ESOGU ELECTRICAL - ELECTRONICS ENGINEERING DEPARTMENT
COURSE INFORMATION FORM

Course Title	Course Code
Control Systems Laboratory	151226364

Semester in Program	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	0	2	2

Course ECTS Credit Distribution				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	1	1		

Language of Instruction	Course Level	Course Type
English	Undergraduate	Required

Prerequisite	
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
Brief Course Content	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.

	Learning Outcomes of the Course	Contributed POs	Teaching Methods *	Assessment Methods **
1	Represent and analyze control systems on MATLAB.	5,6,7	3	A,I
2	Have knowledge about the characteristics of transient and steady-state responses of systems	5,6,7	3	A,I
3	Deciding weather the system is stable or not.	5,6,7	3	A,I
4	Have knowledge about transducers that are used in real applications.	5,6,7	3	A,I
5				
6				
7				
8				

***Teaching Methods** **1:**Lecture, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Assessment Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Ogata K., Modern Control Enginering, Prentice Hall Inc., 4th Ed. 2001.
Supplementary Resources	
Necessary Course Material	MATLAB Program, DIGIAC 1750 lab. kit

Course Weekly Schedule	
1	Introduction to the course
2	Introduction to the Lab safety rules
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	Mid-Term Exams
9	Stability Analysis
10	Input-Output Transducers (Hardware)
11	Root-Locus Analysis
12	Root-Locus Analysis
13	Frequency domain analysis
14	Frequency domain analysis
15	Characteristics of Speed Control Systems (Hardware)
16,17	Final Exams

Calculation of Course Workload			
Activities	**Count**	**Time (Hour)**	**Total Workload (Hour)**
Weekly classroom time	14	2	28
Weekly study time (review, reinforcing, preparation)	14	2	28
Homework			
Taking a quiz			
Studying for a quiz			
Oral exam			
Studying for an oral exam			
Report writing (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam	1	1	1
Studying for Final Exam	1	3	3
		Toplam iş yükü	**60**
		Toplam iş yükü / 30	2
		Dersin AKTS Kredisi	**2**

Assessment	
Activity Type	**%**
Mid-term	
Quiz	
Homework	
Final Exam	100
Total	**100 %**

COURSE CONTRIBUTION TO THE PROGRAM OUTCOMES (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOMES**	**Contribution**
1	a. Sufficient knowledge of mathematics	1
	b. Sufficient knowledge of basic sciences	1
	c. Sufficient basic engineering and Electrical-Electronics engineering knowledge	1
	d. Skill of applying all these knowledge and experience to complicated Electrical-Electronics engineering problems	1
2	Skill of defining, identifying, formulating and solving the complicated problems in Electrical-Electronics engineering and related areas by applying appropriate analysis and modelling methods.	1
3	Skill of designing a complicated process, system, equipment or product by applying modern design methods under realistic constraints and conditions.	
4	To analyze and solve the complicated engineering problems: a. skill of developing, selecting and applying the required techniques and devices	1
	b. skill of using information technologies effectively	1
5	To study the complicated on the complicated Electrical-Electronics engineering problems and research subjects: a. skill of experimental design	4
	b. skill of performing the experiments, collecting the data and analyzing and interpreting the results	4
6	a. Skill of performing individual studies	4
	b. Skill of performing intra and interdisciplinary and multidisciplinary teamwork and studies	4
7	a. Skill of effective oral and writing communication in Turkish	4
	b. Skill of improving and using foreign language knowledge	4
	c. Skill of effective reporting, understanding the reports and preparing the design and production reports	4
	d. Skill of effective presentation and giving and getting clear and understandable instructions.	4
8	Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology	1
9	a. Awareness of necessity of behaving in accordance with the ethical principles and awareness of the importance of having professional ethical responsibilities	
	b. Knowledge about legal regulations and standards of engineering	1
10	a. Knowledge about project management, risk management and change management	1
	b. Awareness of the significance of entrepreneurship and innovation	1
	c. Knowledge about sustainable development	1
11	Knowledge about the effects of engineering applications and practices on the global and social health, ecology and safety, knowledge about the current problems in relation to the working areas of Electrical-Electronics engineering; and awareness of the legal issues resulting from engineering solutions	1
12	Knowledge about modern problems in local and universal scale	1

LECTURER(S)				
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