General information	**Title and code of subject, number of credits**	ETR 487 - Electrical Communication Theory- 6 ECTS credit	
	Department	Physics and Electronics	
	Program	Bachelor	
	Academic semester	2021 spring	
	Lecturer	PhD, Assosiate Professor Sevda N. Garibova	
	E-mail:	sevdaqaribova@khazar.org	
	Phone number:		
	Lecture room/Schedule	11 Mehseti Street, AZ1096 Baku, Azerbaijan (Neftchilar campus), room Lectures:	
	Consultations		
Course language	English		
Prerequisites	ETR 346 – Telecommunication Networks		
Type of the subject	Major		
Textbooks and additional materials	***Textbooks*:** [1]. *Fundamentals of Electrical Engineering*, by Don H. Johnson, Rice University, Houston, Texas, 2013. [2]. *Communication Systems*, Simon Haykin, 4th Ed. Wiley, 2001, ISBN 0-471-17869-1 ***Additional materials:*** *Introduction to Digital Communication*, by Rodger E. Zeimer and Roger L. Peterson, Second Edition, Prentice Hall, 2001.		
Teaching methods	**Lecture**		x
	Group discussions		x
Assessment	**Components**	**Date/ Deadline**	**Percent (%)**
	Presentation/Group Discussion	At the end of the semester	10
	Active participation and discussion	At each lesson	5
	Assignment and quizzes	3 quizzes during the semester	10
	Attendance		5
	Midterm exam		30
	Final exam		40
	Final		**100**
Course description	Communication system, signals, analog and digital communications, noise of DSB, SSB, FM, AM, entropy, block codes, cyclic codes, detection of signals, the prediction and filtering of random processes, the design and analysis of communication systems, the analysis of protocols for communication networks, and statistical processing of images.		
Course objectives	In the course of electrical communication theory students will study the fundamental theory of communication system. Also, they will analyze the structure of common communication system and can build the model of that system, will study both theoretical and practical aspects of information processing. At the end of the course the students understand how build the communication system, and why digital communication has wide uses in modern life. They will be able to construct the mathematical model and block diagrams of communication system, to analyze the input and output signals which have important roles for information communication.		
Learning outcomes	What students should know by the end of the course: Describe a suitable model for noise in communications, determine the signal-to-noise ratio (SNR)		

	performance of analog communications systems, determine the probability of error for digital communications systems, understand information theory and its significance in determining system performance, compare the performance of various communications systems.
Rules (Educational policy and behavior)	Lesson organization General information on the subject will be provided for the students during lectures. Student's knowledge on the previous topics will be evaluated and new topic will be explained by mins of visual aids during seminars. Student's knowledge level will be tested oraly and in written forms before midterm and final exams. Submission of the individual works by the end of course is obligatory. Attendance Participation of students at all classis is important. Students, missing more than 30% of lessons, are not allowed to take the exam. Tests Those students who have informed the teacher and the dean's office about missing the test in advance for particular reasons, are allowed to take the test next week. Exams All the issues related to the participation and admission to the exam are regulated by the faculty dean. Topics of midterm and final exams are provided for the students before the exams. The questions of midterm exam are not repeated in the final exam. Violation of the rules of the exams Disrupting the test and taking copy during midterm and final exams is forbidden. Test papers of the student who do not follow these rules are canceled and the students are expelled from the test by getting 0 (zero). The rule for completing the course In accordance with the University rules the overall success rate to complete the course should be 60% or above. The students who failed the exam would be to take this subject next semester or next year. Rules of conduct for Students Disruption of the lesson and not following ethical norms during the lesson, as well as conduction of the discussions by the students without permission and using mobile phones is forbidden.

Tentative Schedule

Week	Dates (planned)	Subject topics	Textbook/ Assignments
1	***09.02*** ***11.02***	Introduction to signals and communication, structure of communication systems, fundamental signal. *Discussing.*	[1] Pages/ 1-7/
2	***16.02*** ***18.02***	Signals and systems *Free discussing of communication*	[1] Pages /11-23/
3	***22.02*** ***25.02***	Communication channels, types of communication channels *Test for the activity point*	[2] pages /15-19/, [1] pages /196/
4	***02.03*** ***04.03***	Modulation process *Quizzes 1.*	[2] pages /19-21/
5	***09.03*** ***11.03***	Analog and digital types of communication *Discussing*	[2] pages /21-23/
6	***16.03*** ***18.03***	Noise, noise performance of DSB *Preparation to midterm exam*	[1] pages /204- 205/, [2] pages /58/

7	***25.03*** ***30.03***	Noise performance of SSB and AM *Quizzes 2*	[2] pages /135/
8	***06.04*** ***08.04***	Noise performance of FM ***Midterm exam***	[2] pages /142/
9	***13.04*** ***15.04***	Digital communication problem *Practical testing for the activity point by multimedia*	[2] pages /24-26/, [1] pages /209/
10	***20.04*** ***22.04***	Entropy and source coding *Quizzes 3*	[1] pages /218-220/
11	***27.04*** ***29.04***	Channel capacity, Shannon's information capacity theorem *Presentation of student project*	[2] pages /23-34/
12	***04.05*** ***06.05***	Block codes *Presentation of student project*	[2] pages /632/
13	***11.05*** ***13.05***	Communication networks *Presentation of student project*	[1] pages /234-236/
14	***18.05*** ***20.05***	Ethernet, communication protocols *Test for practical application by using multimedia*	[1] pages /237-240/
15	***25.05*** ***27.05***	***Discussing final exam material*** ***Preparing to final exam***	
		Final Exam