Syllabus

PHYS 1145: Physics for Life Sciences 1

Lecturer: Prof. Meni Wanunu
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Email: wanunu@neu.edu
Website: www.neu.edu/wanunu

Lecture hours: Mon, Wed, and Thu 10:30-11:35 AM
Room: West Village F020

To receive a grade, you must be registered for:
PHYS 1145 (lecture)
PHYS 1146 (Introductory Physics Lab - IPL)

Office hours: (in 202 Dana) Friday 9:00 AM - 12:00 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. 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: Life Sciences 1 is a one-semester algebra-based physics class in Newtonian Mechanics, Fluid Mechanics, and Kinetic Theory and Thermodynamics. Students will investigate the principles of introductory physics in a guided inquiry environment through lectures, demonstrations, and problems. 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 kinematics, dynamics, conservation of energy, fluid mechanics, kinetic theory and thermodynamics.

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! so a missed quiz scores zero and will be one of the two dropped quizzes. Solutions to quizzes and exams will be posted on Blackboard.
Examinations: There will be one midterm test during the semester and a comprehensive final exam. The tentative date for the midterm test is October 24, during regular class time. The final exam date and location will be announced later. 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 1146) 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

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<thead>
<tr>
<th>Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>92-100</td>
<td>A</td>
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<tr>
<td>88-92</td>
<td>A-</td>
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<tr>
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<td>C+</td>
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<tr>
<td>63-66</td>
<td>C</td>
</tr>
<tr>
<td>60-63</td>
<td>C-</td>
</tr>
</tbody>
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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](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/](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

Before class
Measurement & Estimating – Chapter 1
Please be sure you understand the introductory material in Chapter 1.

Week 1: Sep 9, 10
Motion in One Dimension -- Chapter 2, sections 1, 2, 3, 4, 5
HW1 Problems: Chapter 2: 1, 2, 6, 13, 18, 24, 28, 29
No quiz

Week 2: Sep 14, 16, 17
Motion in One Dimension -- Chapter 2, sections 6,7
HW2 Problems: Chapter 2: 39, 41, 44, 51
Vectors -- Chapter 3, sections 1, 2, 3, 4
HW2 Problems: Chapter 3: 5, 6, 8, 53
Quiz-1, Sep 17 -- Motion and Vectors

Week 3: Sep 21, 23, 24
Forces, Newton's Laws -- Chapter 4, sections 1, 2, 3, 4, 5, 6, 7
HW3 Problems: Chapter 4: 3, 7, 10, 16, 20, 28, 82, 85
Quiz-2, Sep 24 -- Vectors and Forces

Week 4: Sep 28, 30, Oct 1
Equilibrium -- Chapter 9, sections 1, 2, 3 -- Chapter 7, section 8, 9 -- Chapter 8, section 4
HW4 Problems: Chapter 9: 2, 24, 31, 32, 33, 34, 35, 59
Quiz-3, Oct 1 -- Vectors, Forces, & Torques in Equilibrium

Week 5: Oct 5, 7, 8
Circular Motion -- Chapter 5, sections 1, 2, 3, 4, 5
HW5 Problems: Chapter 5: 1, 3, 5, 6, 12, 68
Quiz-4, Oct 8 -- Circular Motion

Week 6: Oct 14, 15 (No Class Mon Oct 12 for Columbus Day)
Work, Kinetic Energy -- Chapter 6, sections 1, 3
HW6 Problems: Chapter 6: 1, 4, 9, 15, 18, 20
Quiz-5, Oct 15 -- Work and Energy

Week 7: Oct 19, 21, 22
Potential Energy, Conservation of Energy -- Chapter 6, sections 4, 5, 6, 7
HW7 Problems: Chapter 6: 26, 27, 29, 31, 34, 39, 41
Quiz-6, Oct. 22 -- Work, Potential Energy, Conservation of Energy

Week 8: Oct 26, 28, 29
Power -- Chapter 6, section 10
HW8 Problems: Chapter 6: 62, 66, 78, 87, 88, 89
Mid-term Exam Review

MIDTERM EXAM – Oct. 29 (during class time)
Week 9: Nov 2, 4, 5
Fluid Statics -- Chapter 10, sections 1, 2, 3, 4, 5
HW9 Problems: Chapter 10: 1, 2, 3, 4, 5, 6, 9, 10, 13
Quiz-7, Nov 5 -- Fluid Statics

Week 10: Nov 9, 12 (No Class Nov 11 for Veterans’ Day)
Fluid Statics (cont.), Fluid dynamics -- Chapter 10, sections 6, 7
HW10 Problems: Chapter 10: 14, 16, 18, 20, 21, 23, 26, 31
Quiz-8, Nov 12 -- Fluid Statics and Dynamics

Week 11: Nov 16, 18, 19
Fluid Dynamics (cont.) -- Chapter 10, sections 8, 9, 10, 11, 12, 14
HW11 Problems: Chapter 10: 42, 47, 48, 49, 53, 55, 64, 65, 66
Quiz-9, Nov 19 -- Fluid Dynamics

Week 12: Nov 23 (No Class Nov 25 & 26 for Thanksgiving)
Temperature and Kinetic Theory -- Chapter 13, sections 1, 2, 3, 4
HW12 Problems: Chapter 13: 1, 4, 9, 11, 14
No quiz

Week 13: Nov 30, Dec 2, 3
Temperature and Kinetic Theory (cont.) -- Chapter 13, sections 6, 7, 8, 9, 10
HW13 Problems: Chapter 13: 25, 27, 32, 34, 38, 45, 48, 53
Quiz-10, Dec 3 -- Temperature and Kinetic Theory

Week 14: Dec. 7, 9
Heat -- Chapter 14, sections 1, 2, 3, 4
HW14 Problems: Chapter 14: 2, 4, 6, 10, 14, 15, 17, 18
Final Exam Review

Week 15: TBA FINAL EXAM