

SYLLABUS

General information	Title and code of subject, number of credits	ETR393 - Basics of Circuitry- 6 ECTS credits	
	Department	Physics and Electronics	
	Program	Bachelor	
	Academic semester	2020 Fall	
	Lecturer	MSc, MIET, Alim Huseynov	
	E-mail:	alim.huseynov@gmail.com	
	Phone number:	+994 55 425 3599	
	Lecture room/Schedule	11 Mehseti Street, AZ1096 Baku, Azerbaijan (Neftchilar campus), room	
Course language	English		
Type of the subject	Major		
Prerequisites	MATH 101 – Mathematics I		
Textbooks and additional materials	Textbooks: 1. Electronic Principles - Albert Malvino, David Bates 2. Electronics Fundamentals. Circuits, Devices, and Applications by David M. Buchla, Thomas L. Floyd 3. Electronic devices and circuit theory by Boylestad, Robert Nashelsky, Louis		
Teaching methods	Lecture		x
	Group discussions at seminars		x
Assessment	Components	Date/ Deadline	Percent (%)
	Quizzes	During the semester	10
	Active participation	At each lesson	5
	Project	At the end of the semester and students must assemble a circuit that reflects the operation of electronic devices	10
	Attendance	At each lesson	5
	Midterm exam		30
	Final exam		40
	Final		100
Course description	The course discusses the basic methods for calculating the steady-state and transient processes in electrical circuits, their application to the most common electronic engineering circuits, including amplifiers, rectifiers, stabilizers, triggers and other devices. Much attention is paid to the properties and characteristics of semiconductor elements: diodes, bipolar and field effect transistors, thyristors, operational amplifiers, and the simplest logic elements. Separate chapters are devoted to circuitry of digital devices, including DAC and ADC. A set of test and individual tasks will allow you to master the practical skills of designing and calculating electronic circuits necessary for professional activities.		
Course objectives	The course is devoted to the study of the basic laws of electrical engineering, methods for analyzing electrical circuits and circuitry implementations of electronic devices designed to convert analog, pulse and digital signals. The theoretical knowledge and practical skills of designing digital devices acquired during training provide the basis for further acquaintance with existing approaches to the design of computing devices.		
Learning outcomes	After completing the course, the student not only gets an idea of the basics of designing digital devices, but also masters the design skills of such devices using the most advanced computer-aided design tools. Practical study of the discipline is implemented using the modern element base of programmable logic circuits.		

This program reflects the comprehensive information about the subject and information about any changes will be provided in advance.

Week	Dates (planned)	Subject topics	Textbooks / Assignments
1.	18.09.2020	Introduction to Electronics and Circuit Components.	[1] p2 [2] p1
	19.09.2020	Conduction of oral and written survey. Problem solving	
2.	25.09.2020	Semiconductors, Diode Theory, Diode Circuits	[1] p28, p56, p86 [2] p703 [3] p1, p57
	26.09.2020	Conduction of oral and written survey. Problem solving	
3.	02.10.2020	Special-Purpose Diodes	[1] p140
	03.10.2020	Conduction of oral and written survey. Problem solving	
4.	09.10.2020	BJT Fundamentals, BJT Biasing	[1] p188, p240 [2] p768 [3] p133, p166
	10.10.2020	Conduction of oral and written survey. Problem solving	
5.	16.10.2020	Basic BJT Amplifiers	[1] p280
	17.10.2020	Conduction of oral and written survey. Problem solving	
6.	23.10.2020	Multistage, CC, and CB Amplifiers	[1] p326
	24.10.2020	Conduction of oral and written survey. Problem solving	
7.	30.10.2020	Power amplifiers	[1] p366 [3] p705
	31.10.2020	Conduction of oral and written survey. Problem solving	
8.	06.11.2020	JFETs, MOSFET, Thyristors	[1] p414, p470, p524 [p] p387
	07.11.2020	Conduction of oral and written survey. Problem solving	
9.	13.11.2020	Frequency Effects	[1] p568
	14.11.2020	Conduction of oral and written survey. Problem solving	
10.	20.11.2020	Differential Amplifiers	[1] p624
	21.11.2020	Conduction of oral and written survey. Problem solving	
11.	27.11.2020	Operational Amplifiers	[1] p666 [3] p625
	28.11.2020	Conduction of oral and written survey. Problem solving	
12.	04.11.2020	Negative Feedback	[1] p710 [3] p775
	05.11.2020	Conduction of oral and written survey. Problem solving	
13.	11.11.2020	Linear Op-Amp Circuit Applications, Active filters	[1] p740, p788
	12.11.2020	Conduction of oral and written survey. Problem solving	

14.	18.11.2020	Nonlinear Op- Amp Circuit Applications, Oscillators	[1] p850, p902 [3] p775
	19.11.2020	Conduction of oral and written survey. Problem solving	
15.	25.11.2020	Regulated Power Supplies	[1] p958 [3] p705
	25.11.2020	Conduction of oral and written survey. Problem solving	

