Department of Computer Science and Engineering
Lesson Plan:

Course Title: Electrical Circuits I   **Course Code:** EEE 101
Level/Term: Primary level   **Section:** B
Credit: 03   **Contact Hours:** 39
Prerequisite: Basic Knowledge on Electrical Circuits   **Type: Core/Major:**
Session: February, 2019

Instructor: Eftekhar Hossain
Class schedule:
Counseling Time: **Room No:**
Email address: eftekhar.13ete@gmail.com   **Phone No:** 01521532765

Rationale: Intended to enable the learners to analyze and criticize the behavior of electrical circuits, use the acquired knowledge to understand complicated circuits, and develop or design efficient electrical circuits to solve real world problems.

Course Objectives:
- This course provides an introduction to simple electrical circuits as well as the technical skills to analyze such simple circuits.(PEO1, PEO2)
- Help the students to pursue further studies in electrical or telecommunications engineering as well as some other related engineering disciplines including computer engineering. (PEO2, PEO3)
- This course covers some related topics that helpful for students to build and analyze some practical, useful devices in real world. (PEO1, PEO2, PEO3)

Course Outcomes (COs):
After successful completion of this course, you should be able to:
1. Define the circuit theorems and methodology to solve simple DC as well as AC circuits/networks. (PO1, PO2, PO3, PO5)
2. Solve simple 1st order transient circuits and able to apply simple steady state sinusoidal analysis to circuits. (PO5, PO6)
3. Demonstrate a basic understanding of phasors and phasor diagrams for AC circuit analysis. (PO3, PO4, PO6)
4. Demonstrate basic proficiency in building basic electrical circuits and operating fundamental electrical engineering equipment. (PO4, PO6, PO7)

Assessment: Class tests, quizzes/assignments/homework, class attendance and class participation, midterm exam, final exam.

Text and Reference books:
1. Introductory Circuit Analysis, *Robert L. Boylestad*
2. Alternating Current Circuits, *Russell M Kerchner, George F Corcoran*

CO Delivery & Assessment:

COs	Corresponding POs	Bloom's taxonomy domain/level *(C: Cognitive, P: Psychomotor A: Affective)*	Delivery methods and activities	Assessment tools
CO1	P2	C4	Lecture, Problem solution	Quiz, Final Exam, Mid
CO2	P3	C5	Lecture notes,	Final Exam, Assignment
CO3	P2	C3	Lectures, Notes, Practice Problems	Final Exam, Class Test
CO4	P3	C5	Lectures, Notes, Practice Problems	Final Exam, Class Test

CO/PO mapping												
COs	Program Outcomes (POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	√	√	√		√							
CO2					√	√						
CO3			√	√		√						
CO4				√		√	√					

Lesson Plans (3hours = 1.5*2=26 classes)

Lesson	Topic	Teaching strategy	Course Outcome (CO)	Assessment Strategy
Date-1	A brief history, Units of measurement, Systems of unit, Powers of ten, Unit conversion, Symbols, Atoms and their structure.	Multimedia	CO1	
Date-2	Voltage, Current, Ampere hour rating, Conductors and Insulators, Semiconductor, Ammeters and Voltmeters, Resistance: Circular wire.	Multimedia	CO1	
Date-3	Resistance: metric unit, Temperature effect, Superconductor, Conductance, Ohmmeter, Applications.	Multimedia	CO1, CO4	

Date-4	**Ohm's Law, Power, and Energy:** Introduction, Ohm's law, Plotting Ohm's law, Power, Energy, Efficiency, Circuit breaker, Fuses, Applications.	Multimedia	CO1, CO4	
Date-5	**Series dc Circuits:** Introduction, Series Resistance, Series circuits, Power distribution in series circuits, Voltage source in series **Declaration of Assignment-I**	Multimedia	CO1, CO4	
Date-6	Kirchhoff's Voltage Law (KVL), Voltage division in a series circuit, Interchanging series element, Notation, Loading effect of instruments, Applications.	Multimedia	CO1, CO4	
Date-7	**Parallel dc Circuits:** Introduction, Parallel resistor, Parallel Circuits, Power distribution in a parallel circuits, Kirchhoff's Current Law (KCL) **AND SUBMISSION OF ASSIGNMENT-I**	Multimedia	CO1, CO4	Written individual assignment
Date-8	**a. CLASS TEST -1** **b. Review on ASSIGNMENT-I**		CO1, CO4	Written exam
Date-9	Current Divider Rule (CDR), Voltage source in parallel, Open and Short circuits, Summery Table, Applications	Details discussion with examples from reference book.	CO1, CO4	
Date-10	**Series-Parallel Circuits:** Introduction, Series parallel network, Reduce and Return approach	Class room lecture and discussion	CO1, CO4	
Date-11	Block diagram approach, Ladder network, Voltage divider Supply, Applications.	Talk by multimedia	CO1, CO4	
Date-12	**Method of Analysis and Selected Topics:** Introduction, Current source, Source Conversion, Current source in parallel	Conversation by Multimedia	CO1, CO4	
Date-13	Current source in Series, Bunch Current analysis, Mesh analysis (General Approach).	Details discussion with	CO1, CO4	

		examples from reference book.		
Date-14	**MID TERM**		CO1, CO4	Written Exam
Date-15	Mesh Current analysis (format approach), Nodal analysis (General approach), Nodal analysis (Format approach)	Details discussion with examples from reference book.	CO1, CO4	
Date-16	Bridge network, Delta to Y and Y to Delta conversions, Applications.	Lecture and problem solving	CO1, CO4	
Date-17	**Network Theorems:** Introduction, Superposition theorem, Thevenin theorem, Norton theorem **Declaration of Assignment-II**	Lecture and problem solving	CO1, CO4	
Date-18	Maximum power transfer, Millman's theorem, Reciprocity theorem, Applications.	Lecture and problem solving	CO1, CO4	
Date-19	**Sinusoidal Alternating Waveforms:** Introduction, Sinusoidal ac voltage characteristics and definitions, The sinusoidal waveform **AND SUBMISSION OF ASSIGNMENT-I**	Multimedia	CO1, CO2, CO4	Written Individual submission
Date-20	**CLASS TEST -2**		CO1, CO2, CO4	Written Exam
Date-21	General format for the sinusoidal voltage or current, Phase Relation, Average value, RMS value, Applications.	Lecture and problem solving	CO1, CO2, CO4	
Date-22	**The Basic Elements and Phasors:** Introduction, Derivative, Response of Basic R, L, C elements to a sinusoidal voltage or current		CO1, CO2, CO4	
Date-23	Average power and power factor, Complex numbers, Rectangular form, Polar form, Conversion between forms,		CO5	
Date-24	Mathematical operations with complex numbers, Phasors, Applications,		CO1, CO3, CO4	

	Series and Parallel ac Circuits: Introduction, Impedance and the phasor diagram, Series configuration				
Date-25	Summary: Series ac circuits, Admittance and Susceptance, Parallel ac networks, Current divider rule, Frequency response for parallel ac circuits,			CO1, CO3, CO4	
Date-26	Summary: Parallel ac circuits, Applications.			CO1, CO3, CO4	
	FINAL EXAM			CO1,CO2, CO3,CO4	Written Exam

** Another Class Test may be taken if necessary. Any one of three class test can be pop test or instant test. Not more three class test can be happened.