

PHYS 1161: PHYSICS 1

Fall, 2014

Lecturer: Prof. Dmitri Krioukov

Office: 124 Dana

Email: dima@neu.edu

Lecture hours: Mon, Wed, Thu, 10:30-11:35 AM

Classroom: Richards Hall 458

Office hours: Thu, 2:00-5:00 PM. Appointments may be scheduled for students who cannot make the official hours.

Textbook: *Physics for Scientists and Engineers*, 6th Edition, by Paul A. Tipler and Gene Mosca, W. H. Freeman. An electronic version of this book is available at WebAssign accessible under *Tools* or *Assignments* at Blackboard.

Co-requisites: PHYS 1162 (Lab) and PHYS 1163 (Recitation). To receive a grade, you must be registered for PHYS 1161, PHYS 1162, and PHYS 1163.

Course description and objectives: Physics 1 is a one-semester calculus-based physics course in Newtonian Mechanics. Students will investigate the principles of introductory physics through lectures, problem solving, and labs. Upon completion of this course, the students should have knowledge of basic physics concepts and the ability to interpret and solve elementary problems involving forces and torques, static equilibrium, motion in one, two, and three dimensions, Newton's laws, work, energy and power, momentum and collisions, rotational dynamics, special relativity, gravity, and fluids.

Course organization

Reading assignments: This syllabus contains the required reading assignments from the textbook. It is **VERY IMPORTANT** that you read and understand the material in the text before coming to class.

Homework: Homework assignments will be managed through the WebAssign system accessible under *Tools* or *Assignments* at Blackboard. Typically there will be two sets of homework per topic. The first set will typically test conceptual understanding of the reading assignment on a topic before the topic is discussed at the lectures. The second set will primarily consist of traditional quantitative problems. After submitting your homework on WebAssign, you may request the answer key to see the solutions to the homework problems.

Quizzes: There will be a 20 minute quiz almost every week. The Mersenne twister random number generator will be used to determine exact quiz dates. The two lowest quiz scores will be dropped and will not count toward the final grade. There will be no make-ups, so a missed quiz will receive a score of zero. Solutions to the quiz problems will be made available on Blackboard.

Examinations: There will be two midterm exams during the semester and a comprehensive final exam. Practice exam problems will be solved in class. Solutions to all exam problems will be made available on Blackboard.

Grading

Your total score will be based on six components:

| | | |
|----------------|-----|--|
| Lab | 15% | |
| Quizzes | 20% | (no make-ups, 2 lowest scores will be dropped) |
| Homework | 15% | |
| Midterm test 1 | 15% | (no make-ups) |
| Midterm test 2 | 15% | (no make-ups) |
| Final exam | 20% | (no make-ups) |

The final letter grade will be determined as follows:

| Score | Grade |
|--------|-------|
| 92-100 | A |
| 88-92 | A- |
| 84-88 | B+ |
| 79-84 | B |
| 71-79 | B- |
| 68-71 | C+ |
| 63-68 | C |
| 60-63 | C- |

Need Help?

1. Come to the office hours, Thu 2:00 – 5:00 PM at 124 Dana.
2. Talk to your Recitation or Lab TA.
3. Use the Blackboard course discussion forum to ask and discuss your course-related questions with other students who are strongly encouraged to help.
4. The Physics Workshop offers free help sessions by physics doctorate students. You can drop in at the times indicated on the Physics Workshop Schedule available at <http://www.northeastern.edu/physics/undergraduate/help-with-physics-classes/>
5. Peer tutoring by undergraduate students is available on a first-come/first-serve basis. Follow the instructions at <http://www.northeastern.edu/physics/undergraduate/help-with-physics-classes/>

Academic Integrity

Cheating, plagiarism, and other academic misconduct will be reported to the Office of Student Conduct and Conflict Resolution (OSCCR). The Northeastern University Policy on Academic Honesty can be found at: <http://www.northeastern.edu/osccr/academicintegrity/index.html>

Tentative Course Schedule

| Week | Date | Required Reading | Week's Topic | Quiz |
|------|-------------|---------------------|------------------------------------|---------|
| 1 | Wed, Sep 3 | - | Introduction to Mechanics | No quiz |
| | Thu, Sep 4 | 1.1 – 1.7 | Units and Vectors | |
| 2 | Mon, Sep 8 | 2.1, 2.2 | Motion in One Dimension | Quiz 1 |
| | Wed, Sep 10 | 2.3, 2.4 | Motion in One Dimension | |
| | Thu, Sep 11 | 3.1, 3.2 | Motion in Two and Three Dimensions | |
| 3 | Mon, Sep 15 | 3.3 | Motion in Two and Three Dimensions | Quiz 2 |
| | Wed, Sep 17 | 4.1 – 4.4 | Newton's Laws | |
| | Thu, Sep 18 | 4.5 – 4.7 | Newton's Laws | |
| 4 | Mon, Sep 22 | 4.8 | Newton's Laws | Quiz 3 |
| | Wed, Sep 24 | 5.1, 5.2 | Applications of Newton's Laws | |
| | Thu, Sep 25 | 5.3, 5.5 | Applications of Newton's Laws | |
| 5 | Mon, Sep 29 | 5.5 | Applications of Newton's Laws | No quiz |
| | Wed, Oct 1 | - | Review for Midterm 1 | |
| | Thu, Oct 2 | - | Midterm 1 | |
| 6 | Mon, Oct 6 | 6.1, 6.2 | Work and Kinetic Energy | Quiz 4 |
| | Wed, Oct 8 | 6.3, 6.4 | Work and Kinetic Energy | |
| | Thu, Oct 9 | 7.1, 7.2 | Conservation of Energy | |
| 7 | Mon, Oct 13 | Columbus Day | No Classes | Quiz 5 |
| | Wed, Oct 15 | 7.3 | Conservation of Energy | |
| | Thu, Oct 16 | 8.1, 8.2 | Conservation of Linear Momentum | |
| 8 | Mon, Oct 20 | 8.3 | Conservation of Linear Momentum | Quiz 6 |
| | Wed, Oct 22 | 9.1 – 9.3 | Rotation | |
| | Thu, Oct 23 | 9.4 – 9.5 | Rotation | |
| 9 | Mon, Oct 27 | 9.6 | Rotation | No quiz |
| | Wed, Oct 29 | - | Review for Midterm 2 | |
| | Thu, Oct 30 | - | Midterm 2 | |
| 10 | Mon, Nov 3 | 10.1, 10.2 | Angular Momentum | Quiz 7 |
| | Wed, Nov 5 | 10.3 | Angular Momentum | |
| | Thu, Nov 6 | R.1 – R.3 | Special Relativity | |
| 11 | Mon, Nov 10 | R.4 – R.5 | Special Relativity | Quiz 8 |
| | Wed, Nov 12 | 11.1, 11.2 | Gravity | |
| | Thu, Nov 13 | 11.3, 11.4 | Gravity | |
| 12 | Mon, Nov 17 | 12.1, 12.2 | Static Equilibrium | Quiz 9 |
| | Wed, Nov 19 | 12.3 | Static Equilibrium | |
| | Thu, Nov 20 | 13.1, 13.2 | Fluids | |
| 13 | Mon, Nov 24 | 13.3 | Fluids | Quiz 10 |
| | Wed, Nov 26 | Thanksgiving recess | No Classes | |
| | Thu, Nov 27 | | | |
| 14 | Mon, Dec 1 | - | Review for the Final | No quiz |
| | Wed, Dec 3 | - | Review for the Final | |