, 2024
4.	**Pre-requisites**	N/A
5.	**Credit Hours**	3
6.	**Section**	G
7.	**Class Hours**	**Sunday & Wednesday:** EEE 2113 (G) [1.50 pm-3.10 pm], 405
8.	**Class Room**	405
9.	**Instructor's Name**	Anika Tasnim Rodela
10.	**Email**	anika@cse.uiu.ac.bd
11.	**Office**	636 (D)
12.	**Counselling Hours**	Check elms
13.	**Text Book**	Fundamentals of Electric Circuits (5th Edition) by Alexandar and Sadiku
14.	**Reference**	N/A
15.	**Course Contents (approved by UGC)**	Fundamental electrical concepts and measuring units, D.C. voltages, current, resistance and power, laws of electrical circuits and methods of network analysis, principles of D.C. measuring apparatus, laws of magnetic fields and methods of solving simple magnetic circuits. Alternating current, Instantaneous and RMS current, voltage and power, average power combinations of R, L & C circuits, Phasor, representation of sinusoidal quantities.
16.	**Course Outcomes (COs)**	

COs	**Description**
CO1	**Demonstrate** an understanding of the basic circuit principles *by solving simple circuit***.**
CO2	**Apply** circuit analysis techniques like KCL, KVL node and mesh analysis to analyze *larger circuits with multiple sources*.

		CO3	**Simplify** *complex circuit* to speed up solving process by applying different circuit theorems
		CO4	**Analyze** small AC circuits and relate different AC quantities *in practical application*.
17.	**Teaching Methods**	Lecture, Case Studies, Project Developments.	
18.	**CO with Assessment Methods**		

CO	Assessment Method	Percentage (%)
-	Attendance	5
-	Assignments	5
-	Class Tests	20
CO1, CO2	MID Exam	30
CO3, CO4	FINAL Exam	40

Lecture Outline-EEE 2113 (Tentative, can be changed in each trimester)

Class	Topics/Assignments	COs	Reading Reference	Lecture Outcomes/Activities
1	Introduction to circuit and circuit elements.	1	1	Name basic electrical components and use
2	Basic Concepts of basic electric circuit elements. (Charge, Current, Voltage, Power, Sources and their types, Resister… etc.)	1	1	Relate different D.C quantities of electrical networks
3	Ohm's Law, Nodes, Branch and loops,	2	1	Solve simple circuits to find current and voltages
4	Kirchhoff's laws, basic circuit solving.	2,3	1	Solve simple circuits efficiently
5	**Class Test 1**			Based on Lec. 1-4
6	Equivalent resistance (series, parallel & mixed), Equivalent resistance (Voltage division and current division)	2	1	Differentiate resistance orientations and application
7	Nodal analysis (Independent and dependent Sources)	3	1,2	Solve large circuits
8	Math Practise on Nodal analysis	3	1,2	Solve large circuits
9	Mesh and Supermesh analysis (Independent and dependent Sources)	3	1,2	Solve large circuits
10	Math Practise on Nodal analysis	3	1,2	Solve large circuits
11	**Class Test 2**			Based on Lec. 6-10
12	Review and Problem Solving Class **Discussion on Midterm Exam.**			
	MIDTERM EXAM			

13	Superposition Theorem (Independent and dependent Sources)	3	1	Simplify complex circuit with sources
14	Math Practise on Superposition	3	1	Simplify complex circuit with sources
15	Thevenin's theorem (Only Independent Sources)	2,3	1,2	Simplify complex circuit with resistors and sources
16	Maximum power transformation	3	1	Explain constraints in power transfer
17	**Class Test 3**			Based on Lec. 13-16
18	Introduction to Alternating currents, sketching waves, generation and use	4	1	Name basic electrical components and use
19	Lead/Lag in sinusoids, Phasor diagram, Phasor Algebra	4	1,2	Explain constraints in power transfer
20	Concept of Resistance, Reactance and Impedance. Equivalent Impedance.	4	1,2	Understanding Simple AC Circuits
21	Voltage Division, Current Division in AC circuits. Simple Current, voltage calculation in AC Circuits.	4	1,2	Understanding Simple AC Circuits
22	Average value, RMS value, …etc	4	1	Relate different A.C. quantities of electrical networks
23	Power calculation of AC-Circuits.	4,6	1	Formulate RLC networks
24	**Class Test 4 & Discussion on Final Exam**			Based on Lec. 18-23