

# Syllabus

## PHYS 1147: Physics for Life Sciences 2, Spring 2016

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**Lecturer:** Prof. Meni Wanunu  
**Office:** 202 Dana Research Center  
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**Website:** [www.neu.edu/wanunu](http://www.neu.edu/wanunu)

**Lecture hours:** Mon, Wed, and Thu 1:35-2:40 PM  
**Room:** Churchill Hall 101

To receive a grade, you must be registered for:  
PHYS 1147 (lecture)  
PHYS 1148 (Introductory Physics Lab - IPL)

**Office hours:** (in 202 Dana) Wednesday 9:15 AM - 12:15 PM.

**Textbook:** PHYSICS Principles with Applications, 7th Edition, Douglas C. Giancoli, Pearson. A hardcover version of the text can be purchased at the NEU bookstore. An online e-text version of the text is also available for purchase at [masteringphysics.com](http://masteringphysics.com). Note that you do NOT need both the e-text and the hardcover text—you only need one. The 6th Edition is also acceptable, but homework problems must be solved from the new book.

**Course description and objectives:** Physics for Life Sciences 2 is a one-semester algebra-based physics class. Upon completion of this course, the students should be prepared to demonstrate knowledge of the basic concepts and an ability to interpret and solve elementary problems in the areas of waves, electricity and magnetism, light and geometric optics.

### Course organization

**Lectures:** Attendance to the lectures is not mandatory but strongly recommended. You are expected to read the text before coming to class. Reading assignments will usually be from the textbook following what is in the Syllabus, but they may be from handouts, or from pages on Blackboard.

**Homework:** There will be homework assigned each week in the schedule attached, but will not be formally graded, though solutions will be posted on Blackboard. On Thursday we will discuss homework problems in class.

**Quizzes:** There will be a quiz on Thursday almost every week (see schedule attached). The lowest two quizzes will be dropped and will not count toward the final grade. **No makeup quizzes will be allowed under any circumstances!** A missed quiz will receive a score of zero and will be one of the two dropped quizzes. Solutions to quizzes and exams will be posted on Blackboard.

**Examinations:** There will be a **midterm** test during the semester and a **cumulative final exam**. The tentative date for the midterm test is March 3<sup>rd</sup>, during regular class time. The final exam

date and location will be announced later in the semester. The schedules are subject to revision; the changes may be verbally announced in class. Students are responsible for information given in class, even if they are absent.

**Labs:** The lab is a separate course (PHYS 1148) and you will get a letter grade for it depending on what you have done in the Lab reports. We will count your grade in the lab course as 15% of this course. This will help most of you considerably. Any question regarding the lab must be addressed to the lab instructors or the lab coordinator.

**Office Hours:** It is strongly encouraged for students to attend office hours.

### Study sequence for a typical week

*In class:*

**Monday:** first lecture on the week's topic

**Wednesday:** second lecture on the week's topic

**Thursday:** third lecture (go over homework problems) & 20 min **quiz**

*At home:*

**Monday-Thursday:** finish week's homework problems

**Thursday-Monday:** finish assigned reading for the next week

## Grading

### Grade distribution

15% Lab

20% Quizzes

30% Midterm Examination

35% Final Examination

**Final letter grade:** Your course grade will be determined both by your overall score, calculated according to the above percentages, and by your score on exams and weekly quizzes alone, weighted in the same proportion as above. The following table indicates 'target' overall score ranges corresponding to various course grades

Score	Grade
92-100	A
88-92	A-
84-88	B+
79-84	B
71-79	B-
66-71	C+
63-66	C
60-63	C-

If your total score is *less than 60%* I will examine each case individually, to decide if you get a D or an F.

## **Other information**

**Academic integrity:** The Northeastern University Policy on Academic Integrity can be found at: <http://www.northeastern.edu/osccr/academicintegrity/index.html>)

### **Cell phone policy:**

Cell phone use is not allowed in class. Cell phones should be turned off or on “silent” mode. Calls will only be allowed in the case of an emergency situation.

### **Disability Resource Center:**

If you have a physical, mental, emotional, learning disability or chronic health issue and require accommodation, please let me know as soon as possible. You will need to register with the Disability Resource Center, and provide documentation regarding your disability. <http://www.northeastern.edu/drc/>

The instructor reserves the right to modify this syllabus as deemed necessary any time during the semester. Changes to the syllabus will be discussed with students during a class period. Students are responsible for information given in class.

There may be also details about PHYS 1145 uncovered in this syllabus. Do not assume something just because it is not specified in the syllabus. If you are unsure about anything related to the rules guiding this course, consult with me.

## Course Schedule

### Week 1: Jan 11, 12, 14

Vibrations and Waves – Chapter 11, sections 1-9, 11-13

HW1 Problems: Chapter 11: 7, 19, 31, 45, 49, 53

Quiz 1, Jan 14<sup>th</sup>

### Week 2: Jan 19, 21 (No class Monday Jan 18, MLK day)

Sound -- Chapter 12, sections 1-4, 6, 7

HW2 Problems: Chapter 12: 1, 9, 15, 33, 37, 47, 57

Quiz 2, Jan 21<sup>st</sup>

### Week 3: Jan 25, 27, 28

Electric Charge and Electric Fields -- Chapter 16, sections 1-9

HW3 Problems: Chapter 16: 3, 7, 9, 11, 15, 19, 23, 31, 33, 41

Quiz 3, Jan 28<sup>th</sup>

### Week 4: Feb 1, 3, 4

Electric Potential -- Chapter 17, sections 1-5

HW4 Problems: Chapter 17: 1, 3, 7, 15, 19, 23, 27

Quiz 4, Feb 4<sup>th</sup>

### Week 5: Feb 8, 10, 11

Electric Potential and Electric Currents -- Chapter 17, sections 7-9; Chapter 18, sections 1-7

HW5 Problems: Chapter 17: 35, 39, 43, 47, 55; Chapter 18: 1, 5, 11, 13, 17, 33, 41, 47

Quiz 5, Feb 11<sup>th</sup>

### Week 6: Feb 17, 18 (No class Monday Feb 15, Presidents' day)

DC Circuits -- Chapter 19, sections 1-4

HW6 Problems: Chapter 19: 3, 5, 17, 21, 25, 29

Quiz 6, Feb 18<sup>th</sup>

### Week 7: Feb 22, 24, 25

Capacitors in Series and Parallel; RC circuits; Magnetism -- Chapter 19, sections 5-7; Chapter 20, sections 1-4

HW7 Problems: Chapter 19: 41, 45, 55; Chapter 20: 1, 3, 9, 11, 21

Quiz 7, Feb 25<sup>th</sup>

### Week 8: Feb 29, Mar 2, 3

Magnetism -- Chapter 20, sections 5-8

HW8 Problems: Chapter 20: 27, 37, 41, 47

March 2<sup>nd</sup>, dedicated to mid-term Exam Review

MIDTERM EXAM – March 3<sup>rd</sup> (during class time)

### Week 9: No Classes Mar 7, 9, 10, SPRING BREAK

**Week 10: Mar 14, 16, 17**

Electromagnetic Induction and Electromagnetic Waves -- Chapter 21, sections 1-5; Chapter 22, sections 1-5

HW9 Problems: Chapter 21: 1, 3, 5, 9; Chapter 22: 5, 11, 15

Quiz 8, Mar 17<sup>th</sup>

**Week 11: Mar 21, 23, 24**

Light, Geometric Optics -- Chapter 23, sections 1-6

HW10 Problems: Chapter 23: 1, 3, 9, 11, 15, 21, 27, 29, 37

Quiz 9, Mar 24<sup>th</sup>

**Week 12: Mar 28, 30, 31**

Light, Geometric Optics; Optical Instruments -- Chapter 23, sections 7, 8, 10; Chapter 25, sections 1-5

HW11 Problems: Chapter 23: 41, 43, 51, 67; Chapter 25: 1, 9, 11, 25

Quiz 10, Mar 31<sup>th</sup>

**Week 13: Apr 4, 6, 7**

Nuclear Physics and Radioactivity-- Chapter 30, sections 1 – 6, 8 – 11

HW12 Problems: Chapter 30: 1, 3, 15, 27, 39, 41, 49

Quiz-11, Apr 7<sup>th</sup>

**Week 14: Apr 11, 13, 14**

Special relativity -- Chapter 26, sections 1 – 5, 7 – 9

HW13 Problems: Chapter 26: 1, 5, 11, 23, 55

Quiz-12, Apr 14<sup>th</sup>

**Week 15: Apr 20 (No class Monday Apr 18, Patriots' day)**

Final Exam Review, Apr 20<sup>th</sup>

FINAL EXAM – Week of Apr 22-29, exact date to be determined (CUMULATIVE).