Physics 1010

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/

Semester: Spring
Year: 2025
Course Prefix: Phys
Course and Section #: 1010 Sections 003, 004
Course Title: Elementary Physics
Credits: 3

Course Description

For students interested in a one-semester survey physics course. Covers the fundamentals of classical and modern physics. Includes mechanics, fluids, heat, waves and sound, electricity and magnetism, light, optical, relativity, atomic and nuclear physics. Includes lectures, classroom interaction, demonstration, and problem solving.

Course Attributes

This course has the following attributes:
☒ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☐ Discipline Core Requirements in Program
☐ Elective Core Requirements in Program
☐ Open Elective
Other: *Click here to enter text.*

Instructor Information

Instructor Name: Professor Maureen Hintz (she/her) (please use Professor Hintz when addressing me.)

Student Learning Outcomes

Upon successful completion, students should be able to:
1 - Explain how observation and experiment are necessary, but limited means by which we uncover the laws of nature. This explanation should include a discussion on the limits imposed by human sensory perception and how these constraints are exceeded by the use of scientific technologies such as telescopes, sensors of various types, recording devices, etc.
2 - Successfully using Newton's laws to explain mechanical phenomena, motion, etc.
3 - Show by example what is meant by a "conservation law" in physics, and discuss how these are consistent with Newton's laws of motion.
4 - Give specific examples of conservation of energy, conservation of momentum and conservation of angular momentum in ordinary, daily life.
5 - Discuss the inverse square law of gravity.
6 - Show by explanation an understanding of the atomic model of matter.

7 - Explain the definition of temperature and give examples of the three laws of thermodynamics.
8 - Discuss the wave nature of light, sound and other mechanical waves, and illustrate these with examples from daily life.
9 - Explain the laws of static electricity, the origin of magnetism and the law of electromagnetic induction as it relates to the student's own use of electricity.

Course Materials and Texts

Mastering Physics Course Bundle for Physics 1010
Device to Access Live Response System during class time (ie Laptop)

Course Requirements

Course Assignments, Assessments, and Grading Policy

All assignments are accessed and/or submitted through Canvas. More detailed information is given in the syllabus in Canvas.

Grades will add up as follows:
Check Your Neighbor (23 worth 10 points each, two are dropped) – live response of questions completed during class time (graded on participation only)
Homework (22 worth 15 points each, 2 are dropped)- Practice problems completed outside of class
5 Unit Exams (200 points each, none are dropped) – in class tests similar to homework and Check your neighbor
Professionalism Points (50 points) – points assigned based on behavior in class
Final Exam (200 points) – comprehensive exam that covers all topics

Here's the standard letter grade breakdown.

A	94-100%	**C**	74-76.9%
A-	90-93.9%	**C-**	70-73.9%
B+	87-89.9%	**D+**	67-69.9%
B	84-86.9%	**D**	64-66%
B-	80-83.9%	**D-**	60-63.9%
C+	77-79.9%	**E**	Below 60%

Late Work: Homework and Test Corrections will lose 5% per day until 30% max loss until the last class day of the semester. "Check Your Neighbor" are assignments we complete during class and are not accepted late except for absences due to university excused events and military service.

Recommended Reading Assignments and General Subject for Each Day

Date	Lecture #	Class Content	Ebook Sections
7-Jan	1	Class Introduction, Inertia	2.5, 2.7
9-Jan	2	Linear Motion	3.1-3.4

14-Jan	3	Force Diagrams and intro to Vectors	2.4, 4.1
16-Jan	4	Second Law Part 1	4.2-4.4
21-Jan	5	Second Law Part 2	4.5-4.6
23-Jan	---------	Test 1 In Class	recap
28-Jan	6	Vectors and Third Law	3.5, , 5.1-5.3
30-Jan	7	Gravity	9.1-9.5
4-Feb	8	Projectile Motion	10.1
6-Feb	---------	Test 2 In Class	
11-Feb	9	Momentum and Impulse	6.1-6.3
13-Feb	10	Conservation of Momentum	6.5-6.6
18-Feb	11	Energy	
20-Feb	12	Conservation of Energy	7.5-7.6
25-Feb	13	Conservation Laws in our World	recap
27-Feb	---------	Test 3 In Class	
4-Mar	14	The Atom Nature and Solids	12.2-12.4
6-Mar	15	Liquids and Buoyancy	13.1-13.6
18-Mar	16	Mechanical Waves	19.1-19.4, 20.1
20-Mar	17	Heat and Thermodynamics	15.3, 15.4, 16.1, 17.1-2,5
25-Mar	---------	Test 4 in Class	
27-Mar	18	Electrostatics	22.1-4
1-Apr	19	Current and Circuits	23.1-4,8
3-Apr	20	Magnetism	24.1-6, 25.1-3
8-Apr	21	Wave Nature of Light	26.1,27.1.27.4,29.2,29.4-5
10-Apr	22	Radioactivity	33.2, 33.5-8
15-Apr	----------	Test 5 in Class	
17-Apr	23	Relativity	35.2,4,6,9 36.2-3
22-Apr	24	Final Exam Review	

Required Course Syllabus Statements

Generative AI

In this digital age you have nearly infinite resources at your fingertips, including internet search engines and Artificial Intelligence (AI). I encourage you to make use of these resources, but I include a warning that the first thing that pops up after a search or AI prompt may not be accurate. Do not accept the first thing you see as the answer. You need to investigate and make sure it is what you are actually searching

for and corresponds to what you already know. You may also find other theories (models) to describe aspects of the universe that are different from what is presented in class. Homework correct answers will be based on the theories given in class and in the text accompanying our course.

Using Artificial Intelligence and Plagiarism:

AI programs are not a replacement for your human creativity, originality, and critical thinking. Writing, thinking, and researching are crafts that you must develop over time to develop your own individual voice. At the same time, you should learn how to use AI and in what instances AI can be helpful to you.

AI is **good** for:

- Brainstorming
- Finding information (you should confirm this yourself; errors are rampant. Go to the website it suggests.)
- Checking grammar, style, etc.
- Creating Images of your spaceship, etc.

AI **cannot** be used for:

- Writing your answers to the pre-class assignments. Please use your own voice.
- Doing your work for you including blindly answering homework
- Writing your Mission projects or
- Writing your conclusions and/or summaries (such as for your explorations, observing projects and media experience

---

Using Remote Testing Software

☒ This course does not use remote testing software.

☐ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU Accessibility Services at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity
At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*.

Equity and Title IX
Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation
UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.
To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a specially dedicated space for meditation, prayer, reflection, or other forms of religious expression.

Student Conduct
Academic integrity is a basic principle which requires that students take credit only for ideas and efforts that are their own. Cheating, plagiarism, fabrication, and other forms of academic dishonesty are often defined as the submission of materials in assignments, exams, or other academic work that is based on

sources that are prohibited by the faculty member or in ways that do not properly cite the source of a student's ideas and content. Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*Links to an external site.

Cheating is the act of using or attempting to use or providing others with unauthorized information, materials or study aids in academic work. Cheating includes, but is not limited to, passing examination answers to or taking examinations for someone else, or preparing or copying others' academic work.

Plagiarism is the act of presenting another person's ideas, research or writing as your own.

Fabrication is the use of invented information or the falsification of research or other findings.

If students are discovered to be cheating, the relevant grade will be a zero and you will be reported to the University's Judicial Affairs.

All course materials (e.g., outlines, handouts, syllabi, exams, quizzes, PowerPoint presentations, lectures, audio and video recordings, etc.) are proprietary. All planetarium videos are filmed using our Digistar system and are also proprietary. Students are prohibited from posting or selling any such course materials without the express written permission of the professor teaching this course.

University Resources are found in the syllabus in Canvas