



Department of Physics

College of Education

University of Salahaddin/Erbil

Subject: Electricity and Magnetism

Course Book:(First Year Student)

Lecturer's name:Dr. Sardar P. Yaba

Academic Year: 2023-2024

Course Book

1. Course name	Electricity and Magnetism
2. Lecturer in charge	Dr. Sardar P. Yaba
3. Department/ College	Physics/ Education
4. Contact	e-mail: sardar.yaba@su.edu.krd
5. Time (in hours) per week	Theory: 3 Hours
6. Office hours	<p>Sunday 8:30 – 9:30 or By appointment</p> <p>Class Time:</p> <p>Saturday: From 8:30 To 11:30</p>
7. Course code	
8. Teacher's academic profile	<p>BSc (1988 –1989) Physics Department of Physics , College of Education University of Salahaddin /Erbil, Kurdistan Region, Iraq.MSc (1995) in Medical Physics, Department of Physics., College of Education University of Salahaddin /Erbil, Kurdistan Region, Iraq.Ph.D (2009) in Medical Physics - Department of Physics., College of Science /University of Salahaddin /Erbil, Kurdistan Region, Iraq.Teaching Staff since 1995 in Physics - Department of Physics, College of Education, University of Salahadin Erbil – Iraq.I was teaching at nearly all labs of physics dept. and lectured electricity and magnetism, , medical physics, and Research methods.</p>
9. Keywords	
10. Course overview:	<p>This course will through one semester. The students will study many physical aspects of electricity and magnetism during that. In this course, students will also learn about Electric charge, The Electric force, The Electric field, Electric flux, Gauss' law, Electric potential, and Capacitance.</p>
11. Course objective:	<p>The aim of the study of electricity and magnetism is to make the student familiar with the fundamentals of electricity and magnetism in physics. We will learn the nature of the electric charge, and how objects become electrically charged. How to use Coulomb's law to calculate the electric force between charges. How to calculate the electric field due to a collection of charges. Understanding of What is meant by electric flux, and how to calculate it. How to use Gauss's law to calculate late the electric field due to a system metrical</p>

charge distribution. Knowledge of Gauss's and its applications. Knowledge of the Electric potential characteristics. Explanation of Capacitance and Dielectric.

12. Student's obligation

Students should attend all the lectures and they may take notes during the lectures. In addition, in class participation would be an advantage for them to extend their knowledge and understand the module systematically.

Attending the lectures regularly would be crucial for the students to consider. If the students missed a few lectures, they would have difficulty getting back on track.

Furthermore, all exams and tests are done with books closed, and, students have to take at least one compulsory exam with few class tests and quizzes during the semester of study.

13. Forms of teaching

During this course, I am using some ways to make the students engage with the lecture like PowerPoint slides explanation view, the whiteboard in the class, and videos and animations to explain the theory of the subject with the explanation in the class. If there were slides that needed more explanation, or, if the slide needed a long, explanation and I thought that the students must know all of that, I would distribute the description to the students to widen their knowledge of the subject.

14. Assessment scheme

In this system, the maximum mark is (75%). The grading system is based on the summation of two categories of evaluations:

First, (25%) of the mark is based on the academic year effort of the student which includes:

A- 20% for midterm examinations

B- 5 % marks for the homework, quizzes, and classroom activity.

Second, (50%) of the mark is based on the final examination that is comprehensive for the whole of the study material reviewed during the semester.

15. Student learning outcome:

After successful completion of the courses, the students learn:

1. The comprehensive understanding of the fundamental concepts of electricity and magnetism.
2. Complete knowledge of the fundamental laws of electricity and magnetism.

3. The analytical skills for solving problems in Electricity and Magnetism to reinforce conceptual understanding.

16. Course Reading List and References:

The main textbooks are:

- 1- Physics for Scientists and Engineers by Serway Jewett, 6th Edition (2004).
- 2- University Physics with Modern Physics by Young and Freedman (2007)
- 3- Electricity and Magnetism, by Benjamin Crowell, (2007).
- 4- Fundamentals of Electricity and Magnetism by D.N. Vasudeva (2000).

17. The Topics:

Lecturer's name

A tentative lecture schedule is:

- Week 1,2 and 3: Coulomb's Law

Introduction

The structure of the atom

Properties of electric charges

Conductors and insulators

Coulomb's Law

- Week 4,5, 6 and 7: The Electric Field

Introduction to the electric field

Calculation of electric field

Application of the electric field

Gauss's Law

Electric flux

Application of Gauss's law

- Week 8,9, and 10: Electric potential

Electric potential

Calculating electric potential

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<p>Equipotential surfaces</p> <p>Potential gradient</p> <p>• Week 11, 12, and 13: Capacitance</p> <p>Combinations of capacitors</p> <p>Energy storage in capacitors</p> <p>Dielectrics</p>	
<p>19. Examinations:</p> <p>Different types of questions will be provided to the student as an exercise and also in examinations such as given in the question banks which contain each of the following ones:</p> <ol style="list-style-type: none">1. Mathematical derivation and explanation questions for different subjects in calculus are provided.2. Multiple choices questions for every subject that is given in calculus topics are also provided to them.3. Explaining and Definition4. Finally, the true and false questions are also given to them for several mathematical subjects. <p>Each of these mentioned question types will be seen clearly in the question banks that are given to the quality assurance committee of our physics department.</p>	
<p>20. Extra notes:</p> <p>There are too many unnecessary holidays that reduce topics given to students. Due to a number of unforeseen reasons that may lead to the shifting of the academic year program, it may be subjected to modifications. Also, extra curriculum hours may be needed to cover all the topics mentioned above.</p>	
<p>21. Peer review</p>	<p>پیداچونہوہی ہاوہل</p>