



ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226364 - 151246364

COURSE TITLE: Control Systems Laboratory

Semester	Weekly Hours		COURSE					
	Theoretical	Practical	Credits	ECTS	Type	Language		
6	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		
			()					
Assessment			THEORETICAL-PRACTICAL COURSES		LABORATORY COURSES			
			Type	Number	%	Activity Type	Number	%
Midterm			Midterm			Quiz		
			Quiz			Lab performance	9	50
			Homework			Report	9	30
			Project			Oral exam		
			Other (.....)			Other (.....)	9	20
Final								
Makeup exam (Oral/Written)								
Prerequisites								
Brief content of the course			Computer-aided control system analysis with MATLAB, mathematical modeling of the systems, open-loop and closed-loop control systems, transient and steady-state analysis, stability analysis, root-locus analysis, input and output transducers, characteristics of speed control systems.					
Objectives of the course			Realization of modeling and analysis of control systems on MATLAB. Teaching basic circuit connections and their power calculations. To have the ability of examining the results obtained by various analysis methods.					
Contribution of the course towards professional education			In this course, Students realize the knowledge about analysis methods that they have learned in the course, <i>Fundamentals of Control Systems</i> , on MATLAB. This makes them more powerful about the engineering problems that they faced with later.					
Outcomes of the course			At the end of the course, students; <ol style="list-style-type: none"> 6) will learn to represent and analyze control systems on MATLAB. 7) will have knowledge about the characteristics of transient and steady-state responses of systems. 8) will learn how to decide whether the system is stable or not. 9) will have knowledge about transducers that are used in real applications. 					
Textbook of the course			Laboratory experiment manuals					
Other reference books			Ogata K., Modern Control Engineering, Prentice Hall Inc., 4th Ed. 2001.					
Required material for the course			MATLAB, DIGIAC 1750 instrumentation training set					

WEEKLY PLAN OF THE COURSE	
Week	Topics
1	Introduction to the course
2	Introduction to the Laboratory
3	Introduction to MATLAB
4	Mathematical Modeling of Systems
5	Open-Loop vs. Closed-Loop Systems
6	Transient Response Analysis
7	Transient and Steady-State Analysis
8	Midterm
9	Midterm
10	Stability Analysis
11	Input-Output Transducers (Hardware)
12	Root-Locus Analysis
13	Characteristics of Speed Control Systems (Hardware)
14	
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				
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.				
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.				
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.				
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	√			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		√		
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.			√	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

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: