

190 Hannah

Tuesday, Thursday 1:00-2:47

Professor: David Garfinkle

Office: 186J MSC. Phone: 370-3411  
Office hours: TuTh 10:00-11:00

**Course (Catalog) Description:** Classical mechanics and thermodynamics. For science, mathematics and engineering students.

**General Education Learning Outcomes:** *PHY 1510 and PHY 1100 together satisfy the university general education requirement in the natural science and technology (NST) knowledge exploration area. PHY 1610 does not satisfy the university general education requirement in the natural science and technology (NST) knowledge exploration area.*

The learning outcomes for NST courses state that the student will demonstrate:

Knowledge of major concepts from natural science or technology, including developing and testing of hypotheses, drawing conclusions; and reporting of findings and some laboratory experience or an effective substitute.

How to evaluate sources of information in science and technology.

**Course Goals and Objectives:** Physics involves several concepts and principles, as well as several calculation techniques. However, the concepts and principles cannot be learned independently of the calculations. Instead physics concepts and principles are learned and mastered by solving physics problems. Thus, the emphasis in this course will be on doing calculations, solving problems, and finding numerical answers. In particular, by the end of the course the student will be expected to be able to

- Add vectors both graphically and using components.
- Convert between components of a vector and the vector's magnitude and direction.
- Express the results of a calculation in the correct units.
- Find the force, motion, and trajectory for an object undergoing constant acceleration.
- Find the force and acceleration for an object in uniform circular motion.
- Solve problems involving the conversion of potential energy to kinetic energy and vice versa.
- Find the outcome of collisions using the conservation of momentum.
- Find the torque and rotational motion for an object undergoing constant rotational acceleration.

- Find the motion of objects in orbit such as planets and satellites.
- Find the fundamental frequency of simple string and wind instruments.
- Solve for the motion of an object subject to a frictional force.
- Find the motion of a pendulum and of a mass on a spring.
- Use the Doppler effect to calculate speed from change in frequency.
- Find the center of mass of an object.
- Apply the ideal gas law to calculate changes in volume, pressure and temperature of a gas.

**Textbook:** Serway/Jewett, Principles of Physics - 5th Edition, Hybrid – Cengage  
Bundled with EWA and EWA Start Guide  
ISBN: 9781305586871 (required)

For students who choose just WebAssign and e-book  
Access Card to Enhanced WebAssign and e-book (Multi-term-MBT)  
ISBN: 9781285858418

Student Solutions Manual and Study Guide, Volume 1  
by Gordon, McGrew, and Serway  
ISBN: 9781133110767 (recommended)

**Topics:** Vectors, motion in one and two dimensions, Newton's laws of motion and their applications, kinetic and potential energy, momentum, rotational motion, gravitation and planetary orbits, oscillatory motion, waves, temperature, and the laws of thermodynamics.

**Homework:** The online program **WebAssign** will be utilized for entering and automatic grading of the homework. This requires the Access Card to be found inside the textbook. Homework will be due each Thursday before class begins, except for weeks in which there is a test.

The homework for each chapter can be submitted a *maximum of 5 times*.  
**Accessing WebAssign:** see attached sheet.

**Attendance:** Attendance to all lectures is expected.

**Examinations:** There will be three tests and one comprehensive final examination consisting of multiple choice problems. The tests will have 20 problems and the final exam will have 40 problems. All examinations will be closed book. You may bring in one 8.5''x11'' sheet of paper with formulas and notes on one side (for the final exam you may use two sheets of paper). You may not share your formula sheet with anyone else. You will need to bring to the examinations a scientific calculator, #2 pencil, blank paper and a 882-E scantron. The scantrons are available in the bookstore.  
**No makeup examinations will be given for any reason.**

|            |                                  |                    |
|------------|----------------------------------|--------------------|
| Test # 1   | Thursday, Oct. 4, 1:00-2:47 pm   | Chapters 1-3       |
| Test # 2   | Thursday, Nov. 1, 1:00-2:47 pm   | Chapters 4-7       |
| Test # 3   | Thursday, Nov. 29, 1:00-2:47 pm  | Chapters 8,10-12   |
| Final Exam | Thursday, Dec. 13, 12:00-3:00 pm | Chapters 1-8,10-17 |

**Grades:** Your grade will be based on the exams and homework as follows:  
Homework: 20%, Tests: 15% each, Final Exam: 35%  
The relation between the overall percentage and the grade is as follows:

|    |        |
|----|--------|
| A  | 92-100 |
| A- | 85-91  |
| B+ | 80-84  |
| B  | 75-79  |
| B- | 70-74  |
| C+ | 65-69  |
| C  | 60-64  |
| C- | 56-59  |
| D+ | 53-55  |
| D  | 50-52  |
| F  | <50    |

**Laboratory:** Students registered for PHY 1510 are in the Lab course PHY 1100 (taught by Prof. Castoldi) and must get the Physics 1 Laboratory Manual – 2<sup>nd</sup> edition, Cengage Custom Publishing. The Lab Manual is available only at the Bookstore. **ALL questions about the Lab should be addressed to Prof. Castoldi.** Her contact information is: office 162 HH, phone 4870 email castoldi@oakland.edu

**Supplemental Instruction:** TTh 3:00-4:00, 195 HH. Instructor TBA.

Supplemental instruction is NOT a required part of the course.  
Instead it is offered by the Academic Skills Center as an additional aid to learning physics.



## WebAssign: How to Get Started

### Day One: Register

1. Go to <https://webassign.net> and click on **LOG-IN**.
2. In the Students menu Click on **'I have a Class Key'**
3. Enter the **Class Key: oakland 9472 4960** (this allows me to see your homework grades)
4. Enter your chosen Login name and the required information

5. Click on **'Create my Account'**

A review screen will appear with your Username, Institution code & Password.  
Print and retain a copy of this information.

6. Once you Login, you need to enter the **WebAssign Access Code**.

- If you purchased a new textbook, the Access Code card is inside the book.

If you purchased a used book, you may choose to purchase the Access Code online.

7. Once you have logged in, you will see the **Homepage**.

- I suggest you click on **Guide** (upper right corner) and read the **Student Guide**.
- For **Technical Support** click on **Help** or go to

<https://www.webassign.com/support/student-support/>

*Notice: there is a 14 day grace period in WebAssign during which you may do the homework even if you do not have an Access Code*

### To access the Homework:

1. Go to <http://www.webassign.net/login.html> (I suggest you Bookmark this page)
2. After you Login, click on **'My Assignments'**.

Please notice:

- You may save your work without grading by clicking on **'Save Work'** at the end of the question. Next time you access the assignment, your work will still be available.
- WebAssign will not automatically submit your answer if you only 'Save' your work. Make sure you **'Submit'** it before the due date and time.
- You may also choose to **'Submit New Answers to Question xx'** or **'Submit All New Answers'**.
- Remember that there is a **maximum of 5 submissions** for each problem

PHY 151/161 Tentative course plan

| DATE      | CHAPTER       | DATE      | CHAPTER            |
|-----------|---------------|-----------|--------------------|
| 06 SEP Th | Intro         | 23 OCT Tu | 8                  |
| 11 SEP Tu | 1             | 25 OCT Th | 10                 |
| 13 SEP Th | 1-2           | 30 OCT Tu | 10-11              |
| 18 SEP Tu | 2             | 01 NOV Th | Test 2 Ch. 4-7     |
| 20 SEP Th | 3             | 06 NOV Tu | 11                 |
| 25 SEP Tu | 3-4           | 08 NOV Th | 12                 |
| 27 SEP Th | 4             | 13 NOV Tu | 12-13              |
| 02 OCT Tu | 5             | 15 NOV Th | 13                 |
| 04 OCT Th | Test 1 Ch 1-3 | 20 NOV Tu | 14                 |
| 09 OCT Tu | 5-6           | 27 NOV Tu | 15                 |
| 11 OCT Th | 6             | 29 NOV Th | Test 3 Ch. 8,10-12 |
| 16 OCT Tu | 7             | 04 DEC Tu | 16                 |
| 18 OCT Th | 7-8           | 06 DEC Th | 17                 |