

# Classical High School

## Physics

### Syllabus

Instructor: Mr. Butler

Text: Physics    Author: Raymond A. Serway

Prerequisite: Algebra II (Completion or Concurrent)

Required Materials: Scientific Calculator, Slot Folder, Problem Notebook, Pencils.

Class Website: **Physica.cloud** The student should visit this website daily to view updates and to access and utilize required topic resource materials!

Course Description: Core Physics in an introductory course designed to introduce students to fundamental concepts in physics. Algebra, analytic geometry, and trigonometry are used to provide the mathematical foundation for the application of the physical principles. Concept development provides the structure for building students' conceptual framework within and between the physical principles. Problem solving activities provides students important opportunities to derive meaningful mathematical solutions and to apply the physical principles in an alternate context.

Major course topics include:

- The Science of Physics
- One-Dimensional and Two-Dimensional Kinematics
- Newton's Laws of Motion
- Work, Energy and Power
- Circular Motion
- Gravitation and Kepler's Laws of Planetary Motion
- Impulse and Momentum
- Wave Phenomena

In addition to classroom lectures and presentations, instructor demonstrations, films, internet applets, and student hands-on and virtual laboratory experiences are incorporated and serve to support and enhance the physical principles that are being studied.

Major goals of the core physics course include developing analytical skills and a conceptual framework of physical principles through problem solving and the analysis of a wide variety of physical phenomena. Students learn to classify, interpret, and describe natural phenomena by investigating and relating the physical laws, theories, and principles that have been developed which describe them. An emphasis is placed on the study of basic principles and the unity of these principles within the field of physics.

### Evaluation

#### Quarter:

Tests	60 %
Laboratory	20 %
Mastering Physics	20 %

#### Midterm:

1 <sup>st</sup> Quarter	40 %
2 <sup>nd</sup> Quarter	40 %
Midterm Exam	20 %

#### Final:

Final Exam	20 %
Midterm Exam	10 %
Quarter Grades	70 %

Homework: The student should expect to devote the requisite non-class time daily in completing physics assignments. More time may be necessary when preparing for tests, lab reports or midterm/final exams. Assignments are in the form of textbook readings, topic questions, problems, concept applications, hands-on and virtual lab reports, Physics LE, Focus Questions and Physica activities.

Tests: At least one assessment test will be given for each major unit covered. The tests will focus on assessing student knowledge and understanding of underlying and foundational principles and the application of those principles. Tests typically consist of questions of a conceptual nature given in a multiple choice format and/or those involving application of the principles through problem solving. Student can opt-in for cooperative testing with a partner and use their class resources. Each partner will receive the same test grade. Retests are provided only in special circumstances determined by the instructor.

Mastering Physics: Mastering Physics is the component by which students will complete work that develops their knowledge base and skill set in physics. These assignments are varied in scope and DOK level and integrate the application of concepts and principles being taught. Mastering Physics provides opportunities for students to practice skills, apply knowledge and deepen their understanding of conceptual material being presented in class. Emphasis is on application of principles to conceptual problems of realistic physical phenomena. Mastering Physics assignments are formative assessments. These are integrated into the physics curriculum to monitor student progress and to provide students with opportunities to check for understanding and to self-assess.

- Physics LE
- Concept Apps
- Focus Questions
- Physica activities
- Physics Problems

Labs/Lab Reports: Typically, one laboratory experiment will be conducted for each major topic covered. Lab experiences include both hands-on and virtual. Pre-lab sessions will highlight the purpose, objectives, procedure, apparatus, and specific measurements to be made provide an overview of the principles being investigated. It is the student's responsibility to read the lab and become familiar with its content; purpose, procedure, specific measurements, analysis of data, and questions. Students will conduct each lab as a team and work jointly to produce one lab report. A lab report format and rubric are used to offer guidance in writing the report and to assess and assign a grade.

Absences: Due to the amount of material and the pace with which it is covered, students who are absent can quickly fall behind. The student is responsible for any assignments missed/owed during an absence. On the day the student returns from an absence, he/she is expected to see the instructor to get any assignments missed during the absence or to turn in any assignments that were due during the absence.

#### Make-Up Policy

Tests: Students who are absent for a test must be prepared to take an alternate version on the day they return to school, provided the absence is excused. No test make up is allowed for an unexcused absence and will result in a zero grade.

Labs: Due to the time involved in lab preparation, setup, and break-down, a lab make-up may not always be possible. In this case, an alternate assignment related to the lab topic will be assigned.

#### Student Work:

##### **Save all work!**

If the case arises in which a grade is in question, the responsibility for proof of grade is yours!

## Due Dates

The importance of assignment due dates cannot be overemphasized. Meeting assignment due dates promotes a greater level of retention and success by affording the following:

- (1) receive timely feedback regarding strengths and weaknesses gauged to concept understanding and application
- (2) keep pace with the course so as not to fall behind on course material
- (3) ensure timely preparation for tests and retests

**Be aware that late assignments will be accepted with credit reduction!**

## Classroom Policies

1. Be On Time. If you are late for class, you will be expected to stay for detention.
2. Bring your materials to class everyday and be prepared to learn.
3. Absolutely **NO cell phones**, music devices, or food are allowed in class.
4. Be academically responsible: Study daily and complete assignments on time.
5. At all times, conduct yourself with a behavior based upon general rules of politeness, consideration, and respect.

## Cell Phone Policy

Cell phone use is **NOT** allowed at any time during instruction.

The use of cell phones interferes with teaching and learning.

Cell phone use distracts both students and teacher and interrupts instruction.

- Students are required to dock their phones immediately upon entering the classroom.
- Students may collect their phones once the period has ended.

**!Class Participation is Necessary for Learning Success!**

## Participating includes:

- ✓ completing homework assignments
- ✓ arriving to class on time and prepared to learn
- ✓ following posted class policies and expectations
- ✓ staying engaged and on task during class; using class time effectively
- ✓ working to keep pace with topics and class activities; being self-directed
- ✓ being attentive and interactive during presentations and discussions
- ✓ always having required course materials
- ✓ consistently staying focused and on task with class-work assignments
- ✓ showing respect and courtesy toward teacher and fellow students
- ✓ contributing ideas and supporting the efforts of others when working in cooperative groups