

PHY 1610 – Fundamentals of Physics I • 4 Credit Hours (no Lab)**Fall 2018**

Instructor: Yuejian Wang **E-mail:** ywang235@oakland.edu
Office: 164 Hannah Hall **Office phone:** 248-370-3423
Office hours: MW 10:30-11:30 am
Lecture Hall: 190HH **Class Time:** MWF 8:00-9:07 am
Suppl. Instr.: MWF 9:20-10:20 pm (202B ODH)

Course (Catalog) Description: Mechanics, mechanical waves and sound, Fluid Mechanics

Topics include:

Linear Motion in one and two dimensions; Newton's Laws of Motion and their applications to our everyday world; Mechanical Energy--potential and kinetic; Energy transfer; Work; Momentum and Collision.

Rotational Motion. Angular position, speed, and acceleration; Rotational kinetic energy; Torque.

Oscillatory Motion: Harmonic Motion; Pendulum and Damped Oscillations.

Mechanical Waves: Vibrations and Waves.

Fluid Mechanics: Pressure in liquid; Buoyant forces; Equation of fluid; Bernoulli's equation.

Prerequisites: Score of 28 or higher on ACT math test or 660 or higher on SAT math test; or MTH 1441 or equivalent, or placement above MTH 0662. MTH 1554 recommended.

PHY 1610 (4 credits, no lab) does not satisfy the university general education requirement.

Course Goals and Objectives: Goals of this course include: applying the material learned in the Calculus course for problem solving; learning to utilize Calculus methods to produce a mathematical representation of and to analyze physical situations; introduce a wide range of applications to fields other than physics.

To achieve these goals:

- Strong emphasis is given to sound physical arguments and conceptual learning, to strengthen the student's logical capacities.
- Emphasis is given to problem-solving methodology: a modeling approach, based on four types of models commonly used by physicists, is introduced for the students to understand they are solving problems that approximate reality. Then they learn how to test the validity of the model. This approach helps the students see the unity in physics, as a large fraction of problems can be solved using a small number of models.
- Quite often problems require the student to relate to concepts covered in previous chapters.
- Some problems require the use of a computer or graphing calculator. Modeling of physical phenomena enables the students to obtain graphical representations of variables and to perform numerical analyses.

- The course includes practical examples that demonstrate the role of Physics in other disciplines, including engineering, chemistry, life sciences and medicine, and applications relating to modern technology.
- The course connects physics principles to examples of
 - Natural phenomena – such as planetary motion and astronomy, hurricanes;
 - Technology and everyday life – such as car and driving-, sports-, cooking-, heating and cooling-related issues;
 - Ethical and societal issues such as energy and ecology concerns.

Philosophical issues – such as design of a physical theory and its principles.

Textbook: Serway /Jewett: Principles of Physics - 5th Edition, Hybrid packaged with:

- WebAssign – multi-term Access Card
- Access to e-Book

Cengage Publishing – ISBN: 9781305586871 [Required]

Student Solutions Manual with Study Guide, Vol. 1 [Optional]

Cengage Publishing – ISBN: 9781133110767

Available options for purchasing the textbook:

- You may purchase the ‘bundle’ for \$122 at
Campus bookstore – Barnes & Noble – at the Oakland Center
- You may purchase the ‘bundle’ online, directly from the publisher for \$114 at
<http://www.cengagebrain.com/> (search the book by ISBN)

Please notice:

- The Access to Web Assign is valid for multiple terms (PHY 1010 & PHY 1020)
- If you wish to *purchase just the access to WebAssign*, you may do so:
 - *Online* – once you are logged in to WebAssign.net
Please see the page of the syllabus dedicated to WebAssign
 - *Bookstore* – the ISBN for the printed EWA Multi Term Access Card is 9781285858418

Equipment: Protractor, metric ruler, fine point retractable pencil, basic scientific calculator with trigonometric functions, pack of white index cards.

Pre-class Preparation: Prior to the class, the lecture notes (power Points) will be posted on Moodle. You are **required** to have read the lecture notes as well as the corresponding contents in the textbook. It is suggested that you print a copy of the notes and bring those to class, so that you can focus more on the conceptual understanding of the topics discussed in class and maybe add just a few notes on the side of the sheets.

Study Tips: In order to develop *Critical Thinking* (one of the main goals of this course) much emphasis in this class will be on the understanding and assimilation of ‘concepts’. You are strongly encouraged to review the chapter’s *Active Examples* on the textbook and the animated *Active Figure* tutorials on the *e-book*. Also, in order to test your understanding of concepts, you should test yourself by trying all the *Quick Quizzes* interspersed in each chapter (answers to be found at the end of the textbook) and the end-of-chapter *Conceptual Questions*. Ideally, you should find one or two partners in the class and work with them at least once a week for a few hours outside class time.

Supplemental Instruction: Supplemental Instruction is provided by the Tutoring Center.

SI will meet for an hour after each lecture as a support for the students. The SI leader will lead you through extra problem solving, review difficult concepts, and answer any questions you may have.

SI will also allow you to work in a much smaller environment than our large class. Participation to the SI is not mandatory, but **strongly** encouraged.

Other Help: Several other forms of help are available on campus. The **Tutoring Center** offers free individual and group peer tutoring and also space to gather and study with peers.

Last but not least, you may meet me during **office hours** (or request a special appointment) to get help with course material, discuss ways of improving your performance, and to ‘stick out of the crowd’ get known personally by the instructor.

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.

The homework for each chapter can be submitted a **maximum of 5 times**.

Accessing WebAssign: see attached sheet.

Due time: The assignments are due on the date specified on WebAssign. Only in case of serious circumstances an extension may be granted. If you need an extension for a certain chapter’s homework, please show your **official documents** evidencing the serious circumstance you encountered which makes you

impossible to complete the homework on time. No e-mailed homework is accepted.

Grace period: *there is a grace period in Web Assign during which you may do the homework even if you do not have an Access Code. After passing the grace period, you cannot access your homework in Web Assign without an Access Code. So please purchase your Access Code as early as possible.*

During class, conceptual questions will be raised by the instructor and the students who give correct answer will receive extra credits.

The homework + extra credits is worth 15% of the final grade.

Exams: There will be a total of three exams, consisting of multiple choice problems. All exams are closed-book. Please notice that clear writing and clarity of expression is a very important component of the exam. A calculator is required, plus a fine point pencil, and an eraser.

Exam # 1: Monday, October 8 (Chapters 1, 2, 3, 4)

Exam # 2: Wednesday, November 7 (Chapters 5, 6, 7, 8)

Exam # 3: Monday, December 10 at 8:00 AM! (Chapters 10, 12, 13, 15, 14)

Make-up Policy: In order to be fair to the majority of students who take the exams on time, the general policy is: ***No make-up exams*** will be given.

A score of zero will be entered for missed a test.

If you cannot be present for an exam due to a documentable serious and unavoidable emergency, contact me before the exam, if possible, or as quickly as possible after the exam to see if an exception can be made.

Grading: Course grades will be posted on Moodle.

Homework + extra credit	15%
Exam 1	27%
Exam 2	27%
Exam 3	31%

Grading scale:

Final grade	Total grade	Honor points
A	96-100	4
A-	90-95	3.7
B+	85-89	3.3
B	80-84	3
B-	75-79	2.7
C+	70-74	2.3
C	65-69	2.0

C-	60-64	1.7
D+	55-59	1.3
D	50-54	1.0
F	< 50	0

Note: *the first and second exams will be curved. The third exam and the grade of this class will not be curved.*

Common Courtesy Guidelines:

For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regards to all course interactions.

For example:

- Show up for class on time.
- Turn off your cell phones and put away iPods and other devices before class begins.
- Do not leave class early, and do not rustle papers in preparation to leave before class is dismissed.
- Be attentive in class and participate. Stay awake; no text messaging, listening to iPods, or surfing the internet...
- If you must be late or leave early on a particular day, please inform your instructor in advance.
- Be kind and respectful to your fellow students and the instructor.

You can expect your grade to be lowered if you do not practice common courtesy.

Add/Drops

The University's add/drop policy will be explicitly followed. It is the student's responsibility to be aware of the university deadline dates for dropping courses.

Reasonable Accommodations

Accessibility and Accommodations: It is the University's goal that learning experiences be as accessible as possible. Students with disabilities who have questions about course accessibility are encouraged to contact the instructor immediately. The Office of Disability and Support Services (DSS) is available to help. The DSS office is located in room 103A North Foundation Hall.

For more information, call 248-370-3266 or visit <https://www.oakland.edu/dss>

Policy on Academic Misconduct

The University's regulations that relate to academic misconduct will be fully enforced. Any student suspected of cheating and/or plagiarism will be reported to the Dean of Students and, thereafter, to the Academic Conduct Committee for adjudication. Anyone found guilty of academic misconduct in this course may

receive a course grade of F, in addition to any penalty assigned by the Academic Conduct Committee. Students found guilty of academic misconduct by the Academic Conduct Committee may face suspension or permanent dismissal. The full policy on academic misconduct can be found in the General Information section of the Undergraduate Catalog.

Excused Absence Policy

The University excused absence policy applies to participation as an athlete, manager or student trainer in NCAA intercollegiate competitions, or participation as a representative of Oakland University at academic events and artistic performances approved by the Provost or designee.

For the excused absence policy, see:

<https://www.oakland.edu/provost/policies-and-procedures/>

Student Preferred Name/Pronoun Policy

Course rosters are typically provided to the instructor with the student's legal names. If you do not identify with the name that is listed with the Registrar's office, please notify me. I will gladly honor your request to address you by an alternate name or gender pronoun. For more information on indicating a preferred first name on university records, please visit:

<https://www.oakland.edu/uts/common-good-core-resources/name-services/>

WebAssign: How to Get Started

Day One: Register

1. Go to **<https://webassign.net>** and click on **LOG-IN**.
2. Click on **'I have a Class Key'**
3. Enter the **Class Key**: oakland 5277 1823 (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

<http://www.webassign.net/info/support/report.html>

You may want to watch the short Student Self-Enrollment video:

http://www.wadsworthmedia.com/tlc/EWA_StudentVideos/Self_Enrollment/EWA_Student_Self_Enrollment.html

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### 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. When 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 1610 TENTATIVE SCHEDULE – FALL 2018

| Fall 2013 Tentative Schedule - Fall 2013 |     |       |                       |                                 |
|------------------------------------------|-----|-------|-----------------------|---------------------------------|
| Week                                     | Day | Date  | Chapter               |                                 |
| 1                                        | W   | 9/5   | 1                     |                                 |
|                                          | F   | 9/7   |                       |                                 |
| 2                                        | M   | 9/10  | 2                     |                                 |
|                                          | W   | 9/12  |                       |                                 |
|                                          | F   | 9/14  |                       |                                 |
| 3                                        | M   | 9/17  | 3                     |                                 |
|                                          | W   | 9/19  |                       |                                 |
|                                          | F   | 9/21  |                       |                                 |
| 4                                        | M   | 9/24  | 4                     |                                 |
|                                          | W   | 9/26  |                       |                                 |
|                                          | F   | 9/28  |                       |                                 |
| 5                                        | M   | 10/1  | 5                     |                                 |
|                                          | W   | 10/3  |                       |                                 |
|                                          | F   | 10/5  |                       |                                 |
| 6                                        | M   | 10/8  | EXAM 1 (Chapters 1-4) |                                 |
|                                          | W   | 10/10 | 5                     |                                 |
|                                          | F   | 10/12 | 6                     |                                 |
| 7                                        | M   | 10/15 |                       |                                 |
|                                          | W   | 10/17 | 7                     |                                 |
|                                          | F   | 10/19 |                       |                                 |
| 8                                        | M   | 10/22 | 8                     |                                 |
|                                          | W   | 10/24 |                       |                                 |
|                                          | F   | 10/26 |                       |                                 |
| 9                                        | M   | 10/29 | 10                    |                                 |
|                                          | W   | 10/31 |                       |                                 |
|                                          | F   | 11/2  |                       |                                 |
| 10                                       | M   | 11/5  | 10                    |                                 |
|                                          | W   | 11/7  |                       | EXAM 2 (Chapters 5-8)           |
|                                          | F   | 11/9  |                       |                                 |
| 11                                       | M   | 11/12 | 12                    |                                 |
|                                          | W   | 11/14 |                       |                                 |
|                                          | F   | 11/16 |                       |                                 |
| 12                                       | M   | 11/19 | 13                    |                                 |
|                                          | W   | 11/21 |                       |                                 |
|                                          | F   | 11/23 |                       | Thanksgiving, classes suspended |
| 13                                       | M   | 11/26 | 15                    |                                 |
|                                          | W   | 11/28 |                       |                                 |
|                                          | F   | 11/30 |                       |                                 |
| 14                                       | M   | 12/3  | 15/14                 |                                 |
|                                          | W   | 12/5  |                       |                                 |



|    |   |       |                                                        |
|----|---|-------|--------------------------------------------------------|
|    | F | 12/7  |                                                        |
| 15 | M | 12/10 | FINAL EXAM (CHAPTERS 10, 12, 13, 15, 14) 8:00-10:30 AM |