SYLLABUS

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab.*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Language*
PHY	**117**	**Physics (1)**	**3**	**2**	**0**	**2**	**5**	**PHY 119**	**1**	**English**

A. Course Description

Physics 117 is an introductory physics course for non-science majors. This course focuses on basic physics concepts and connections to everyday life. Course topics include; Vectors, Motion in 1 Dimension, Motion in 2 and 3 Dimensions, Force and Motion, Kinetic Energy and Work, Potential Energy, Center of Mass and Linear Momentum, Rotation, Equilibrium and Elasticity. 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. Develop critical thinking and analytical problem-solving skills. At the end of the course, students will be able to:
2. Understand the fundamental physical principles in mechanics.
3. Build up an understanding of how physical principles are applied in everyday life and engineering.
4. Provide a clear understanding of the basic concepts and integrating their knowledge in various disciplines of physics.
5. Build up basic skills necessary for solving problems with practical applications by using physical principles.
6. Familiarize with the basic skills necessary for understanding of physical principles in terms of multiple representations: graphs, diagrams, equations.

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).

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

D. Topics Outline

1. ***Vectors:*** *Coordinate Systems in 3 dimensions, Vectors and scalar quantities, Properties of vectors, Components of a vector and unit vectors (Contact hours: 6).*
2. ***Motion in 1 Dimension:*** *Position and displacement, Average velocity, Instantaneous velocity, Acceleration and instantaneous acceleration, One-dimensional motion with constant acceleration (Contact hours: 6).*
3. ***Motion in 2 and 3 Dimensions:*** *The position, Velocity and acceleration vectors in 3 dimensions, Projectile Motion (Contact hours: 6).*

4. ***Force and Motion:*** *Newton's first Law, Force and mass, Newton's second Law, Newton's third Law, Applications of Newton's Laws, Frictional force, Circular motion with uniform acceleration (Contact hours: 8).*
5. ***Kinetic Energy and Work:*** *Work done by a constant force, Scalar product, Kinetic energy and work kinetic energy theorem, Work done by a spring force (a variable force) (Contact hours: 6).*
6. ***Potential Energy:*** *Potential energy of a system, Conservative and nonconservative forces, Conservation of mechanical energy, Changes in mechanical energy for nonconservative forces, Relationship between conservative forces and potential energy (Contact hours: 6).*
7. ***Center of Mass and Linear Momentum:*** *The Center of mass, Motion of a system of particles, Linear momentum and impulse, Conservation of linear momentum, Collisions in one dimension (Inelastic, Elastic). Collisions in two dimensions (Inelastic, Elastic) (Contact hours: 8).*
8. ***Rotation:*** *Angular position, velocity and acceleration, Rotational kinematics; rotational motion with constant angular acceleration, Angular and linear quantities, Rotational kinetic energy, Calculation of moments of inertia, Torque, Relationship between torque and angular acceleration. Work, Power, and Energy in Rotational Motion. Rolling Motion of a Rigid Object. Rolling, Torque and angular momentum; The vector product and torque, Angular momentum, Angular momentum of a rotating rigid object. Conservation of angular momentum (Contact hours: 10).*
9. ***Equilibrium and Elasticity:*** *The conditions for equilibrium, The center of gravity, Examples of static equilibrium (Contact hours: 4).*

E. Office Hours

Office hours give students the opportinuity 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: 20 %	**Midterm 2:** 20 %	**Final Exam:** 40 %
Quizzes, Homework, Attendance & Participation: 20 %		

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