PHYS 011: General Physics I

Term: 2020 Summer Session Instructor: Staff Language of Instruction: English Classroom: TBA Office Hours: TBA
Class Sessions Per Week: 5 Total Weeks: 5 Total Class Sessions: 25 Class Session Length (minutes): 120 Credit Hours: 4

Course Description:

This course is the first part of a two semester study on the basic theories and principles of physics. Students selecting this course shall be equipped mathematics tools on algebra, geometry, and trigonometry, and especially be familiarized with relevant mathematical formulas. Topics cover chapter 1 to chapter 20 in textbook, including Newton's laws; gravitation; mechanics, kinematics; energy and momentum conservation, rotational motion, and angular momentum conservation; simple harmonic motion; mechanical waves; fluids; ideal gas law; heat and the first and second laws of thermodynamics.

Course Materials:

Fundamentals of Physics, Volume 1, David Halliday, Robert Resnick, Jearl Walker, 10th edition.

Course Format and Requirements:

Attendance:

Students are expected to attend and participate in class. Strong attendance and participation are good indicators of success. Each student is responsible for all course material, announcements, quizzes and exams made in class, whether or not the student attended that day's class.

Grading Scale:

A+: 98%-100%
A: 93%-97%
A-: 90%-92%
B+: 88%-89%
B: 83%-87%
B-: 80%-82%
C+: 78%-79%
C: 73%-77%
C-: 70%-72%
D+: 68%-69%
D: 63%-67%
D-: 60%-62%
F: Below 60%

Course Assignments:

Quizzes

There will be 6 quizzes administered. Quizzes will always be completed in the first ten minutes of class. The quiz problems will be similar to homework problems and in-class examples. There will be no make-up quizzes.

Midterm Exams

There will be three midterm exams in this course. The midterm exam will be based on concepts covered in class. It will be in-class, close-book and non-cumulative.

Final Exam

The final will be cumulative and close-book. Note that the final will not be taken during the normal class times. Exact time and location for final will be announced later.

Course Assessment:

Quizzes	15%
Midterm Exams 1	20%

Midterm Exams 2	20%
Midterm Exams 3	20%
Final Exam	25%
Total	**100%**

Course Schedule:

Week	Topics	Activities
1.	Go through syllabus Intro to the field of General Physics Review on needed Mathematical Formulas Measurement (Lengths, Time and Mass) ● **Motion Along a Straight Line :** Acceleration, Constant Acceleration, Falling-fall Acceleration Application of Graph in Motion Analysis ● Vectors ● **Motions in Two and Three Dimensions:** Average Velocity and Acceleration, and Instantaneous Velocity and Acceleration Projectile Motion, Uniform Circular Motion, 1-D Motion and 2-D motion	Quiz 1

2.	● **Newtonian Mechanics:** Newton's First Law and Second Law Some Particular Forces Newtons' Third and the Application of Newton's Law ● Friction ● **Kinetic Energy and Work:** Work Done by the Gravitational Force Work Done by a Spring Work Done by a General Variable Force ● **Potential Energy and Conservation of Energy**	Quiz 2 Midterm 1 Quiz 3
3.	● Center of Mass and Linear Momentum ● Rotation ● Rolling, Torque and Angular Momentum ● **Oscillations:** Simple Harmonic Motion An Angular Simple Harmonic Oscillator Pendulums, Circular Motion Damped Simple Harmonic Motion Forced Oscillations and Resonance	Midterm 2 Quiz 4

4.	● Equilibrium and Statics ● Gravitation and Newton's Law of Gravitation ● Fluids, Density and Pressure ● Temperature, Heat, The First Law of Thermodynamics, Heat Transfer Mechanics ● Ideal Gas Law	Quiz 5 Midterm 3
5.	● Entropy and the Second Law of Thermodynamics ● **Wave** Types of Wave Transverse and Longitudinal Waves Wavelength and Frequency The Speed of a Traveling Wave Sound Wave Interference, Beats and Dopper Effects Course Summary and Review for Final	Quiz 6 Final exam

Academic Integrity:

Students are encouraged to study together, and to discuss lecture topics with one another, but all other work should be completed independently.

Students are expected to adhere to the standards of academic honesty and integrity that are described in the Shanghai Normal University's *Academic Conduct Code*. Any work suspected of

violating the standards of the *Academic Conduct Code* will be reported to the Dean's Office. Penalties for violating the *Academic Conduct Code* may include dismissal from the program. All students have an individual responsibility to know and understand the provisions of the *Academic Conduct Code*.

Special Needs or Assistance:

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.