NAU NORTHERN ARIZONA UNIVERSITY

Course Title: PHY 111 General Physics I

Term: Summer 2023
Instructor: TBA
Course Credit: 4
Mode of Instruction: Online

Course Description:

This class is the first course in the two-semester, algebra-based, introductory physics sequence. Focusing on classical mechanics, heat, and sound, other subjects covered are equilibrium, Newton's laws of motion, work and energy, impulse and momentum, rotational dynamics, oscillatory motion, thermodynamics, rotational motion and waves. In addition, the course also includes an experimental part.

Course Prerequisites:

MAT 125 Precalculus Mathematics

Learning Outcomes:

By the end of the course, the student should be able to:

A. Gain a good understanding of basic physical principles and concepts;
B. Set up equations based on energy conservation as applied to various kinds of situations involving different kinds of forces;
C. Demonstrate a mastery of relating position, velocity, acceleration and time using kinematics relationships in one dimension;
D. Analyze physical systems (accelerating cars, satellite orbits, bridges, etc.) using two paradigms: Newton's laws and conservation laws.

Course Material:

Physics for Scientists and Engineers: A Strategic Approach with Modern Physics, 4th Edition by Randall Knight.

Evaluation:

- 5 Labs [25%]
- 4 Quizzes [20%]
- Mid-term Exam [20%]
- Final Exam [35%]

Description of the Evaluation tasks:

Assignment/ Essay/ ... : During the term, students will be required to finish several evaluation tasks within due date. All the tasks are linked with specific course topics/outcomes and will adequately assess students' competence and learning outcomes. Students are encouraged to meet with instructor about these tasks at any point.

Mid-term/ Final Exams/ Quiz/... : There may be periodic quizzes given at the beginning of lecture sessions; the feedback from these quizzes will monitor the progress of the learners and help to set learning priorities. There will be mid-term exam/ final exam for the course. They are the basic criteria for the evaluation of students' learning outcomes and final grade.

Grading Policy:

Students are supposed to finish each online lecture. Prior to each class, students should finish the required readings. During the class time, students are encouraged to make use of all relevant online course resources and communicate with the instructor. Students' grades are accumulated based on the cumulative evaluations.

Students' letter grade will be assigned according to the following scale:

A+ 90-100	A 85-89	A- 80-84
B+ 77-79	B 73-76	B- 70-72
C+ 67-69	C 63-66	C- 60-62
D+ 57-59	D 53-56	D- 50-52
F < 50		

Academic Integrity:

Students must strictly adhere to the university's academic integrity rule; and all essays, exams and any other form of academic assignments must adhere to these rules. Any form of plagiarism, cheating, or misappropriation of materials will be considered a violation of academic integrity and will be punishable by the university.

Withdrawal from the Course(s):

Students will be able to apply for a transfer or withdrawal within 3 days of the starting date of the course. If a withdrawal is applied for within 3 working days, the tuition fee will be fully refunded. After 3 days, the tuition fee will not be refunded. If a withdrawal is applied for in the first two weeks, it will be recorded as W (Withdraw) on the course transcript. After this initial two-week period, the class will be recorded as F (Fail).

Tentative Schedule:

1	Course Introduction
2	Motion in One Dimension
3	Kinematics, Vectors
4	Vectors and Motions in Two Dimensions **Quiz# 1**
5	Forces and Newton's Laws of Motion
6	Newton's 3rd Law
7	Applying Newton's Laws
8	Circular Motion, Orbits, Gravity **Quiz# 2**
9	Work and Kinetic Energy
10	Potential Energy

11	Energy Conservation
12	**Mid-term Exam**
13	Rational Motion
14	Rotational Dynamics
15	Impulse and Momentum
16	Equilibrium and Elasticity **Quiz# 3**
17	Fluids
18	Oscillations
19	Thermal Properties of Matter
20	First law of Thermodynamics
21	Micro/Macro Connection **Quiz# 4**
22	Micro/Macro Connection (Cont.)
23	Engines
24	Final Exam Reviews
25	**Final Exam**

Laboratory Schedule:

Week	Experiment
1	Expt 1 #: Motion
2	Expt 2 #: Equilibrium of a Particle
3	Expt 3 #: Centripetal Force
4	Expt 4 #: Work-Energy
5	Expt 5 #: Oscillations of a String