

Syllabus

Physics 10 Introduction to Physics

Instructor: **Dietmar Krauss-Varban**

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← You will get a faster response using this address.
Please include in all correspondences which class you are taking.

4 units lecture (GR or P/NP)

Prerequisites: Math 201 Algebra and 202 Geometry – *recommended*

Class: **22483 PHYS 10**

Tu Th 7:00PM - 8:50PM room: L-FORUM

Acceptable for credit: CSU, UC

Course Description:

Introduction to Physics with an emphasis on conceptual understanding, covering the following topics: The history of science and the formation of the scientific method; Newton's Laws: motion, momentum, forces, energy, and gravity; Properties and states of matter; Temperature, heat, and thermodynamics; Sound, sound waves, and music; Electromagnetism: charges, voltage, current, and magnetism; Light: colors and color perception, reflection and refraction, emission and absorption; Atoms: structure, fission, and fusion; Relativity: time and space are relative (to an observer in motion), and gravity is caused by the curvature of space-time.

Student Learning Objectives:

1. Using written language, students explain and discuss the physics concepts listed in the course content, and apply them to everyday phenomena and interdisciplinary examples.
2. Students apply simple formulas to calculate measurable quantities that describe the physical environment related to the concepts of physics.

3. Students explain and discuss physical principles underlying classroom demonstrations.

Extended Objectives:

- Learn to appreciate that the exact meaning of terms is crucial in physics (and in science in general).
- Explain and discuss basic physical phenomena – including motion, energy conversions, and Newton’s gravity.
- Explain and discuss the concepts of temperature, heat, and basic thermodynamic processes.
- Appreciate the details of what light is, how it behaves, and what we can find out by studying it.
- Learn that we are all star dust: what are atoms, where did they come from, what are fission and fusion, and how can we use them?
- Explain how theories in physics are based on observations, fundamental ideas and concepts, and physics-based simulations; be able to express the scientific method in your own words.

Text Book: Conceptual Physics, P. Hewitt, 12th Edition, 2015

Internet Material: <http://web.peralta.edu/portal/> (peralta portal)
<https://peralta.instructure.com/courses/18312>
(specific Canvas site for *this* course)

Make sure to log on frequently for newly uploaded material and dates.

<https://account.mypearson.com/?#login>

The above PEARSON web material is *supplemental* and *not required*

Computer/ Internet/ Technology Requirements:

For this course it is recommended that you have access to a computer/ laptop with moderately high-speed internet access. There are suitable computers available at the Peralta Community College District libraries and in several labs on campus. Much, but not all of the material can be viewed from portable devices, including smart phones. The following is a list of software/ apps/ plug-ins that I recommend you have installed:

- at least two different internet browsers (e.g., Google Chrome and Mozilla Firefox; some users find that Firefox works better for them)
- Adobe flash and shockwave players
- Adobe Reader (for .pdf files) or similar
- Microsoft PowerPoint Viewer or similar

- the ability to watch YouTube videos

Other:

- **a Peralta student account including email, Passport and Canvas accounts**

If you do not regularly use your peralta e-mail account, please forward your peralta e-mail to an alternate account that you know you will periodically look at.

Information about student e-mail, passport, and the available helpdesk can be found [here](http://web.peralta.edu/portal/studentinfo/).

Help for Canvas is provided on [this page](http://web.peralta.edu/de/canvas/).

General Course Requirements:

Textbook: With few exceptions, the course will closely follow the *outline* and *order* of the above textbook, but not necessarily its *detailed content*. Selected, important sections of the book will be announced as ***required reading before*** they are covered in class.

Handouts: Handouts supplement the textbook, cover certain aspects in greater detail, summarize topics covered, or spell out certain vocabulary or concepts you should become familiar with. Handouts or notes are numbered in sequence, but may cover several lectures and periods of varying lengths. In addition, practice quizzes will be uploaded to prepare for the actual quizzes. Answers to practice quizzes will be presented on the class web page.

Homework: Homework assignments will usually not be graded or corrected, but note that they are closely aligned with the questions in the graded quizzes and in the final exam. A "standing" homework is to read the book chapters and to peruse the online material for the chapters covered at any given time. There may be one or more assignments that can earn extra credit!

Quizzes: There will be four (4) quizzes held during the period of the course. These quizzes will be announced in advance – at the minimum, during the preceding class meeting. Quizzes usually last 30 minutes, are closed book/ closed notes, and may consist of true/false, multiple choice, and brief "essay" questions. Only the best three (3) out of four (4) quizzes will count toward the grade. Therefore, there will be no make-up quizzes.

Final Exam: Will be held during finals week at a date and time to be determined; students will be allowed to take two hours. The grade

is heavily based on the outcome of the final. The final exam will cover topics dealt with during the lectures, video presentations, and in the provided internet material. The course is cumulative in nature, with final exam questions selected from the core material covered throughout the course. The quizzes as well as the "Need to Know" sections of the homework assignments and handouts and as posted on the class web site provide a good idea of the type and character of questions on the final, and what topic areas they will be selected from. The final exam is closed book/ closed notes, and may consist of true/false, multiple choice, and brief "essay" questions.

Web Site: Handouts, "Need to Know" notes, and homework assignments will be available on the class web site. Also, answers to certain homework assignments and quiz questions will be provided, there. Special announcements made in class (e.g., dates for quizzes) will usually be posted, as well.

Grading: The grade is 50% based on the results of the (best three out of four) quizzes, and 50% based on the outcome of the final exam. Note that this means *you cannot pass without taking the final*.
Grade scale: A=90%-100%; B= \geq 80%,<90%; C= \geq 70%,<80%; D= \geq 60%,<70%; F= \geq 0%,<60%

Miscellaneous:

Office Hours: Office hours will be held 6:00pm – 6:50pm, the hour immediately prior to Tuesday classes, in the Physics lab, classroom 272. If that room is not available, office hours will be in a room and at a time to be determined.

Attendance: There is no substitute for coming to class. Much of the material presented in lectures and in video presentations is essential and forms the basis for homework assignments, group activities, quizzes, and the final exam. Videos and internet-based presentations are a substantial part of the class. Prompt, regular class attendance is expected of you. Missed quizzes will affect your grade negatively. However, *if in agreement with college policies*, attendance will *not always* be recorded after the first several class meetings except to satisfy college rules regarding add-ons, census taking, and attendance verification.

Behavior: Smoking, eating, or drinking are not permitted in the classroom. Cell phones, smart phones, tablets, and computers need to be switched off or put in silent/ sleep mode except when explicitly allowed for group activities *and then solely for work required in the classroom*. No visitors are allowed. Please help create a constructive, fun, and relaxed learning environment for everyone.

Purpose:

The purpose of this class is to provide you with a survey and conceptual understanding of physics and to introduce you to the **science** of physics, its history and technologies – with relatively modest reliance on mathematics. ***There will be a strong emphasis on concepts and understanding rather than on learning of facts*** - which you can find more than enough of in the textbook or elsewhere. Also, important goals are to get a better understanding of science in general, and learning to appreciate the scientific process and the scientific method.

As we go, you will perhaps learn some new mathematical concepts, such as powers of ten, orders of magnitude, the scientific notation, relationships between physical quantities, vectors, logarithmic graphs, and how to read “complicated” graphs, in general. Without these, many concepts in physics simply cannot be conveyed. Note, however, that for the most part, you will not be tested on these out of context.

Disability statement:

Students with disabilities who may need academic accommodations should discuss options with their professor during the first two weeks of class [Americans with Disabilities Act of 1990].

Spring 2019 Important Dates & Deadlines/Enrollment Dates:

Date	Day	Description
January 21	M	Martin Luther King Jr's Birthday – Holiday Observance
January 22	T	Day and Evening Instruction Begins
January 26	S	Saturday Instruction Begins
January 27	Su	Last Day to Add without a Permission Number or Add Card
February 1	F	Last Day to Add Regular Session Classes in person with a Permission Number on Add Card
February 3	Su	Last Day to Drop Regular Session Classes and Receive A refund
<p>Note: Short-term and open-entry classes must be dropped within 10% of the first class meeting to receive a refund. >>>Refund Drop Deadline Schedule.</p>		
February 3	Su	Last Day to Drop Regular Session Classes Without a "W" Appearing on Transcripts.
February 3	Su	Last Day to Add Regular Session Classes online with an Instructor issued Permission Number
February 3	Su	Census Roster Due – Instructors Verify Enrollment in Classes
February 4	M	Census Date
February 8	F	Last Day to File for PASS/NO PASS Grading Option for Regular Session Classes
February 15-18	F-M	President's Birthday– Holiday Observance
March 1	F	Last Day to File Petitions for ADT Degree/Certificate
March 15	F	Last Day to File Petitions for AA/ AS Degree/Certificate
March 21	Th	Professional Day – No Instruction
April 1	M	Cesar Chavez – Holiday Observance

April 2-7	T- Su	Spring Recess
April 26	F	Last Day to Withdraw from Regular Session Classes and Receive a "W". All outstanding fees are due even if classes are dropped on this day.
April 26	F	Attendance Verification Day – Instructors Verify Enrollment
May 17	F	Malcolm X's Birthday– Holiday Observance
May 18	S	Saturday Instruction Ends
May 20-24	M-F	Final Examinations
May 24	F	Spring Semester Ends
May 27	M	Memorial Day– Holiday Observance
May 31	F	Grade Roster/Rollbooks are Due

Dates are subject to change; see the online Academic Calendar at www.peralta.edu for the latest information.

Physics 10 Conceptual Physics – *tentative schedule*

Week 1

Chapter 1: About Science

Chapter 2: Inertia

Chapter 3: Linear Motion

Week 2

Chapter 4: Forces and Acceleration

Chapter 5: Action and Reaction

Chapter 6: Momentum

Week 3

Chapter 7: Energy

Chapter 8: Rotational Motion

Week 4

Chapter 9: Gravity

Chapter 10: Projectile and Satellite Motion

Week 5

Quiz 1: Chapters 1 - 10

Chapter 11: Atoms and Matter

Chapter 12: Solids

Week 6

Chapter 13: Liquids

Chapter 14: Gases and Plasmas

Chapter 15: Temperature and Expansion

Week 7

Chapter 16: Heat Transfer

Chapter 17: Phase Changes

Chapter 18: Thermodynamics

Week 8

Quiz 2: Chapters 11 - 18

Chapter 19: Vibrations and Waves

Chapter 20: Sound

Week 9

Chapter 21: Musical Sounds

Chapter 22: Electric Forces

Chapter 23: Electric Current

Week 10

Chapter 24: Magnetic Forces

Chapter 25: Generating Electricity

Week 11

Chapter 26: Light

Chapter 27: Color

Week 12

Quiz 3: Chapters 19 - 27

Chapter 28: Reflection and Refraction

Chapter 29: Wave Properties of Light

Week 13

Chapter 30: Creating Light

Chapter 31: Photons

Chapter 32: Atoms and Photons

Week 14

Chapter 33: Nuclei and Radioactivity

Review

Week 15

Chapter 34: Nuclear Fission and Fusion

Chapter 35: Special Theory of Relativity

Chapter 36: General Theory of Relativity

Week 16

Quiz 4: Chapters 28 - 36

Review

Week 17

Final Exam

Academic Integrity and Support Services

• **The College follows the legal opinion set forth by the California Community Colleges' legal department** which limits the consequences of an act of academic dishonesty to a failing grade on the activity, assignment, or test involved.

• **Definition of what constitutes academic dishonesty**

Academic dishonesty regarding tests in this class is defined as using resources not made available by me to everyone in the class during the testing time. Academic dishonesty includes plagiarism.

• **Support Services for students I**

Accessibility for students with disabilities: "If you have a disability which may require classroom or test accommodations, please contact Programs and Services for Students with Disabilities (DSPS) in Room D117 or call DSPS at 510-748-2328. You will need to provide written documentation of your disability. If you think you have a disability but currently have no documentation, DSPS may be able to help you. If you already have an accommodation notification from DSPS, please submit it to the instructor privately. All information will be kept confidential." "This document is available in alternate format upon request. Please contact DSPS at 510-748-2328."

Support Services for students II

Free Learning Resources Location: 2nd (second) floor of the Library:

- Appointments for free tutoring in most subjects
- Drop-in Academic Help and Workshops in the Math Lab, Writing Center, and ESL Lab for classes across the curriculum
- Open entry, open exit lab classes in English, ESL, & Math that go at your own pace
- Open Lab
- For college use only, the open lab provides students access to internet and application software.
- Printing access is provided at a cost of 10 cents per page. All students must provide a current Peralta student ID in order to utilize services. For Latest Hours call 748-2307.
- Writing Center, ESL Lab & Math Lab
- Location: 2nd Floor of the Library – L234, L235, L226 (in the back behind the elevator)
- Writing Center, ESL & Math Lab Hours: 10:00 am to 3:00 pm, Monday – Friday