SYLLABUS

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab.*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Language*
PHY	**103**	**General Physics**	**3**	**2**	**2**	**0**	**6**		**1**	**English**

A. Course Description

In this course, students will Learn and understand the basic knowledge in electrostatics and build up basic skills necessary for solving problems with practical applications by using physical principles . The course covers the topics; vectors, electric field, electric potential, capacitance, current and resistance. Furthermore, the course provides an introduction to laboratory techniques and experimental methods of physics with emphasis on linking the understanding of physics concepts with "Real-Life" situations. Every class will have a short lecture introducing the procedures, concepts, formulas and instructions relevant to the experiment. The lecture will also cover what is expected in the lab-report; don't be late. Attendance and participation is mandatory. Experiments will usually be performed in groups, but each student will turn in an individual lab report.

B. Course Outcomes

At the end of this course the student will be able to**:**

1. Build up basic skills necessary for solving problems with practical applications by using physical principles.
2. Learn and understand the basic knowledge in electrostatics.
3. Demonstrate the ability to formulate, interpret and draw inferences from their knowledge.
4. Demonstrate competence with a wide variety of mathematical tools and techniques.
5. Develop a good understanding and appreciation of electrostatics.
6. Observe and analyze physical data relevant to some of the experiments in mechanics and electrostatics.
7. Use of the laboratory equipment to collect and record data, apply relevant mathematical models and perform required computations, and present the derived results as an application of a measured observation of the electronic physics.
8. Understand the basic concepts of physics and the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis.

C. References

Required Textbook

Serway R.A. and Jewett J.W., ***Physics for Scientists and Engineers with Modern Physics,*** 9th Edition, Brooks/Cole, Belmont, CA, USA (2014).

Other references

- Halliday D. and Resnick R., Physics, 9thEdition, John wiley & sons (2011).
- Laboratory Manual supplied by the Department of Physics.

Course Website: http://www.imamm.org/

D. Topics Outline

1. ***Vectors:*** *Coordinate systems, vector and scalar quantities, some properties of vectors, components of a vector and unit vectors, the scalar product of two vectors, the cross product of two vectors (Contact hours: 4).*
2. ***Electric field:*** *Properties of electric charges, insulators and conductors, Coulomb's law, electric field created by one charge and group of charges, electric field lines, motion of charged particles in uniform electric field (Contact hours: 6).*
3. ***Electric potential:*** *Potential difference and electric potential, potential difference in a uniform electric field, electric potential and potential energy due to point charges (Contact hours: 5).*
4. ***Capacitance:*** *Definition of capacitance, calculating Capacitance for parallel plate capacitors, connection of capacitors, energy stored in a charged capacitor (Contact hours: 5).*
5. ***Current and resistance:*** *Electric current, resistance and Ohm's law, electrical energy and power (Contact hours: 5).*
6. ***Direct current circuits:*** *Electromotive force, resistors in series and parallel, Kirchhoff's rules, RC circuits (Contact hours: 5).*

Topics to be covered in the Laboratory

1. ***Experiment 1:*** *Measurements and uncertainties.*
2. ***Experiment 2:*** *Free fall.*
3. ***Experiment 3:*** *Forces in equilibrium.*
4. ***Experiment 4:*** *Simple pendulum.*
5. ***Experiment 5:*** *Constant Spring.*
6. ***Experiment 6:*** *Simple harmonic motion.*
7. ***Experiment 7:*** *Free fall: Conservation of mechanical energy of a uniformly accelerated mass.*
8. ***Experiment 8:*** *Describe the movement of an object moving at a constant speed and constant acceleration.*
9. ***Experiment 9:*** *Friction and Newton's second law.*
10. ***Experiment 10:*** *Ohm's Law.*

E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6th or 7th week.
- **Midterm 2:** 11th or 12th week.
- **Quizzes & Homeworks:** During the semester.
- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Midterm 1: 10 %	**Midterm 2:** 10 %	**Final Exam:** 40 %
Quizzes, Homework, Attendance & Participation: 20 %		
Laboratory: 30 %		

The grading distribution:

A+	A	B+	B	C+	C	D+	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)

G. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

Executive Rules for Study Regulations and Exams
goo.gl/ykm7t3