<table>
<tr><td rowspan="8">General information</td><td>Title and code of subject, number of credits</td><td colspan="3">EENG 245 Basic Electronics, 8 ECTS</td></tr>
<tr><td>Department</td><td colspan="3">Physics and Electronics</td></tr>
<tr><td>Program</td><td colspan="3">Undergraduate</td></tr>
<tr><td>Academic semester</td><td colspan="3">2023 spring</td></tr>
<tr><td>Lecturer</td><td colspan="3">MSc, Yelmar Aliyev</td></tr>
<tr><td>E-mail:</td><td colspan="3">yelmar.aliyev1994@gmail.com</td></tr>
<tr><td>Phone number:</td><td colspan="3">+994 514151515</td></tr>
<tr><td>Lecture room/Schedule</td><td colspan="3">11 Mehseti Street, AZ1096 Baku, Azerbaijan (Neftchilar campus), room</td></tr>
<tr><td>Language</td><td colspan="4">English</td></tr>
<tr><td>Compulsory/ Elective</td><td colspan="4">Compulsory</td></tr>
<tr><td>Required textbooks and course materials</td><td colspan="4">Textbooks:
1. Electronic devices: Conventional Current Version, Thomas L. Floyd, 10th Edition, 2018 (required).
2. Fundamentals of electric circuits, Charles K. Alexander, Matthew N. O. Sadiku, 5th Edition, 2013.
3. Electronic Fundamentals: Circuits, Devices and Applications, Thomas L. Floyd, 8th Edition, 2014.</td></tr>
<tr><td rowspan="2">Teaching methods</td><td colspan="2">Lecture</td><td colspan="2">✓</td></tr>
<tr><td colspan="2">Group discussions at seminars</td><td colspan="2">✓</td></tr>
<tr><td rowspan="6">Assessment</td><td>Methods</td><td>Date/ Deadline</td><td colspan="2">Percentage (%)</td></tr>
<tr><td>Class Participation</td><td>At each lesson</td><td colspan="2">10</td></tr>
<tr><td>Quizzes</td><td>During the semester, 2 time</td><td colspan="2">20</td></tr>
<tr><td>Midterm exam</td><td></td><td colspan="2">30</td></tr>
<tr><td>Final exam</td><td></td><td colspan="2">40</td></tr>
<tr><td>Final</td><td></td><td colspan="2">100</td></tr>
<tr><td>Course description</td><td colspan="4">The course will cover the fundamentals of basic electronic circuits and key components: their device characteristics, and behavioural patterns as well as the extension of the circuit analysis techniques such as Ohm’s laws and Kirchhoff’s laws to analyze them accordingly. These basic ideas will form the core component of the course.

History of electronics, classification of electronic signals, digital and analog, role of A/D and D/A converters, electronic components, symbols and identifications, semiconductivity.

Electronic components such as diodes, capacitors, inductors, transistors, thyristors, operational amplifiers and their application.</td></tr>
<tr><td>Course objectives</td><td colspan="4">The main objectives of this course is to introduce the main concepts electronics, and to teach fundamentals of electronic circuit design, elements and their functionality.</td></tr>
<tr><td>Learning outcomes</td><td colspan="4">Upon successful completion of this course, students will be able to know:
Basic consepts of electric circuits.
Basic laws of electric circuits.
Fundamentals of electronic circuit design.
Operation principles of resistors, diodes, capacitors, inductors, transistors, thyristors, amplifiers, oscillators.</td></tr>
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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. **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		*Introduction to Electronics*	[1] p. 20-42
2		*Basic Concepts and Law:* Voltage, Current, and Resistance, Ohm's Law, Kirchhoff's Laws, Series Circuits, Parallel Circuits.	[2] p. 4-20 [2] p. 30-52 [3] p. 23-118
3		*Diodes and applications:* Half-wave rectifiers, Full-wave rectifiers.	[1] p. 43-69 [3] p. 703-766
4		*Special-purpose diodes:* The Zener Diode, Zener Diode Applications, Varactor Diodes, Other Types of Diodes.	[1] p. 121-163
5		*Capacitor and inductors* ***Quiz 1 (Week 01-04)***	[2] p. 216-232 [3] p. 401-458 [3] p. 517-557
6		***Public Holiday***	
7		*Bipolar Junction Transistors*	[1] p. 182-210 [1] p. 235-254 [3] p. 767-835
8		*BJT Amplifier*s	[1] p. 274-301
9		*Field-Effect Transistors (FETs)* ***Quiz 2 (Week 05-08)***	[1] p. 383-424

10		***Mid term exam***	
11		*Thyristors:* The Four-Layer Diode. The Silicon-Controlled Rectifier (SCR). The Diac and Triac. The Silicon-Controlled Switch (SCS). The Unijunction Transistor (UJT)	[1] p. 573-593
12		*The operational amplifier*	[1] p. 609-700 [2] p. 175-195 [3] p. 835-877
13		*Active Filters* ***Quiz 3 (Week 9-12)***	[1] p. 772-795
14		*Oscillators*	[1] p. 815-837
15		***Recap of all covered material.*** ***Preparing to final exam.***	
		Final exam	