

Identification	Subject (code, title, credits)	PHSC 112, Physics II - 6 ECTS		
	Department	Physics and Electronics		
	Program (undergraduate, graduate)	Undergraduate		
	Term	Spring, 2023		
	Instructor	Assoc. Prof. Dr., V u s a l a E m i n o v a		
	E-mail:	vusaleeminova84@gmail.com		
	Phone:	050 724 14 17		
	Classroom/hours	11 Mehseti str.(Nefitshilar campus)		
	Office hours	Monday: 11:50-15:10/ Thursday: 11:50-15:10		
Prerequisites	PHSC 111			
Language	English			
Compulsory/Elective	Compulsory			
Required textbooks and course materials	<p>Fundamentals of Physics Extended 8th Edition by Halliday, Resnick, and Serway, Walker John Wiley, 2011 https://drive.google.com/folderview?id=0B2q6eS6QaN-pZXRDO3VCZ0xQYmM&usp=sharing Go to this page to download textbook</p> <p>Class assignments: www.edmodo.com</p>			
Course outline	<p>Physics II serves as a calculus based introduction to Electromagnetism. Students will investigate the principles of introductory physics through lectures, seminars and homework problems. Course will cover these topics- Electric Charge and Electric Field. Gauss Law, Electric Potential. Capacitance, Electric Current and Resistance, Circuits, Magnetism. Electromagnetic Induction, Electromagnetic Waves, Interference and the Wave Nature of Light. Critical thinking about physics problems is emphasized.</p>			
Course objectives	<p>To develop understanding the concepts in electricity and magnetism, reinforce general problem solving skills. Students should be able to apply the basic laws of electricity and magnetism to solve simple problems concerning the motion and distribution of charges.</p>			
Learning outcomes	<p>Understanding topics related to Electric and Magnetic fields. Apply the conceptual themes of Electromagnetism. Understand methods for solving electromagnetic problems in related fields of Engineering. To analyze simple Electrical Circuits. Application of fundamental methods of Circuit theory. To apply gained knowledge into practical work in Engineering.</p>			
Teaching methods	Lecture		<input checked="" type="checkbox"/>	
	Group discussion		<input checked="" type="checkbox"/>	
	Experiential exercise		<input type="checkbox"/>	
	Case analysis		<input checked="" type="checkbox"/>	
	Quiz, Classroom Exams		<input checked="" type="checkbox"/>	
Evaluation		Methods	Date/deadlines	Percentage (%)
		Midterm Exam		30
		Case studies		
		Class Participation	At each lesson	5
		Quizzes	During the semester, 4 time	20
		Activity	During the semester	10
		Presentation		
		Final Exam		35
		Others		
	Total			100

<p>Policy</p>	<ul style="list-style-type: none"> ▪ 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 relevant problems and cases from the end of the chapter and sample exam questions. ▪ Withdrawal (pass/fail) This course strictly follows 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, Mid-term and Final Examinations will lead to paper cancellation. In this case, the student will automatically get zero (0), without any considerations. ▪ Professional behavior guidelines The students shall behave in the way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly prohibited.
<p>Quizzes</p>	<p>Attendance Students who attend the whole classes will get 5 marks. for three absence student loses 1 mark.</p> <ul style="list-style-type: none"> ▪ Activity Students who will be active during discussion of past lessons and who will be solve homework problems in a seminar will be awarded with one activity mark. ▪ There will be 2 quizzes examination during the semester. The quizzes will be announced in the classroom two weeks before. Quiz is based on homework problems. The homework problems will be selected from questions and problems in the end of each chapter. The number of homework problems will be announced after finishing each chapter. ▪ The students who able to pass midterm and first quiz with max points automatically get max 10 point for the second quiz.

Tentative Schedule

Week	Date/Day (tentative)	Topics	Textbook
1	02.2023 02.2023	<p>Electric Charge</p> <p>The Origin of Electricity, Types of electric charge - Forces among two charges (Coulomb's law) - Charge quantization - Charge conservation Charged Objects and the Electric Force, Conductors and Insulators, Charging by Contact and Induction, Coulomb's Law.</p>	<p>1. Fundamentals of Physics by Halliday, Chapter 21.</p> <p>2. Handnotes given by teacher</p>

2	02.2023 02.2023	<p style="text-align: center;">Electric Field</p> <p>The Electric Field, Electric Field Lines, The Electric Field Inside a Conductor. Calculate the electric field generated by a point charge. - Using the principle of superposition determine the electric field created by a collection of point charges as well as continuous charge distributions. - Define the notion of an “electric dipole”. Determine the net force, the net torque, exerted on an electric dipole by a uniform electric field, as well as the dipole potential energy</p>	<p>1. Fundamentals of Physics by Halliday, Chapter 22.</p> <p>2. Handnotes given by teacher.</p>
3.	03.2023 03.2023	<p style="text-align: center;">Electric Potential Energy and the Electric Potential</p> <p>Potential Energy, The Electric Potential Difference, The Electric Potential Difference Created by Point Charges, Equipotential Surfaces</p>	<p>1. Fundamentals of Physics by Halliday, Chapter 24.</p> <p>2. Handnotes given by teacher.</p>
4.	03.2023 03.2023	<p style="text-align: center;">Capacitance</p> <p>Capacitor; Capacitance, Capacitors in Parallel and in Series Potential Energy and Energy Density, Capacitance with a Gauss' Law with a Dielectric Equivalent capacitance. -Energy stored in a capacitor.</p>	<p>1. Fundamentals of Physics by Halliday, Chapter 25.</p> <p>2. Handnotes given by teacher</p>
5.	03.2023 03.2023	<p style="text-align: center;">Current and Resistance</p> <p>Current, Current Density, Drift Speed, Resistance of a Conductor, Ohm's Law, Resistivity of a Metal, Power, Resistive Dissipation, Semiconductors, Superconductors</p>	<p>1. Fundamentals of Physics by Halliday, Chapter 26.</p> <p>2. Handnotes given by teacher</p>
6.	03.2023 03.2023	<p style="text-align: center;">MiddermExam Problem solving</p>	
7.	03.2023 03.2023	<p style="text-align: center;">Circuits</p> <p>Electromotive force (emf), Ideal and real emf devices, Seri wiring, Parallel wiring, Circuits partially series and partials parallel, Internal resistance.</p>	<p>1. Fundamentals of Physics by Halliday, Chapter 27.</p> <p>2. Handnotes given by teacher</p>
8.	04.2023 04.2023	<p style="text-align: center;">Circuits</p> <p>RC circuits, charging and discharging of a capacitor, Measurement of current, Kirchhoff's Rules, Capacitors in series and parallel</p>	<p>1. Fundamentals of Physics by Halliday, Chapter 27.</p> <p>2. Handnotes given by teacher</p>
9.	04.2023 04.2023	<p style="text-align: center;">Magnetic Forces and Magnetic Fields</p> <p>Magnets and Magnetic Fields, Force on a Moving Charge, Motion of a Charged Particle in a Magnetic</p>	<p>1. Fundamentals of Physics by</p>

		Field, Mass spectrometer. Hall effect, Force on a Current, Torque on Coil, Magnetic Fields by Currents, Magnetic Materials	Halliday, Chapter 28. 2. Handnotes given by teacher
10.	04.2023 04.2023	Quiz Problem solving	
11	04.2023 04.2023	Magnetic Forces and Magnetic Fields Hall effect, Force on a Current, Torque on Coil, Magnetic Fields by Currents, Magnetic Materials	1. Fundamentals of Physics by Halliday, Chapter 28. 2. Handnotes given by teacher
12.	05.2023 05.2023	Magnetic Fields Due to Currents The Biot-Savart Law, Magnetic Field of a Long Straight Wire, Magnetic Field of a Circular Arc, Force Between Parallel Currents, Ampere's Law, Fields of a Solenoid and a Toroid.	1. Fundamentals of Physics by Halliday, Chapter 29. 2. Handnotes given by teacher
13	05.2023 05.2023	Induction and Inductance Magnetic Flux, Faraday's Law, Lenz's Law, Emf and the Induced Electric Field, Self-Induction, Mutual Inductance	1. Fundamentals of Physics by Halliday, Chapter 30. 2. Handnotes given by teacher
14	05.2023 05.2023	Images Two Types of image, A Common Mirage, Plane Mirrors, Extended Objects, Mirror Maze, Spherical Mirrors	1. Fundamentals of Physics by Halliday, Chapter 36. 2. Handnotes given by teacher
15	05.2023 05.2023	Images The nature of Light. The Interference of Light.	1. Fundamentals of Physics by Halliday, Chapter 37. 2. Handnotes given by teacher.
		Final Exam	

This syllabus is a guide for the course and any modifications to it will be announced in advance.

