**SYLLABUS**

**PCS 122 – 010 HY**

**PCS 123 – 010 HY Physics II Spring 2024**

Time: T/R 9:30-10:45 Room: Dobbs 122

Lab: T 12:30-3:15 Room: Dobbs 101

**Instructor: Fred Yarger, Ph.D., Adjunct Professor of Physics**

Email: Fred.Yarger@reinhardt.edu

Office Hours: By arrangement via email (contact anytime via email)

In Emergency: (404) 493-8795 (C)

**Text: OpenStax *College Physics* by Paul Peter Urone & Roger Hinrichs**

**Credit Hour Statement:** After 16 weeks, students will spend 270 minutes per week in lectures, class discussions, and examinations (36 hours for the semester) and 960 minutes of laboratory work. Instructional time includes up to a 3-hour final exam. Homework; preparation for exams and quizzes; and laboratory work and reports is estimated at around 800 minutes per week (approximately 100 hours per semester).

**General Classroom Policies:**

**Cell Phone Policy:** Please turn off/silence all cellular phones. Do not use them in class without prior permission by your instructor.

**Attendance:** Students are expected to attend each session. If you miss a class, you are responsible for finding out what was covered and getting the work done.

**Late Policy:** Work submitted late will be penalized (50%) unless there is a documented extenuating circumstance provided to the instructor.

**Academic Dishonesty:** The Reinhardt University academic dishonesty policy will be followed. You will earn a zero for the assignment or exam in which you are found cheating.

**Quality of Student Work**: Use of proper grammar, correct spelling, and writing principles are expected in all work. Full credit will not be granted for work that contains grammar or spelling errors.   
**Expectations**: You are expected to read and study the textbook. Reading a section before it is covered in class is a great habit! For each instructional hour students are expected to spend a minimum of two hours in independent work activities. Therefore, for this class each student is expected to “work at home” for at least six hours. Students are expected to pay attention and participate in class. Use of personal laptops is encouraged, but access to the college computer labs is granted.

**Communications:** All written communications will be through Reinhardt email.

**Homework:** Homework will be assigned and collected each week for the previous week. Late homework will be assessed a 20% penalty.

**Lab Reports:** Lab reports will be due on Tuesday for the lab held the previous Tuesday. Late lab reports will be assessed a 20% penalty.

1. **COURSE COVERAGE: Chapters 14-31 of OpenStax *College Physics***

**A free copy of this text can be downloaded at** [**https://openstax.org/details/books/college-physics**](https://openstax.org/details/books/college-physics)**.**

1. **CATALOG DESCRIPTION: This course is a continuation of College Physics I. It covers electricity and magnetism, optics and modern physics. The introduction to electricity and magnetism includes the Coulomb force, electric fields, electric potential, direct current circuits, the magnetic field and the magnetic force, ammeters and voltmeters, DC electric motors, electromagnetic induction, AC generators and transformers. The optics material begins with electromagnetic waves and proceeds through reflection, refraction, optical instruments, interference and diffraction. As time permits, special relativity and quantum physics are discussed. Laboratory exercises reinforce the concepts studied in class. Prerequisite: MAT 102 or MAT 103.**
2. **CONCEPTUAL FRAMEWORK:**

**The Mathematics Department at Reinhardt University believes that all students should have an exposure to the ideas of science and the scientific method**. This includes exposure to laboratory procedures, familiarity with some of the vocabulary of science and ability to read scientific articles in the newspaper or in popular magazines.

**The Mathematics Department at Reinhardt University believes that all students should be familiar with the systematic development of science through history.** This includes an understanding of the effects that science has had on history and that history has had on scientists.

**The Mathematics Department at Reinhardt University wishes to convey to students that science is a continuing endeavor that will not ever be finished.** This includes an introduction to the interaction of theory and observation.

1. **COURSE RELATIONSHIP TO CONCEPTUAL FRAMEWORK:** The course will be taught using lectures, in-class problem solving activities, and homework. Homework will be assigned for each class and normally collected the following Monday.
2. **MATHEMATICS PROGRAM OBJECTIVES:**

**MPO1** Analyze and solve problems by using reasoning, logic and evidence, and by bringing knowledge from a wide range of mathematical areas.

**MPO2** Use effective written and oral expression of mathematical concepts in the creation of a mathematical argument by recognizing a wide range of mathematical terms and vocabulary.

**MPO3** Apply axiomatic systems.

**MPO4** Apply mathematical research methodologies by using libraries, informational technologies, computer programming and numerical methods in order to create solutions to problems.

**MPO5** Apply ethical, legal, and policy issues to Information Technology.

**MPO6** Create IT solutions to solve organizational problems.

1. **MATHEMATICS PROGRAM STUDENT LEARNING OUTCOMES:**

**SLO1** Solve a word problem by applying the appropriate mathematical setup, obtaining the mathematical solution, and interpreting this solution in the context.

**SLO2** Solve a theoretical problem by identifying the appropriate mathematical context, interpreting the question and the nature of the solution, and checking that the solution is correct.

**SLO3** Complete a proof or produce a mathematical object that satisfies specific properties.

**SLO4** Solve a problem by consulting various resources, applying appropriate technological tools, and using adequate approximations.

**SLO5** Analyze how information technology affects ethical and legal issues.

**SLO6** Synthesize appropriate solutions to organizations' problems.

1. **ALIGNMENT TO REINHARDT UNIVERSITY SLO’s:**

|  |  |  |
| --- | --- | --- |
| **Math PO** | **Math SLO** | **RU SLO** |
| 1 | 1 | 1, 2, 4 |
| 2 | 2 | 1-4 |
| 3 | 3 | 1-4 |
| 4 | 4 | 1-4 |
| 5 | 5 | 1-4, 7 |
| 6 | 6 | 1-4 |

1. **COURSE OBJECTIVES:**
2. Apply mathematical modeling to solve word problems (**SLO1, SLO2**).
3. Understand the principles of mechanics (**SLO1, SLO2, SLO4**).
4. Understand the principles of wave motion (**SLO1, SLO2, SLO4**).
5. Understand the principles of electricity and magnetism (**SLO1, SLO2, SLO4**).
6. Understand properties of matter (**SLO1, SLO2, SLO4**).
7. Understand the principles of sound (**SLO1, SLO2, SLO4**).
8. Understand the principles of light (**SLO1, SLO2, SLO4**).
9. Understand the principles of heat and thermodynamics (**SLO1, SLO2, SLO4**).
10. **GRADING POLICY:**

**GRADING SCALE: A 90 – 100**

**B 80 – 89**

**C 70 – 79**

**D 60 – 69**

**E < 60**

**GRADE DETERMINATION:**

**The grade will be determined as follows:**

**Quizzes (Weighted Average) 50%**

**Final Exam 15%  
Lab Reports (Weighted Average) 20%**

**Discussions (Weighted Average) 5%**

**Homework (Weighted Average) 10%**

**Total 100%**

1. **CSS:** The Center for Student Success (CSS) is located at the lower floor of Lawson, room 035. **CSS offers free peer and faculty tutoring for all subjects**. For appointments, go to Reinhardt webpage and click Center for Student Success.
2. **ADA and ASO:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. Reinhardt University is committed to providing reasonable accommodations for all persons with disabilities. Therefore, if you are seeking classroom accommodations under the Americans with Disabilities Act, you are required to register with the Academic Support Office (ASO). The ASO is located in the basement of Lawson Building. Phone is (770) 720-5567. To receive academic accommodations for this class, please obtain the proper ASO letters/forms. Students with disabilities needing accommodations must contact the **A**cademic **S**upport **O**ffice prior to contacting me. The ASO will then inform me about your (free of charge) arrangements.
3. **COVID-19 Policy**

Reinhardt University’s COVID-19 Policy applies to all students, faculty, staff, administration and guests.  The policy is subject to changes based on conditions and guidance from CDC, state and local health experts.  Current policies and procedures can be found at: <https://www.reinhardt.edu/back-to-campus>. If you have any questions, please refer to the website or contact Reinhardt University at the numbers below.

Campus Nurse within the Student Health Center

[studenthealthcenter@reinhardt.edu](mailto:studenthealthcenter@reinhardt.edu), 770-720-5542 or

[www.reinhardt.edu/nurse](http://www.reinhardt.edu/nurse).

Public Safety

**Non-Emergency Phone:** 770.720.5789  
**Emergency Phone:** 770.720.5911  
[publicsafety@reinhardt.edu](mailto:public_safety@reinhardt.edu)

Dean of Students

[deanofstudents@reinhardt.edu](mailto:deanofstudents@reinhardt.edu), 770-720-5540

Office of the Vice President for Academic Affairs

[VPAA@reinhardt.edu](mailto:VPAA@reinhardt.edu), 770-720-9102.

*The instructor reserves the right to modify the course requirements and other related policies as circumstances may dictate, and with sufficient notification to all students. Even the professor can have an unanticipated emergency, and the university, or the community at large, may experience an emergency that requires changing the class schedule or requirements. I don't expect to invoke this clause, but if I do, you will be notified as soon as possible. Any change will also be posted to Canvas.*

1. **COURSE OUTLINE:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Date** | **Topics** | **Special events** |
| **1** | Jan 8-12 | Syllabus; Chapter 14 | **Homework as assigned** |
|  | Jan 9 |  | Classroom/Lab |
|  | Jan 11 |  | Classroom Discussion |
| **2** | Jan 15-19 | Chapter 15 | **Homework as assigned** |
|  | Jan 16 |  | Classroom/Lab |
|  | Jan 18 |  | Classroom Discussion; Quiz Chap. 14; Week 1 Lab Report Due |
| **3** | Jan 22-26 | Chapters 16-17 | **Homework as assigned** |
|  | Jan 23 |  | Classroom/Lab |
|  | Jan 25 |  | Classroom Discussion; Quiz Chap. 15; Week 2 Lab Report Due |
| **4** | Jan 29-Feb 2 | Chapters 18 | **Homework as assigned** |
|  | Jan 30 |  | Classroom/Lab |
|  | Feb 1 |  | Classroom Discussion; Quiz Chaps. 16-17; Week 3 Lab Report Due |
| **5** | Feb 5-9 | Chapter 19 | **Homework as assigned** |
|  | Feb 6 |  | Classroom/Lab |
|  | Feb 8 |  | Classroom Discussion; Quiz Chap. 18; Week 4 Lab Report Due |
| **6** | Feb 12-16 | Chapters 20-21 | **Homework as assigned** |
|  | Feb 13 |  | Classroom/Lab |
|  | Feb 15 |  | Classroom Discussion; Quiz Chap. 19; Week 5 Lab Report Due |
| **7** | Feb 19–23 | Chapter 22 | **Homework as assigned** |
|  | Feb 20 |  | Classroom/Lab |
|  | Feb 22 |  | Classroom Discussion; Quiz Chaps. 20-21; Week 6 Lab Report Due |
| **8** | Feb 26-Mar 1 | Chapter 23 | **Homework as assigned** |
|  | Feb 27 |  | Classroom/Lab |
|  | Feb 29 |  | Classroom Discussion; Quiz Chap. 22; Week 7 Lab Report Due |
| **9** | Mar 4-8 | **Midterm Break** | **No Homework** |
|  | Mar 4-8 |  | **No Class; Midterm Grades Due Mar 7** |
| **10** | Mar 11-15 | Chapter 24 | **Homework as assigned** |
|  | Mar 12 |  | Classroom/Lab |
|  | Mar 14 |  | Classroom Discussion; Quiz Chap. 23; Week 8 Lab Report Due |
| **11** | Mar 18-22 | Chapters 25 & 27 | **Homework as assigned** |
|  | Mar 19 |  | Classroom/Lab |
|  | Mar 21 |  | Classroom Discussion; Quiz Chap. 24; Week 10 Lab Report Due |
| **12** | Mar 25-29 | Chapter 28 | **Homework as assigned** |
|  | Mar 26 |  | Classroom/Lab |
|  | Mar 28 |  | Classroom Discussion; Quiz Chaps. 25 & 27; Week 11 Lab Report Due |
| **13** | Apr 8-12 | Chapter 29 | **Homework as assigned** |
|  | Apr 9 |  | Classroom/Lab |
|  | Apr 11 |  | Classroom Discussion; Quiz Chap. 28; Week 12 Lab Report Due |
| **14** | Apr 15-19 | Chapters 30-31 | **Homework as assigned** |
|  | Apr 16 |  | Classroom/Lab |
|  | Apr 18 |  | Classroom Discussion; Quiz Chap. 29; Week 13 Lab Report Due |
| **15** | Apr 22-26 | **Review** |  |
|  | Apr 23 | **Final Exam Review** | **Last Day of Class;** Week 14 Lab Report Due |
|  | Apr 25 |  | **FINAL EXAMS BEGIN; GRADES DUE MAY 6** |