

# COLLEGE OF THE REDWOODS Conceptual Physics Syllabus

## Course Information

### Basic Information

Semester & Year: Fall 2022

Course ID & Section #: PHYS-10-V3585 (053585)

Instructor's name: Jacob McElderry

Course Modality: Online

Course units: 3

Textbook (Optional): Hobson Physics Concepts & Connections 5<sup>th</sup> edition, Pearson

### Instructor Contact Information

Office location: Online Office Hours Only

Office hours: Tuesday at 8 pm in Zoom

Email address: Jacob-McElderry@redwoods.edu

### Catalog Description

A conceptual course in physics with an emphasis on the ideas of physics, how they can be used to understand phenomena in the real world, and how they were discovered. Topics may include motion, energy, electricity and magnetism, heat and temperature, waves, Einstein's relativity, and quantum physics.

### Course Student Learning Outcomes

1. Demonstrate an understanding of modern and antiquated theories of astronomy and motion, the scientific method, and how it led to the Newtonian description of the universe by contrasting modern theories to antiquated ideas and describing motion in terms of acceleration and force.
2. Describe systems using the physical quantities of energy, work, momentum, entropy, charge, and fields, as well as the atomic hypothesis, and identify types of energy, heat engines, and fields in nature and in technology.
3. Describe corrections to classical physics coming from relativity and quantum theory, as well as their implications to physical systems that fall outside the description of classical physics.
4. Analyze issues in physics and science in general using written arguments based on scientific evidence, theory, and ideas.

### Accessibility

College of the Redwoods is committed to making reasonable accommodations for qualified students with disabilities. If you have a disability or believe you might benefit from disability-related services and accommodations, please contact your instructor or [Disability Services and Programs for Students](#) (DSPS). Students may make requests for alternative media by contacting DSPS based on their campus location:

- Eureka: 707-476-4280, student services building, 1<sup>st</sup> floor
- Del Norte: 707-465-2324, main building near library
- Klamath-Trinity: 530-625-4821 Ext 103

If you are taking online classes DSPS will email approved accommodations for distance education classes to your instructor. In the case of face-to-face instruction, please present your written accommodation request to your instructor at least one week before the needed accommodation so that necessary arrangements can be made. Last minute arrangements or post-test adjustments usually cannot be accommodated.

## Learning Management System

### Canvas Information

The Canvas system is the primary means of delivery for this course. Canvas is used for all aspects of this course. You should plan to log into Canvas multiple times every week.

Log into Canvas at <https://redwoods.instructure.com>

Password is your 8 digit birth date

For tech help, email [its@redwoods.edu](mailto:its@redwoods.edu) or call 707-476-4160

Canvas Help for students: <https://webapps.redwoods.edu/tutorial/>

Canvas online orientation workshop: [Canvas Student Orientation Course \(instructure.com\)](#)

### Setting Your Preferred Name in Canvas

Students have the ability to have an alternate first name and pronouns to appear in Canvas. Contact [Admissions & Records](#) to request a change to your preferred first name and pronoun. Your Preferred Name will only be listed in Canvas. This does not change your legal name in our records. See the [Student Information Update form](#).

## College & Course Policies

### Academic Dishonesty

In the academic community, the high value placed on truth implies a corresponding intolerance of scholastic dishonesty. In cases involving academic dishonesty, determination of the grade and of the student's status in the course is left primarily to the discretion of the faculty member. In such cases, where the instructor determines that a student has demonstrated academic dishonesty, the student may receive a failing grade for the assignment and/or exam and may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct ([AP 5500](#)) is available on the College of the Redwoods website. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the [College Catalog](#) and on the [College of the Redwoods website](#).

### Student Behavior

Student behavior or speech that disrupts the instructional setting will not be tolerated. Disruptive conduct may include, but is not limited to: unwarranted interruptions; failure to adhere to instructor's directions; vulgar or obscene language; slurs or other forms of intimidation; and physically or verbally abusive behavior. In such cases where the instructor determines that a student has disrupted the educational process, a disruptive student may be temporarily removed from class. In addition, the student may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct ([AP 5500](#)) is available on the College of the Redwoods website. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the [College Catalog](#) and on the [College of the Redwoods website](#).

In a fully online course, it is important to remember that expectations regarding behavior that would apply in a face-to-face setting generally carry over to the online environment. Disruptive conduct will not be tolerated in any part of the online course. The discussion assignments should be thought of as representing a classroom environment and the standards of behavior described above should be adhered to when posting. In the online modality the instructor's directions come out in the form of the design and structure of the course. The instructor has full authority on the design and structure of the course in the same sense that a face-to-face instructor has on what directions to give in class.

## **Grading**

The course grade will be determined based on the grading categories of Quizzes (15%), Discussions (40%), Exams (20%), Written Assignment (10%), and Final (15%). In determining the final letter grade I reserve the right to use '+' and '-' modifiers to letter grades, but I generally use them sparingly. Letter grades will be assigned based on the following percentages earned:

A	90% - 100%
B	80% - 90%
C	70% - 80%
D	60% - 70%
F	0% - 60%

The cut-offs for grades may be lowered at my discretion but will not go up. Your grade information will be available through Canvas throughout the semester.

## **Glitches, Technology Changes, & Syllabus Modifications**

As an instructor I am committed to following my syllabus without changes. However, in the modern world, particularly with a fully online course, glitches can happen, technology can change, or other events beyond our control can happen. If there is a glitch, technology change, other event, or an honest mistake on my part that makes it impossible to follow a syllabus policy as written, I will have to make a change. If a change is made it will be as minimal a change as possible and adhere as much as possible to the intent of the original policy that was changed.

## **Course Details**

### **Course Summary**

This course is an introduction to the concepts and ideas of physics. The emphasis will be on ideas and not very much on quantitative problem solving. Some ideas will involve some quantitative aspects, but in such cases conceptual methods will be demonstrated. The course content will therefore mainly be focused on physics concepts and ideas. A variety of questions will come up throughout this course to consider and practice using the concepts and ideas with the aim to develop physics related thinking skills.

The discussions in this course are focused on questions based on and extending upon the online lectures. The discussions are the primary vehicle for learning in this course. You will be asked to answer on your own some of the Conceptual Questions found at the end of each chapter in the textbook. Although you may ask me for a little help if you're stuck, it is largely your individual responsibility to

answer all the assigned questions in preparation for exams. There will be repeatable quizzes assigned in each module to help you prepare for exams.

The topics presented in the course modules will parallel the text, but not exactly duplicate it. If a question came up in the assigned Conceptual Questions from the text, but not in the online parts of the course, like a discussion or quiz, you are still expected to be able to answer similar questions on the exam covering that material. Similarly, you are expected to be able to answer questions resembling those coming up in the online material, even if there is no similar question in the assigned Conceptual Questions from the text. The goal in this course is to understand concepts and be able to answer any question that involves the concepts of this course.

## Discussions

You will be expected to participate in online discussions as part of your grade for this course. Further details and instructions will be made available through Canvas with each discussion assignment.

In participating in online discussions in this course, please be respectful to your classmates. Be kind, considerate, and forgiving in your postings and responses to the discussion forum. Adhere to the same standards of behavior online that you follow in real life. Remember that real people read your posts.

## Quizzes

There will be a quiz for each chapter in the course text in the corresponding module. Each quiz will be generated randomly from questions drawn from a bank and may be repeated as often as you like before the deadline. With each quiz, the highest score will be kept, and may be repeated for additional practice even if you already have the maximum score. Repeating these quizzes for practice has been shown in past iterations of this course to have a strong impact on exam scores.

## Conceptual Exercises

Each week you will be expected to do Conceptual Exercises from the textbook OR questions presented as alternatives in each module. The alternative questions generally cover the same concepts as those from the text. The text Conceptual Questions are found at the end of each chapter. Exam questions are predominantly based on the concepts that come up in answering these questions as well as the repeatable quizzes. The table below lists all the questions assigned from the text and which exam(s) cover the corresponding topics. You do not need to submit these; do them any way that you like.

Exam	Conceptual Exercises
Exam I, Midterm & Final	Ch. 1: 1, 5, 6, 7, 11, 13, 20, 21, 22, 24, 27, 30 OR alternate questions
Exam I, Midterm & Final	Ch. 3: 1, 3, 7, 9, 10, 11, 15, 16, 19, 20, 21, 23, 27, 30, 32, 36, 37 OR alternate questions
Exam I, Midterm & Final	Ch. 4: 1, 2, 4, 5, 6, 9, 10, 13, 14, 17, 23, 24, 28, 29, 32, 33, 34, 35, 36, 38, 40, 49, 52, 55, 57, 60 OR alternate questions
Midterm & Final	Ch. 5: 1, 4, 5, 7, 8, 15, 16, 19, 21, 22, 24, 26, 27, 28, 31, 32, 37, 39 OR alternate questions
Midterm & Final	Ch. 6: 1, 3, 4, 7, 8, 9, 12, 13, 19, 21, 23, 25, 34, 39, 41, 45 OR alternate questions
Midterm & Final	Ch. 7: 1, 3, 5, 7, 9, 10, 11, 13, 16, 17, 18, 19, 20, 21, 22, 23 OR alternate questions

Exam	Conceptual Exercises
Exam III & Final	Ch. 8: 1, 2, 3, 6, 9, 11, 14, 15, 16, 19, 25, 27, 29, 30, 31, 35, 37, 39 OR alternate questions
Exam III & Final	Ch. 9: 1, 3, 4, 6, 9, 10, 11, 12, 14, 15, 18, 20, 24, 27, 29 OR alternate questions
Exam III & Final	Ch. 2: 1, 3, 5, 6, 7, 16, 17, 18, 20, 25, 27, 29, 31, 33, 35, 41, 42 OR alternate questions
Final	Ch. 10: 1, 3, 5, 9, 13, 14, 15, 18, 21, 25, 27, 39, 41, 49 OR alternate questions
Final	Ch. 12: 1, 4, 6, 7, 11, 12, 13, 14, 18, 19, 26, 29, 32 OR alternate questions
Final	Ch. 13: 1, 3, 4, 5, 11, 19, 21, 23, 29, 30, 31, 33 OR alternate questions

## Written Assignment

Towards the end of the course, you will be given an additional assignment that involves writing in your own words the answers to a set of questions. The assignment is designed to have you think more deeply about some of the key ideas that have been presented throughout the course and help you review those key ideas for the final. The questions are similar to questions coming up in other part of this course, but with a little more depth and a little more attention to how you write your answers. However, it is not intended to be a tremendously long project.

## Exams & Final

Each exam will cover the material from all the chapters and corresponding modules as shown in the homework table above. There will be a cumulative final exam during finals week.

I create the exam questions mainly by looking at the concepts and ideas that come up in Conceptual Exercises assigned in the text (or the alternate questions) and the questions in the online quizzes and then writing new questions that differ in their details. The questions on exams will not differ substantially in difficulty from the Conceptual Exercises in the text or the online quizzes. Exam questions will come in different varieties such as multiple choice, dropdown selection, and open response.

## Time Expectations

Your commitment will require at least as much time as you dedicate to a traditional class. A typical three credit hour course requires about nine hours per week of your time. You will need to carefully read online lectures and textbook chapters, participate in online activities and watch online videos, participate in online discussions, complete weekly quizzes, and take exams. Conscientiousness, contemplation, attention to details, and skills in reading and writing are critical for success.

## Late Work

Ideally course work should not be completed late. If something arises that will make it so that you cannot complete something on time, please let me know. However, repeated late work due to circumstances that should be within your control is not acceptable. I also may ask for some documentation if it is relevant to the circumstance of why an assignment is late.

## Course Modules & Schedule

The course modules are shown in a table on the home page of the course Canvas shell along with dates corresponding to when you should be actively working through that module. Each entry is linked to a

contents page for that module. Each module will have an introduction page with a brief introduction to the material and a list of objectives, where appropriate.

Lectures in each module have been broken down into small sections with each section comprising of a video and text version of that lecture. The lectures have been more broadly organized into two parts per chapter. The online lecture pages are labeled by chapter, part, and topic number. For example, Lecture 1.2.3 is the lecture corresponding to Chapter 1, part 2, topic number 3.

### **Integrity Expectations**

The main integrity expectation for all assignments and assessments in this course is that the work is your own work done by you, not someone else. Assignments and assessments are open to resources in this course, the textbook, as well as other online resources, unless that resource involves having another person, remote or in person, doing the assignment or assessment for you. Having another person do coursework for you is a clear violation of The College of the Redwoods Student Code of Conduct ([AP 5500](#)).

### **Drop Policy**

Make sure to post in the “Discussion: Introductions” discussion forum before 11:59 pm on Wednesday of the first week to confirm that you showed up in this online course. You may be dropped from the course if you are not attending and not making progress in the course. If it is your intention to drop, you should make sure to do that as it may not happen automatically.