



**ESOGU ELECTRICAL-ELECTRONICS ENGINEERING DEPARTMENT  
COURSE INFORMATION FORM**

Course Title	Course Code
COMMUNICATIONS LAB	151226367

Semester in Program	Number of Course Hours per Week		ECTS Credit
	Theory	Practice	
6	0	2	2

Course ECTS Credit Distribution				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	2			

Language of Instruction	Course Level	Course Type
English	Undergraduate	Required

<b>Prerequisite</b>	151226356 COMMUNICATIONS ( in Parallel )
<b>Objectives of the Course</b>	Learn the modulation/demodulation techniques used in electronic communications, get familiar with the waveforms, learn how to measure and what to measure in the communication waveforms.
<b>Brief Course Content</b>	Hands-on Lab experiments on fundamentals of electronic communications, signal/noise power-energy, sampling and quantization, AM, DSB-AM, FM, PSK, QPSK, PAM, ADC/DAC principles.

Learning Outcomes of the Course	Contributed POs	Teaching Methods *	Assessment Methods **
1 Learn & Identify communication signals	1,2,3,7	2,3,4,7,12,15	E,K
2 Learn the usage of lab equipment	1,2,3,7	2,3,4,7,12,15	E,K
3 Learn to prepare experiment report	1,2,3,7	2,3,4,7,12,15	E,K
4			
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:Individual 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

<b>Main Textbook</b>	E. Seke, Sayısal Haberleşmeye Giriş, Seçkin Yayıncılık, 2015
<b>Supplementary Resources</b>	1) B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000 2) J. G. Proakis, M. Salehi, Communication Systems Engineering, Prentice Hall, 2002
<b>Necessary Course Material</b>	

Course Weekly Schedule	
1	Fundamentals of effective and safe handling of the lab-equipment and comm. kits.
2	Signal generators and spectrum experiments
3	Amplitude Modulation/demodulation, DSB-AM.
4	Amplitude Shift Keying
5	Frequency Modulation/demodulation
6	Frequency Shift Keying
7	Phase Shift Keying modulation/demodulation
8	Mid-Term Exams
9	ADC/DAC experiments
10	Digital baseband transmission using NRZ pulses
11	Digital baseband transmission using PWM
12	Octave Adaptation Experiment
13	M-PSK, M-QAM experiment on Octave
14	QPSK experiment design
15	Make-up experiment for all
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	1	14
Homework			
Taking a quiz			
Studying for a quiz			
Oral exam			
Studying for an oral exam			
Report writing (Preparation and presentation time included)	14	1.5	21
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam			
Studying for Final Exam			
		<b>Total workload</b>	<b>63</b>
		<b>Total workload / 30</b>	<b>2.1</b>
		<b>Course ECTS Credit</b>	<b>2</b>

Assessment	
Activity Type	%
Mid-term	
Quiz	
Homework	
Report	100
<b>Final Exam</b>	
<b>Total</b>	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	
	b. Sufficient knowledge of basic sciences	
	c. Sufficient basic engineering and Electrical-Electronics engineering knowledge	5
	d. Skill of applying all these knowledge and experience to complicated Electrical-Electronics engineering problems	3
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.	3
3	Skill of designing a complicated process, system, equipment or product by applying modern design methods under realistic constraints and conditions.	2
4	To analyze and solve the complicated engineering problems:	1
	a. skill of developing, selecting and applying the required techniques and devices	
	b. skill of using information technologies effectively	
5	To study the complicated on the complicated Electrical-Electronics engineering problems and research subjects:	2
	a. skill of experimental design	
	b. skill of performing the experiments, collecting the data and analyzing and interpreting the results	5
6	a. Skill of performing individual studies	
	b. Skill of performing intra and interdisciplinary and multidisciplinary teamwork and studies	
7	a. Skill of effective oral and writing communication in Turkish	1
	b. Skill of improving and using foreign language knowledge	1
	c. Skill of effective reporting, understanding the reports and preparing the design and production reports	3
	d. Skill of effective presentation and giving and getting clear and understandable instructions.	
8	Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology	
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	
	b. Awareness of the significance of entrepreneurship and innovation	
	c. Knowledge about sustainable development	
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	
12	Knowledge about modern problems in local and universal scale	

**INSTRUCTORS**

<b>Prepared by</b>	Erol SEKE			
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**Date:**06.07.2024