ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223556 - 151243556 **COURSE TITLE:** Circuit Laboratory

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	0	2	1	2	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	1	(√)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance	7	35
	Homework			Report	7	20
	Project			Oral exam		
	Other (……)			Other (……)	7	15
Final					1	30
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Series and Parallel Connections, Power Calculations The Combination Circuits, Voltmeter Loading Thevenin's Theorem,The Wheatstone Bridge Signal Sources and Using the Oscilloscope, Capacitors& RC circuits& Inductors &RL Circuits Resonant Circuits Op-amp Circuits Voltage and Current Conversion Circuits
Objectives of the course	Teaching basic circuit connections and their power calculations. Teaching the working priciples of voltmeter loading, Thevenin Theorem, Wheatstone bridge circuits. Teaching how to use use signal sources and oscilloscope. Teaching working principles of RC, RL circuits and resonant circuits by giving the knowledge about capacitor and inductor specifications. Teaching the working principle of op-amp and voltage/current converters.
Contribution of the course towards professional education	Students use knowledge and the practical ability, which is related to fundamental circuit elements, circuits and their setup, in other courses such as Electronics Laboratory or application based Electrical Engineering Design.
Outcomes of the course	At the end of the course, students; 1) will learn the basic circuit connections and their power calculations. 2) will have knowledge about voltmeter loading, Thevenin theorem, working principle of Wheststone Bridge. 3) will learn how to use signal sources and oscilloscope. 4) will analyse RC and RL circuits by having knowledge about characteristics of capacitors and inductors. 5) will have knowledge about resonant circuits, op-amp, voltage/current converters.
Textbook of the course	Laboratory experiment manuals
Other reference books	
Required material for the course	Electronic experiment kit, Oscilloscope, Voltmeter, Signal Generator, and fundamental circuit elements specific to each experiment.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the Lab
2	Introduction to the course
3	Series and Parallel Connections, Power Calculations, The Combination Circuits, C-Voltmeter Loading
4	Thevenin's Theorem, The Wheatstone Bridge
5	Signal Sources and Using the Oscilloscope
6	Capacitors& RC circuits& Inductors &RL Circuits
7	Resonant Circuits
8	Midterm
9	Midterm
10	Op-amp Circuits
11	Voltage and Current Conversion Circuits
12	Practical Exam
13	Practical Exam
14	Practical Exam
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