

**King Saud University  
College of Science  
Physics & Astronomy Department**

**Course outline for  
PHYS 323, Electromagnetism 2  
(1<sup>st</sup> Semester 461)**

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**Office Hours:** Sun, Tue, and Thu from 1:00 – 2:00 pm

**Class Days/Time:** Sun, Tue, and Thu from 11:00 am -11:50 am

**Classroom:** 0140 04 1 A 077

**Prerequisites:** PHYS 221

**Credit hours distribution:** 3 (3+0+0)

**3 hours of lectures a week (14 weeks in the semester).**

**Course Description:**

This course builds up on 221 PHYS to establish the theoretical grounds of electromagnetism. The course covers the concept of vector: gradient, divergence, and curl. Stokes' and Green's theorems. electrostatics in free space, conductors and dielectric materials. It also covers Ampere's law and the magnetic field, Maxwell equations in differential and integral forms, and in tensor form. It also covers solutions to Maxwell equations in vacuum and the propagation of electromagnetic radiation. The course covers the so-called 4-vector notation and the compatibility of Maxwell equations with special relativity. It also introduces gauge transformations.

**Textbook:**

Introduction to electrodynamics (by David Griffiths).

**Other Readings:**

Electricity and Magnetism (by Edward M. Purcell and David Morin)

**Course Evaluation and Marks distribution:**

Midterms Exams	40% ( 20% Two Exams)
Quizzes	5%
HomeWorks	10%
Class participation	5%
Final Exam	40%
<b>Total</b>	<b>100%</b>

**Chapters Distribution for the Exams:**

- M1: CHAPTERS 1+2+3 .....
- M2: CHAPTERS 5+7+8 .....
- F: All Parts .....

**Quizzes and HomeWorks Policy:**

- I. **Quizzes (2):** no substitution if you are absent.
- II. **HomeWorks (3):** I recommend always making the homework due on the same day and at the same time.

**Absence Policy:**

- I. **Attendance percentage:**
  - Student should attend the course lectures during the 15 weeks of the semester.
  - Students with absence hours more than 25% of the total course hours will be **banned** from the Final Exam.
- II. **Absence from Examinations:**
  - If you are unable to attend an examination (first or second midterm) owing to illness or other unavoidable circumstances, you should provide an acceptable evidence of 'good cause' for such absence to the competent commission. If the absence is regarded as authorized, student will grant a Makeup Exam only **once**.
  - All Makeup Exams will be scheduled at the same time one week before the Final Exam.
  - No other Makeup Exam will be done in the same semester. If you miss the Makeup Exam, you will have a mark of zero.

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