



# ESOGÜ Electrical-Electronics Engineering Department

**COURSE CODE:** 151226367 - 151246367 **COURSE TITLE:** Communications Lab.

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.).						
<b>Math and Basic Science</b>		<b>Electrical Engineering</b> [mark (√) if there is high design content]		<b>General Education</b>		<b>Humanities</b>
		1 ( )				
<b>Assessment</b>		<b>THEORETICAL-PRACTICAL COURSES</b>			<b>LABORATORY COURSES</b>	
		<b>Type</b>	<b>Number</b>	<b>%</b>	<b>Activity Type</b>	<b>Number</b> <b>%</b>
<b>Midterm</b>		Midterm			Quiz	
		Quiz			Lab performance	8   50
		Homework			Report	8   50
		Project			Oral exam	
		Other (.....)			Other (.....)	
<b>Final</b>						
<b>Makeup exam (Oral/Written)</b>						
<b>Prerequisites</b>		151226356 COMMUNICATIONS (in parallel)				
<b>Brief content of the course</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.				
<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>Contribution of the course towards professional education</b>		Students will get familiar with the communication blocks and generated waveforms used in electronic communication and get ready for the advanced techniques in communication.				
<b>Outcomes of the course</b>		11) Students get familiar with AM, FM, PSK and the techniques made up from their derivatives. They experimentally learn “how/why”s in practical communication systems 12) Gain the ability to measure fundamental quantities in communication. 13) Start building experience for advanced communication systems.				
<b>Textbook of the course</b>		B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000				
<b>Other reference books</b>		5) J. G. Proakis, M. Salehi, Communication Systems Engineering, Prentice Hall, 2002. 6) B. P. Lathi, Modern Digital and Analog Communication Systems, Holt, Rinehart and Winston, Inc., 1989				
<b>Required material for the course</b>		The course is parallel with Communication course in the curriculum which is mostly theoretical. A communication lab equipped with communication lab-kits is required for hands-on experiments.				

## WEEKLY PLAN OF THE COURSE

Week	Topics
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
8,9	Midterm
10	QPSK
11	ADC/DAC experiments
12	Digital data transmission experiments
13	Digital data transmission experiments / reception
14	Make-up for the incomplete experiments
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):** Erol Seke

**Signature(s):** Erol Seke

**Date:**