



## SYLLABUS

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Private study	Pre-requisites	Course Level	Language
PHY	101	General Physics (1)	3	2	0	2	5		1 <sup>1</sup>	English

### A. Course Description

This course focuses on basic physics concepts and connections to everyday life. Course topics include Motion in one dimension, vectors, laws of motion, work and kinetic energy, potential energy and conservation of energy, electric field, electric potential, capacitance, direct current. While advanced mathematics is not required for this course, basic math with some trigonometry and simple algebra is utilized. Overall goals of this course include students' gaining an appreciation for the physical world, improved critical thinking and reasoning skills, and improved scientific literacy for a better-informed public that can make intelligent voting decision.

### B. Course Outcomes

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

1. Provide the basic concepts and build a strong foundation in the principles of classical mechanics and electrostatic.
2. Analyze different physical situations and phenomena in terms of the fundamental laws of classical mechanics and electrostatic.
3. Understand how these principles are applied in the world around us.
4. Gain an understanding of the classical laws of physics and how they are applied to real world problems.
5. Develop critical thinking and analytical problem-solving skills.

### C. References

#### Required Textbook

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

#### Other references

Halliday D. and Resnick R., *Physics*, 9<sup>th</sup> Edition, John Wiley & Sons (2011).

**Course Website:** <http://www.imamm.org/>

### D. Topics Outline

1. **Motion in one dimension:** Displacement, velocity and acceleration, one dimensional motion with constant acceleration, freely falling objects (Contact hours: 8).
2. **Vectors:** Vector and scalar quantities, some properties of vectors, components of a vector and unit vectors (Contact hours: 6).
3. **The laws of motion:** The concept of force, Newton's first law, Newton's second law, the force of gravity and weight, Newton's third law, some applications of Newton's laws, forces of friction (Contact hours: 8).

<sup>1</sup> Level I for the B.Sc. in Applied Mathematics and Chemistry.



4. **Work and kinetic energy:** The scalar product of two vectors, work done by a constant force, kinetic energy and the work-kinetic energy theorem (Contact hours: 6).
5. **Potential energy and conservation of energy:** Potential energy, conservative and non-conservative forces, conservative forces and potential energy, conservation of mechanical energy, work done by non-conservative forces, power (Contact hours: 8).
6. **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 (Contact hours: 8).
7. **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: 4).
8. **Capacitance:** Definition of capacitance, calculating Capacitance for parallel plate capacitors, connection of capacitors, energy stored in a charged capacitor (Contact hours: 6).
9. **Direct Current:** Electromotive force electric current, resistance and resistivity, Ohm's law, connection of resistors, electric energy and power, Kirchhoff's rules (Contact hours: 6).

### 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:** 6<sup>th</sup> or 7<sup>th</sup> week.
- **Midterm 2:** 11<sup>th</sup> or 12<sup>th</sup> week.
- **Quizzes & Homeworks:** During the semester.
- **Final Exam:** 16<sup>th</sup> week.

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

<b>Midterm 1:</b> 20 %	<b>Midterm 2:</b> 20 %	<b>Final Exam:</b> 40 %
<b>Quizzes, Homework, Attendance &amp; Participation:</b> 20 %		

The grading distribution:

A <sup>+</sup>	A	B <sup>+</sup>	B	C <sup>+</sup>	C	D <sup>+</sup>	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](http://goo.gl/ykm7t3)

