

## ESOGÜ Electrical-Electronics Engineering Department

**COURSE CODE:** 151223555 - 151243555

COURSE TITLE: Circuit Analysis I

Semester	Weekly Hours		COURSE						
	Theoretical	heoretical Practical		ECTS	\$	Type		Language	
3	4	0	4	6	Cor	npulsory (x) Elective (	Elective ( )  Turkish ( )  English (x )		
Wr	ite the credit (for	r non-credit cou	ırses weekly l	hours) belo	w (If nec	essary distribute the	credits.).		
Math and Basic Science			Electrical Engineering [mark ( $$ ) if there is high design content]			General Education	Humai	Humanities	
0			4 ()			0	0		
Assessment	Assessment		THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES			
Midterm		Type		Number	%	Activity Type	Number	%	
		Proje	ework	3	30	Quiz Lab performance Report Oral exam Other ()			
Final		Other	()	1	40	Juici ()			
	n (Oral/Written	n) Writt	en	_				1	
Prerequisites	`	None							
Brief content of the course		Norto and Trans Analy	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		owards analy estable currie	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 Textbook of t		1) 2) 3) 4) Nilsse	3) Apply electrical circuit analysis methods.					nd	
Other referen		1) Ha Analy 2) Ri	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 ma	terial for the co	urse							

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.

Scale for assessing the co	ntribution of the (	course to the p	rogram outco	mes:
4: High	3: Medium	2: Low	1:None	
Name of Instructor(s):				
Signature(s):				<b>Date:</b> 08/03/2016