EE111-3: Fundamentals of Electrical Engineering

Course code and name	EE111-3: Fundamentals of Electrical Engineering
Credits units	3 Credit units
Contact hours	5 Contact hours: 2 lecture, 1 tutorial and 2 practical
Instructor name	Dr. Shaban Marzouk Eladl
Textbook	- Charles Alexander and Matthew N.O. Sadiko, Fundamentals of Electric Circuits, 3rd Edition, ISBN: 0072977183, McGraw-Hill's, 2007.
Other supplemental materials	- Irwin, J. D., "Basic Engineering Circuit Analysis", 4th ed., Macmillan, 1993.
	Specific course information
a. Course description	This course will give students a sufficient background on circuit analysis in a manner that is clearer, more interesting, and easier to understand. All principles of electrical circuits are presented applying both DC and AC electrical sources. Basic concepts of electrical theory are presented including main laws and theorems used to solve different problems in basic circuit analysis and their applications.
b. Prerequisite	101PHYS-4
c. Required / Elective	Required
	Course Learning Outcomes
<u>CLO of the Lecture Activities:</u> CLO1: Explain all basic knowledge and engineering concepts concerning the fundamental of Electrical Engineering. CLO2: Apply different methods of analysis for DC electrical circuits CLO3: Apply different methods of analysis for AC electrical circuits CLO4: Analyze different linear electrical circuits based on considered methods of analysis for DC circuits. CLO5: Analyze different linear electrical circuits based on considered methods of	

analysis for AC circuits.

CLO of the Laboratory Activities:

CLO1: Verify theory and to improve knowledge learned in class.

CLO2: Formulate and solve problems related to theory.

CLO3: Design and safety conducts an experimental procedure.

CLO4: Independently perform accurate quantitative measurements, interpret experimental results, perform calculations on these results and draw a reasonable, accurate conclusion.

CLO5: Communicate critical analysis of scientific information through written reports.

CLO6: Be integrated inside a group of work and respect the team working.

Brief list of topics to be covered

- System of Units, Basic Quantities, Independent and Dependent Sources.

- Ohm's Law, Nodes, Branches and Loops

- KVL and KCL

- Methods of Circuit analysis: Nodal analysis and Mesh analysis

- Methods of Circuit analysis: Superposition, Source Transformations, Thevenin's Theorem

- AC circuits: Instantaneous and Average

- Effective Power, Apparent. Power and Complex Power

- Conservation of AC Power and Power Factor correction

Mapping Course Learning Outcomes to Student Outcomes

	Lecture Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							

CLO5							
	Laboratory Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							
CLO5							
CLO6							