General information	**Title and code of subject, number of credits**	ETR482 Electronic Systems and Technology 3 credits/6 ECTS	
	Department	Physics and Electronics	
	Program	Bachelor	
	Academic semester	2022 spring	
	Lecturer	Master of Science (Electronics Engineering) Sabuhi Ganiyev	
	E-mail:	s.ganiyev@gmail.com	
	Phone number:	+994 77 520 73 50	
	Lecture room/Schedule	11 Mehseti Street, AZ1096 Baku, Azerbaijan (Neftchilar campus), room	
	Consultations	Saturday 13:00 – 14:00	
Course language	English		
Type of the subject	Major		
Textbooks and additional materials	***Textbooks*:** 1. The ECE Handbook – Electronics Systems and Technologies, By Engr. Santos S. Cuervo, 2nd edition, 2013 2. Control Systems for Power Electronics, Patil, Mahesh, Rodey, Pankaj, 2015 3. Electronics A Systems Approach, Neil Storey, Pearson, 2017 4. Electrical Engineering: Principles and Applications, Allan R. Hambley, 6th Edition, 2014 5. Sensors and tranducers, Ian R. Sinclair, 3rd Edition, 2001. 6. Attenuator Overview - a brief review of key specifications for fixed and step attenuators. Agilent.1998 7. Power electronics handbook, Muhammad H. Rashid, 2001.		
Teaching methods	**Lecture**		X
	Group discussions at seminars		X
Assessment	**Components**	**Date/ Deadline**	**Percent (%)**
	Presentation		5
	Quizzes	During the semester	20
	Attendance		5
	Midterm exam		30
	Final exam		40
	Final		**100**
Course description	The purpose of this course is to teach undergraund students the fundamentals of electronics systems and technology. Generally, the course consist of four sections. The first section covers basic concepts communication systems. The second part studies control sytems. The third section analizes operation principles of sensorst-transducers, actuators and DC machines. The fourth section studies power electronics for photovoltaic and wind power systems.		
Course objectives	The main objectives of this course is to introduce the main concepts of electronics systems and technology		
Learning outcomes	Learning outcomes: • Studens will know main consepts communication systems. • Studen will know main consepts control systems. • Studens will know basics of power electronics for photovoltaic power systems. • Studens will know basics of power electronics for wind power 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 should inform dean's office about missing lessons for particular reasons (illness, family issues and etc.). Students, missing more than 25% of lessons, are not allowed to take the exam. Lates Those students who are late for lessons for more than 15 minutes are not allowed to participate at the lesson. Despite this, the student is allowed to take part in the second part of the lesson. Quizzes Those students who have informed the teacher and the dean's office about missing the quiz in advance		

	for particular reasons, are allowed to take the quiz next week. Presentations Each student must present a pre-agreed topic related to electronics systems. The presentation date is scheduled for the last two weeks of the semester. 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 quiz and taking copy during midterm and final exams is forbidden. Quiz papers of the student who do not follow these rules are canceled and the students are expelled from the quiz 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.

Week	Dates (planned)	Subject topics	Textbook/ Assignments
1		*Electronic systems*: electronic systems categories, communications systems, control systems, parts of electronic system *Questions and Exercises*	[1]
2		*Communication Systems*: communication model, transmission line, and data communication *Questions and Exercises*	[1]
3		*Communication Systems:* communication model, transmission line, and data communication *Questions and Exercises,*	[1]
4		*Communication Systems:* communication model, transmission line, and data communication *Questions and Exercises.* ***Quiz 1(Lec1-Lec3)***	[1]
5		*Control systems*: history of automatic control, modern control systems, future evolution of control systems, design examples *Questions and Exercises.*	[2]
6		*Control systems:* feedback, mathematical models, electrical analogies of mechanical systems, block diagrams, signal flow graphs, time response analysis *Questions and Exercises.*	[2]
7		**Public holiday**	
8		*Sensors-Transducers and Actuators:.* Introduction. Principles of sensoers-tranducers and actuators. Classification and characteristics. *Questions and Exercises.* ***Quiz 2(Lec4-Lec6)***	[4] [5]
9		***Mid term exam***	
10		*Sensors-Transducers and Actuators:* Introduction. Principles of sensoers-tranducers and actuators. Classification and characteristics. *Questions and Exercises*	[4] [5]
11		*Sensors-Transducers and Actuators:* Introduction. Principles of sensoers-tranducers and actuators. Classification and characteristics. *Questions and Exercises*	[4] [5]
12		*DC machines***:** Overview of motors. Principles of DC machines. Rotating DC machines. Shunt-connected and separately excited DC motor. Series-connected DC motors. Speed control of DC motors. DC generators. *Questions and Exercises.* ***Quiz 3(Lec6-Lec9)***	[3]
13		*Power Electronics for Renewable Energy Sources:* Power electronics for photovoltaic power systems, Power electronics for wind power systems. *Questions and Exercises*	[6]

14		*Power Electronics for Renewable Energy Sources:* Power electronics for photovoltaic power systems, Power electronics for wind power systems. *Questions and Exercises*	[6]
15		***Recap of all covered material*** ***Quiz 4(Lec9-Lec12)***	
		Final Exam