

**Faculty of Science
Department of Physics**

Semester : Spring 2011
Course Title : General Physics II
Course Number : PHYS 110
Credit Hours : 03
Prerequisite : General Physics I

Instructors: Nacir Tit (sec. 51, 53), Ihab Obaidat (sec. 02, 52)

Course Objectives:

- 1) Developing a clear understanding of the basic concepts in Electricity and Magnetism.
- 2) Developing the ability to deal with the physical concepts quantitatively (numerically).
- 3) Demonstrating the applications of Electricity & Magnetism in different sciences.
- 4) Developing the learning skills of the student, (e.g. using computers as educational tools, and problem solving).
- 5) Enhancing the ability of the student for self learning.

Textbook: “*Physics for Scientists and Engineers*”, by Raymond A. Serway & John W. Jewett, 6th edition (2004).

References:

- <http://physics.brookscole.com> and click on "student companion site". You will have access to practice tests, concept simulations, and practice problems and selected solutions.
- <http://masteringphysics.com>
- “Physics, by Halliday, Resnick and Krane, 6th edition (2002) Vol.1.
- “University Physics with Modern Physics, by Young and Freedman 11th edition (2004)”.

Homework: Homework will be assigned at the end of each chapter. Homework will be collected during the class on Wednesday or Thursday in one week after each assignment is announced. Late homework will not be accepted. It is absolutely essential that you work out the assigned problems. If an assignment is copied, completely or in part, everyone involved will be given zero.

Midterm Exam: This is a one-hour exam closed book exam. It will consist of several problems. The date of the midterm exam is **April 04, 2011 at 7 – 8 pm.**

Final Examination: There will be a two-hours comprehensive final exam. The date of the final exam is **June 14, 2011, at 6 – 8 pm.**

Evaluation Process:

Homework	10%
Quizzes	30%
2) Midterm	20%
3) Final	40%

General Physics II

<i>Date</i>	<i>Topic</i>	<i>Text Reference</i>
Week 1	- Course outline and Historical Background - Properties of electric charges	Chapter 23: Sec 1 and 2
Week 2	- Coulomb's Law. - The electric field	- Chapter 23: Sec. 3 - Chapter 23: Sec. 4.
Week 3	- Electric field of a charge distribution. - Electric field lines, Motion of charged particles in a uniform electric field.	- Chapter 23: Sec. 5 - Chapter 23: Sec. 6 and 7
Week 4	- Electric Flux. - Gauss's Law and its applications.	- Chapter 24: Sec 1 - Chapter 24: Sec 2 and 3
Week 5	- Conductors in Electrostatic Equilibrium. - Potential Difference and Electric Potential, Potential Difference in a Uniform Electric Field.	- Chapter 24: Sec 5 - Chapter 25: Sec 1 and 2
Week 6	- Electric Potential and Potential Energy due to Point Charges. - Obtaining the value of the electric field from the electric potential	- Chapter 25: Sec 3 - Chapter 25: Sec 4
Week 7	- Electric Potential due to continuous charge distribution, Electric Potential due to a charged conductor. - Definition and Calculations of Capacitance.	- Chapter 25: Sec 5 and 6 - Chapter 26: Sec 1 and 2
Week 8	- Combinations of Capacitors. - Energy Stored in a Charged Capacitor,	- Chapter 26 Sec 3 - Chapter 26 Sec 4
Week 9	Capacitors with Dielectrics, Electric dipole in electric field. Midterm: Monday Apr/04/2011 7 – 8 pm	Chapter 26: Sec 5 - 6 Chapters 23 – 26
Week 10	- Electric Current, Resistance and Ohm's Law - Resistance and Temperature, Electrical Energy and Power.	- Chapter 27: Sec 1 and 2 - Chapter 27: Sec 4 and 6
Week 11	- Electromotive force, Resistors' Combination. - Kirchhoff's Rules.	- Chapter 28: Sec 1 and 2 - Chapters 28: Sec 3
Week 12	- R-C Circuits. - Magnetic fields and forces	- Chapter 28: Sec 4 - Chapters 29: Sec 1
Week 13	- Magnetic force acting on a current-carrying conductor, - Torque on a current loop in a uniform magnetic field.	- Chapter 29: Sec 2 - Chapter 29: Sec 2 and 3
Week 14	- Motion of a charged particle in a uniform magnetic field. - The Biot-Savart Law .	- Chapter 29: Sec 4 - Chapter 30: Sec 1
Week 15	The magnetic force between two parallel conductors, Ampere's Law.	Chapter 30: Sec 2 and 3
Week 16	Magnetic Flux, Gauss's Law in Magnetism	Chapter 30: Sec 5 and 6
Week 17	Faraday Laws of Induction, Motional EMF, Lenz's Law.	Chapter 31: Sec 1 – 3
Week 18	Final: Tuesday Jun/14/2011 6 – 8 pm	All chapters