ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223555 - 151243555 **COURSE TITLE:** Circuit Analysis I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	4	0	4	6	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
0	4	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Current, voltage, power, energy. Resistor. Sources. Ohm and Kirchoff's Laws, Circuit Analysis techniques (Node voltage, mesh current, Thevenin and Norton Theorems, superposition, source transformation). OPAMP, Capacitor and inductor. RL and RC circuits, Transient response. Step response. Transient and step response of RLC circuits. Sinusoidal forcing function. Analysis of sinusoidal circuits. Power calculations in sinusoidal circuits
Objectives of the course	Introducing elements of circuits, teaching circuit analysis methods. Analysing direct current circuits. Analysis of RL, RC, and RLC circuits. Sinusoidal circuits, power calculations in sinusoidal circuits.
Contribution of the course towards professional education	In this course students will learn basic elements of electrical circuits ve analyze direct current circuits and altenative current circuits. This course establishes a background for other courses in the Electrical Engineering curriculum
Outcomes of the course	At the end of this course, Students 1) Can analyze a dc circuit and calculate current, voltage, power, and energy of an element in the circuit. 2) Recognize basic elements used in the electrical circuits. 3) Apply electrical circuit analysis methods. 4) Can analyze an ac circuit and calculate current, voltage, power, and energy of an element in the sinusoidal circuit.
Textbook of the course	Nilsson, J. W. and S. A. Riedel, Electric Circuits, Pearson Prentice Hall Inc., 9th Ed. 2009.
Other reference books	1) Hayt, W.H., Jack E. Kemmerly, Steven M. Durbin, Engineering Circuit Analysis, Mc Graw Hill, 6th Ed. 2002 2) Richard C. Dorf, James A. Svoboda Introduction to Electric Circuits, Wiley, 7th Ed. 2006
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Current, volatge, power, energy definitions. Sources, resistor, Ohm's law. Kirchoff Laws.
2	Basic resitor circuits, series and paralel resistors. Delta-Y transformation. Node voltage method
3	Mesh current method. Thevenin and Norton theorems,
4	Maximum power transfer, Superposition, source transformation. OPAMP
5	Inductor and capacitor
6	Transient response of RL and RC circuits
7	Step response of RL and RC circuits
8	Midterm
9	Midterm
10	Transient response of RLC circuits
11	Step response of RLC circuits
12	Complete response of RL, RC, and RLC circuits
13	Sinusoidal forcing function. Analysis of sinusoidal circuits using phasors
14	Power calculations in sinusoidal circuits
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		**x**		
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date: 08/03/2016