



# ESOGÜ Electrical-Electronics Engineering Department

**COURSE CODE:** 151227635 - 151247635

**COURSE TITLE:** Communication Electronics

Semester	Weekly Hours		COURSE				
	Theoretical	Practical	Credits	ECTS	Type	Language	
7	3	2	4	7	Compulsory ( ) Elective ( x )	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>		
0		4 ( )		0	0		
<b>Assessment</b>		<b>THEORETICAL-PRACTICAL COURSES</b>			<b>LABORATORY COURSES</b>		
<b>Midterm</b>		<b>Type</b>	<b>Number</b>	<b>%</b>	<b>Activity Type</b>	<b>Number</b>	<b>%</b>
		Midterm	1	30	Quiz		
		Quiz			Lab performance	10	30
		Homework			Report		
		Project			Oral exam		
<b>Final</b>			1	40			
<b>Makeup exam (Oral/Written)</b>		Oral					
<b>Prerequisites</b>		151226322 Electronics II, 151226357 Electronics Laboratory					
<b>Brief content of the course</b>		Introduction to communications electronics, amplitude modulation-frequency modulation theories and circuits, radio transmitters, power amplifiers, typical receiver circuits, transceivers, frequency synthesizers, multiplexing (FDM, TDM, PCM), antenna fundamentals, satellite communication, television and telephony system fundamentals					
<b>Objectives of the course</b>		To introduce the principles of electronic communication and to introduce some basic communication electronics circuits.					
<b>Contribution of the course towards professional education</b>		Students will learn some principle methods of analog communication and they will also get familiar with some communication electronics circuits.					
<b>Outcomes of the course</b>		1) Introduce some basic communication electronics circuits 2) Construct a communication system in terms of blocks of communication circuits. 3) Learn basics of communication tools such as radio, television and telephony system.					
<b>Textbook of the course</b>		Louis E. Frenzel, Communication Electronics: Principles and Applications, McGraw Hill, 2001.					
<b>Other reference books</b>		Forrest Barker, Communication Electronics Systems, Circuits and Devices, Prentice Hall, 1987.					
<b>Required material for the course</b>							

## WEEKLY PLAN OF THE COURSE

Week	Topics
1	Communication electronics - introduction
2	Amplitude modulation, single-sideband modulation (Experiment-1 : Oscillator circuits)
3	Amplitude modulation circuits (Experiment-2 : AM and FM (Theory))
4	Frequency modulation (Experiment-3 : AM Generation and Detection circuits)
5	Frequency modulator-demodulator and phase modulator circuits (Experiment-4 : FM Generation and Detection circuits)
6	Radio transmitters, power amplifiers, impedance-matching networks (Experiment-5 : Phase Locked Loop (PLL) Circuits)
7	Superheterodyne receiver, intermediate frequency circuits, noise (Experiment-6 : IF Filter Design)
8	Midterm
9	Midterm
10	Typical receiver circuits, transceivers and frequency synthesizers (Experiment-7 : Mixer circuits)
11	Multiplexing: frequency division multiplexing, time-division multiplexing (Lab: project subject assignments)
12	Pulse code modulation, antenna fundamentals (Lab: project progress report)
13	Satellite communication, TV signal, cable, satellite and digital television (Lab: project presentations-group1)
14	Telephone, fax and GSM communication (Lab: project presentations-group2)
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.				
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.				
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):** Yrd. Doç. Dr. H. Serhan Yavuz

**Signature(s):**

**Date:** March 10, 2016