Identification	Subject	PHSC 111 Physics 1 6 ECTS credits	
	Department	Physics and Electronics	
	Program	Undergraduate	
	Term	Spring 2023	
	Instructor	**Sevinj Guluzade**	
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	Phone:	0559565615	
	Classroom/hours	10:00-15:00	
	Office hours		
Prerequisites	no		
Language	English		
Compulsory/Elective	Compulsory		
Required textbooks and course materials	Fundamentals of Physics Extended 10th Edition by Halliday, Resnick, https://drive.google.com/folderview?id=0B2q6eS6QaN-pZXRDQ3VCZ0xQYmM&usp=sharing- Go to this page to download the textbook		
Course website	Class assignments: www.edmodo.com		
Description	This course covers the principles of mechanics, heat, fluids, oscillations, waves, and sound. Emphasis is on conceptual development and numerical problem-solving. A detailed schedule of topics can be found later in this syllabus. The aim of this course is to assist students in improving their fundamental knowledge of physics. As well as examinations every two weeks will help students to revise topics till the final exams.		
Course outline	This course of physics provides a conceptually based exposure to the fundamental principles and processes of the physical world. Lectures include basic concepts of motion, forces, energy, heat, Newton's laws, fluids thermodynamics, thermal physics, work and energy, and power. Upon completion, students should be able to describe. examples and applications of the principles studied.		
Course objectives	This course will help students to get an idea of the main physical phenomena and the major physical laws. The course in general physics will give the chance to students to study motion laws, movement of a solid body, surface phenomena, will be able to analyze the types of motion, Newton's laws. At the end of course, the students will be able to understand the fundamentals of classical physics, to solve physical problems of mechanics and molecular physics.		
Learning outcomes	What students should know by the end of the course: Students should describe the types of motion, such as motion in one-dimension, projectile motion, circular motion, and also differentiate each of them. Students should apply Newton's Laws, analyze contact and field forces, also should know about simple harmonic motion, pendulum, temperature, pressure, Archimedes principle, Buoyant force, work and energy, the types of energy, and fluid dynamics. Students should solve each problem relating to these topics and answer the questions easily and correctly, path the quizzes and midterm or final exam successfully. What students are able to do by the end of the course: Understanding core physics concepts: Students should have a solid grasp of fundamental physics principles such as classical mechanics and thermodynamics. Problem-solving: Students should be able to solve a variety of physics problems using mathematical techniques and analytical thinking. This includes calculating forces, velocities, energies, and other physical quantities. Critical thinking: Students develop critical thinking skills by analyzing and evaluating complex physical phenomena and theories. They learn to question assumptions and think logically. Problem identification: Students can identify real-world problems that can be addressed through		
Teaching methods	Lecture		+
	Seminar		+
	Assisted work		x

		Assisted lab work		x
		Others		
Evaluation		**Methods**	**Date/deadlines**	**Percentage (%)**
		Midterm Exam		30
		Class Participation and Attendance	At each lesson	5
		Quizzes		20
		Activity	At each lesson	5
		Final Exam		40
		Total		100

Policy	**Preparation for class**
	The structure of this course makes your individual study and preparation outside the class extremely important. The lecture material will focus on the major points introduced in the text. Reading the assigned chapters and having some familiarity with them before class will greatly assist your understanding of the lecture. After the lecture, you should study your notes and work on relevant problems and cases from the end of the chapter and sample exam questions.
	Withdrawal (pass/fail)
	This course strictly follows the grading policy of the School of Science and Engineering. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year.
	Cheating/plagiarism
	Cheating or other plagiarism during the Quizzes, Midterm, and Final Examinations will lead to paper cancellation. In this case, the student will automatically get zero (0) without consideration.
	Professional behavior guidelines
	The students shall behave in a way to create a favorable academic and professional environment during class hours. Unauthorized discussions and unethical behavior are strictly prohibited.
	Attendance
	Students who attend the whole class will get 5 marks. for three absences student loses 1 mark.
	Activity
	Students who will be active during the discussion of past lessons and who will solve homework problems in a seminar will be awarded one activity mark.
	Quizzes
	There will be 4 quizzes during the semester. The quizzes will be announced in the classroom two weeks before. The quiz is based on homework problems. The homework problems will be selected from questions and problems at the end of each chapter. The number of homework problems will be announced after finishing each chapter.
	20 percent of the average score of all the quizzes will be added to the final exam scores.

Week	Date/Day (Tentative)	Topics	Textbook/Assignments
		Tentative Schedule	
1	18.09.2023 20.09.2023 22.09.2023	Measurement and Vectors. **Short description:** Units of measure. Concepts of vectors and action with them. Scalar and vectorial quantities.	1. Fundamentals of Physics by Halliday, Chapters 1 and 3. 2. Handnotes given by a teacher
2	25.09.2023 27.09.2023 29.09.2023	Motion along a straight line. **Short description:** Position, displacement, and average velocity. Apply the relationship between a particle's average speed, the total distance it moves, and the time interval for the motion.	1. Fundamentals of Physics by Halliday, Chapter 2. 2. Handnotes given by a teacher
3	02.10.2023 04.10.2023 06.10.2023	Quiz 1. (first 45 min.) Motion in two and three dimensions. (second 45 min.) **Short description:** Quiz 1- covers measurement and vectors, motion along a straight line. Description of projectile motion, uniform circular motion, and relative motion in one and two dimensions	1. Fundamentals of Physics by Halliday, Chapter 4. 2. Handnotes given by a teacher
4	09.10.2023 11.10.2023 13.10.2023	Force and motion-1 Force and motion-2 Gravitation **Short description:** Concept of force. Description of Newtonian mechanics and application of Newton's laws. Types of force, drag force and terminal speed, uniform circular motion. Measuring the Gravitational Constant. Gravitational force. Kepler's Law and the motion of planets. The Gravitational field.	1. Fundamentals of Physics by Halliday, Chapters 5,6 and 13 2. Handnotes given by a teacher
5	16.10.2023 18.10.2023 20.10.2023	Kinetic energy and work, Potential energy and conservation of energy **Short description:** Kinetic energy, work, and kinetic energy, work done by gravitational force, work done by a spring force, work done by a general variable force and power, potential energy, conservation of mechanical energy	1. Fundamentals of Physics by Halliday, Chapters 7 and 8. 2. Handnotes given by a teacher
6	23.10.2023 25.10.2023 27.10.2023	Quiz 2 (first 45 min.) Center of mass and linear momentum (second 45 min.) **Short description:** Center of mass, linear momentum, collision and impulse, conservation of linear momentum, momentum and kinetic energy in collisions, elastic collisions in one and two dimensions, and system in	1. Fundamentals of Physics by Halliday, Chapters 9. 2. Handnotes given by a teacher

		varying mass	
7	30.10.2023 1.11.2023 3.11.2023	Rotation, Rolling, torque, and angular momentum **Short description:** Rotational variables, rotation with constant angular acceleration, calculation of rotational inertia, torque, and rotational inertia, Rolling as translation and rotation combined, angular momentum, conservation of angular momentum, precision of a gyroscope	1. Fundamentals of Physics by Halliday, Chapters 10 and 11. 2. Handnotes given by a teacher
8	06.11.2023 10.11.2023	**Midterm Exam** **Problem-solving**	The midterm exam will cover Chapters 1-10 and 13
9	13.11.2023 15.11.2023	Equilibrium and elasticity **Short description:** Equilibrium, elasticity, and static equilibrium	1. Fundamentals of Physics by Halliday, Chapter 12. 2. Handnotes given by a teacher
10	20.11.2023 22.11.2023 24.11.2023	Oscillations and waves **Short description:** Simple harmonic motion energy in simple harmonic motion, transverse wave, interference of wave, standing waves, and resonance	Fundamentals of Physics by Halliday, Chapter 15,16. 2. Handnotes given by a teacher
11	27.11.2023 29.11.2023 01.12.2023	Quiz 3 (first 45 min.) Waves (second 45 min.) **Short description:** The quiz will cover chapters 15,16,17. Speed of sound, traveling sound waves, intensity and sound level, beats, the Doppler effect	1. Fundamentals of Physics by Halliday, Chapter 17. 2. Handnotes given by a teacher
12	04.12.2023 06.12.2023 08.12.2023	Fluids **Short description:** Measuring pressure, Pascal's principle, Archimedes' principle, Bernoulli's Equation, and other applications of fluid	1. Fundamentals of Physics by Halliday, Chapter 14. 2. Handnotes given by a teacher
13	11.12.2023 13.12.2023 15.12.2023	The kinetic theory of gases **Short description:** Kinetic theory of ideal gases. Distributions of molecular speed and adiabatic expansion of an ideal gas	1. Fundamentals of Physics by Halliday, Chapter 19. 2. Handnotes given by a teacher
14	18.12.2023 20.12.2023 22.12.2023	Quiz 4 (first 45 min.) Temperature heat and the first law of Thermodynamics (second 45 min.) **Short description:** The quiz will cover chapters 14,19 Thermal expansion, the first law of thermodynamics, and the Celsius and Fahrenheit scales	1. Fundamentals of Physics by Halliday, Chapter 18. 2. Handnotes given by a teacher
15	25.12.2023 27.12.2023	Entropy and the second law of thermodynamics **Short description:**	1. Fundamentals of Physics by Halliday, Chapter 20.

	29.12.2023	İnversible process and entropy, change in entropy, and the second law of thermodynamics	2. Handnotes given by a teacher
		Final Exam	