

Honors Physics

Course Syllabus 2023-2024

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TEXT: *Foundations of Physics, 2nd Edition, Hsu*

DESCRIPTION:

7:30 AM – 3:45 PM Room 114

This class will cover several different aspects of Physics but will focus primarily on classical mechanics. The class will feature a mastery style classroom, where students will not progress until sufficient knowledge of a concept has been demonstrated.

RATIONALE:

There are two basic reasons for studying Physics. First, it is the study of some of our attempts to understand our world and the universe. Second, its applications have and continue to produce changes in our society. Even if you do not enter in to a Physics intensive field, you will have gained a deeper understanding of our ever-changing world.

REQUIREMENTS and EXPECTATIONS:

- Demonstrate critical thinking skills.
- Come to class ready to work with a plan for the day.
- Work together cooperatively in their group.
- Participate in labs and class discussions.
- Make good use of their study time...avoid procrastination. Formulate and ask questions.
- Participate in class every day.
- Expect some difficulty.
- Breathe
- Be a Leader in the Science Department

SUGGESTED MATERIALS:

- Scientific calculator
- School iPad
- Headphones/Earbuds
- Folder-to save any paper copies utilized in class
- Physics Notebook

GOALS:

The student will:

- Apply the steps of the scientific method.
- Communicate scientific data to others.
- Investigate and understand:
 - Classical Mechanics
- Develop proficiency and safety in the use of laboratory equipment.
- Develop Physics specific vocabulary and language skills.

RULES:

Be Respectful:

- To the Teacher
- To Other Students
- To Yourself

Be Responsible:

- Be to Class On Time
- Come to Class Ready
- Follow Lab Safety Procedures

Be Positive:

- No Complaining
- No Negative Comments

Be Accountable:

- All work is authentic
- All work is submitted before deadlines

ABSENCES:

It is your responsibility to make arrangements with the teacher.

CLASSROOM PROCEDURES:

GRADING:

****Note to students:** To this point much of your high school career has focused on memorizing material and regurgitating it for a test. While this is a useful skill, it fails to help you improve on your ability to create useful tools for society. Building baseline knowledge is important and there will be some memorizing in this class, but having an adaptive, analytical, creative, problem-solving skill set is equally important. You will be challenged by new problems that require you to push yourself into areas where you are creating new ways to solve these issues.

Students will be evaluated on their performance on:

- Quarterly Project: 10%
- Progression Grade: 10% (Includes Classwork)
- Lab Work: 30%
- Exams: 50%

Quarterly Project: Each quarter students will participate in a group project based on STEM (science, technology, engineering, and mathematics). In your group you will work together to engineer a device to solve a specific problem. At the end of the project you will individually submit a scientific paper outlining the steps your group took throughout this project.

Challenge problems: Challenge problems are ungraded sets of problems that students can use to prepare for tests. These challenge problems will not count as grades and can be worked on in groups or with teacher as a guide. Working these problems will be crucial to preparing for your tests as I rarely put simple, cookie-cutter book problems from the text on your test. Often these will serve as a litmus test to see if you are ready for an exam.

Exams: Exams in physics typically consist of a set of problems. The purpose of these problem sets is to gauge the understanding of the applications and concepts in physics. At times other types of exams will be used. These can include but are not limited to writing assignments, projects, and lab practical demonstrations.

Labs: The opportunity to perform many different laboratory experiments exists in this class. The length and depth of each lab varies from simple one-day preps to weeklong

projects. Each chapter will have a mandatory number of laboratory events. These labs may require a formal lab report. Formal lab reports include: statement of the **problem**, required **materials** list, **procedures** used, accurate **data**, focused answers to **analysis** questions, and a well-constructed **conclusion**. A note about safety, failure to follow safety procedures will result in removal from the lab setting. After multiple disciplinary actions a student may no longer be allowed to perform labs or if severe enough the student may be asked to transfer out of the class.

Weekly Progression Grades: Each week students will be graded on the amount and quality of work performed. This grade will reflect a combination of lab work, challenge problems, and exams attempted. For students to receive full credit for their weekly progression grade they will need to be following the class timeline for chapter completion. Late submission of a weekly plan will result in a zero for that week. The weekly plan will be made on Mondays and discussed with the teacher.

This weekly progression grade is a guide to keep students on track for their quarter progression grade.

The quarter-based progression grade is based on the expectation to complete one unit per quarter. Each unit consists of five chapters.

Quarter 1:

As of the Tuesday before the end of the first quarter, students will have needed to complete:

- Chapter 4 in order to receive an A (100%)
- Chapter 3 – B (90%)
- If a student fails to complete Chapter 3 before this date a change of class will be suggested.

Quarter 2:

As of Friday before finals week starts students will have needed to complete:

- Chapter 8 in order to receive an A (100%)
- Chapter 7 – B (90%)
- If a student fails to complete Chapter 8 before this date a change of class will be suggested.

Quarter 3:

As of Tuesday before the end of the third quarter students will have needed to complete:

- Chapter 12 in order to receive an A (100%)
- Chapter 11 – B (90%)
- If a student fails to complete Chapter 13 before this date a change of class will be suggested.

Quarter 4:

As of the Friday before the seniors last week, students will need to complete:

- As a class you will vote on the topic covered:
 - Waves and Sound
 - Light and Optics
 - Electricity and Magnetism

A complete class calendar is available online through Google Classroom.

Exams: Exams will be given at the end of units. They will be composed of questions from challenge problems and labs as well as ***additional questions that will be new to the student***. The purpose of these tests is to prove that the students ***fully*** understand the material. If a student does not pass the exam at a satisfactory 77% they will need to retake. The final grade will be an average of the attempts. It is in the student's best interest to prepare well for exams, as they constitute the bulk of your grade. Exams may only be taken with two days prior notice and consent from the teacher. You will need to complete all required lab work before attempting an exam. You will have the dates that you will need to attempt the test by.

GRADES: A modified grading scale will be used. In this class in order to progress to the next section or chapter a student needs to score a 77% on the exam for that chapter. If this standard is not met the student will be required to retake the chapter's test. There is one notable exception to this policy, wherein if a student is caught cheating they will receive a zero and will be asked to transfer out of the class. The cheating policy is applied both to the cheater and the person whom they were cheating with.

PAPERS BEING HANDED IN NEED:

- Name, date, class period, and title of assignment or page number.
- No rough edges.
- **ALL** questions answered in complete sentences.

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STUDENT AND PARENT CONSENT

- After you have carefully read all parts of this document and do not have any questions, print and sign your name below. Next you will need to take this home and review and explain it to your parent or guardian. Please have this form returned by class time on the third Friday in August.

- _____ Student – print

- _____ Student – sign

- Date _____

- _____ Parent – sign

- Date _____