Physics 113 General Physics I
Classical Mechanics

Instructor: Christina Othon
Schedule: 11:00-11:50 M, W, F
Office: #233, Science Tower
Office Hours: Monday 3:30-5:00 PM; Thursday 1:30-4:00, by appointment
E-mail: cothon@wesleyan.edu
Telephone: 685-2107
Course Website: On Moodle

Please do not hesitate to contact me. If you cannot make it to my office hours, I will schedule a meeting with you at another time. If you run into difficulty with the homework, don’t delay getting in touch with me!

It is my goal in this course to give you every tool to succeed. You will find many different forms of feedback that will help you practice your physics skills and try to identify and address difficult concepts long before the exams.

**Course Prerequisites:** Students should have previously taken Calculus I Math121 or the equivalent.

**smartPhysics:** You are required to purchase a license to use the *smartPhysics* online course. This system is the product of years of physics education research, designed to prevent and address misconceptions. On the site you will find online pre-lectures which are intended to replace reading assignments of the text (each prelecture takes ~15 minutes on average). They are accompanied by short checkpoint questions which will give you and the instructor immediate feedback on your comprehension of the material. This allows the instructor to see which topics are most challenging for the class PRIOR to the lecture, allowing her to adapt the lecture as needed. The online course material also includes homework, many of these problems will include guided tutorials which can help guide students through the problem. **Do not purchase the clicker designed by smartPhysics, as it is not supported by our ITS and will not work with our system.** Licenses and texts are available at Broad Street books.

**Textbook:** The textbook is not intended to be the main source of your learning in this class, the emphasis is placed on pre-lectures replacing long reading assignments and in-class problem based learning. As such the recommended text is a condensed text which emphasizes key ideas:

*smartPhysics*, by Stetzler, Gladding, and Selen. This is a streamlined text, which focuses and reinforces the main concepts that are covered in the pre-lectures and main lecture. This is not a comprehensive text, only covering Classical Mechanics.

Alternative Text: *Understanding Physics*, by Cummings, Laws, Redish, and Cooney. This is a comprehensive text covering mechanics, basic thermodynamics, electricity, magnetism and optics. This text has been used by Wesleyan in previous iterations of this course. If you feel that you would benefit from lengthy discussion, and more numerous examples, you may be interested in purchasing this text. Supplementary problems for the course will be selected from this text.

**Homework:** Homework will be assigned weekly, and will be due at the beginning of class on Friday. All problem sets not turned in during class, should be placed in the grader’s box
in the Cady Lounge on the second floor of Exley. Late problem sets will typically receive a drastically reduced score (up to 50%); exceptions will be made at the discretion of the course instructor.

Students are encouraged to work together on homework assignments. However, each student is required to write up individual solutions. Students may work freely with the course TA, and are encouraged to work with the instructor. The use of online solution manuals or other such forums will be considered a violation of Wesleyan’s Honor Code.

**In-class Participation:** The main lecture will be interactive and clicker questions will be asked and your responses will be tallied. As such, you will need to purchase and register your own clicker. Clickers can be purchased from the Cardinal Technology Center (located in Usdan) and sold back at the end of the semester. Information on clicker systems can be found at [http://www.wesleyan.edu/classrooms/clickers/clickers.htm](http://www.wesleyan.edu/classrooms/clickers/clickers.htm). Your lowest three class participation scores can be dropped.

**Discussion Section:** Each student is required to attend a weekly discussion section and participate in problem based learning sessions. The sessions will be comprised of problems that emphasize the key concepts from that week’s lectures, the work however will be more advanced and significant discussion may be required to determine the best approach to the problem. Each group will turn in a single solution, it is YOUR responsibility to ensure your name appears on that solution. Your lowest Discussion section score will be dropped.

**Course Website:** There is a moodle website for this course available through your portfolio at [http://moodle.wesleyan.edu](http://moodle.wesleyan.edu). Class announcements, homework assignments, solutions and your grades will be found there.

**Exams:** There will be two in-class midterm exams (Oct. 11 and Nov. 15) and a final exam (Friday Dec. 13th 2-5 PM). Makeup exams will only be administered for extenuating circumstances.

**Calculator:** A simple scientific calculator is required for the course. I recommend in particular the Texas Instruments TI-30Xa; its simple, uncluttered layout is efficient and adequate for all our needs. Of course, you may use any calculator you choose; on exams, however, you are responsible for knowing how to use it. Cell phones are not permitted for use on exams.

**Grading:** Grades will be determined approximately as follows.

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework:</td>
<td>25%</td>
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<tr>
<td>smartPhysics</td>
<td>10%</td>
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<tr>
<td>In-class exercises</td>
<td>5%</td>
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<tr>
<td>Discussion Section</td>
<td>10%</td>
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<tr>
<td>Midterm Exams (2):</td>
<td>30%</td>
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<tr>
<td>Final Exam:</td>
<td>20%</td>
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**Course Assistants:** Office hours: Monday 2-3pm, Wednesday 6-8 pm
Homework Help Session: Wednesday 5:30-7:30 PM
Thursday 7:00-9:30 PM

**Extra Credit:** 2 pts. Extra credit for the course total will be given for students who write a one page/paragraph summary of a physics colloquium (not Wesleyan Faculty or Staff). These points can be added to a midterm or final exam point total. Maximum 4 pts. per student.
It is the policy of Wesleyan University to provide reasonable accommodations to students with documented disabilities. Students, however, are responsible for registering with Disabilities Services, in addition to making requests known to me in a timely manner. If you require accommodations in this class, please make an appointment with me as soon as possible [by the end of the second week], so that appropriate arrangements can be made. The procedures for registering with Disabilities Services can be found at http://www.wesleyan.edu/deans/disability-students.html.

Tentative Schedule:

Sept. 2-6 1-D Kinematics
Sept. 9-13 2-D Kinematics and Circular Motion
Sept. 16-20 Newton’s Laws and Free-Body Diagrams
Sept. 23-27 Friction, Work, and Energy
Sept. 30-Oct. 4 Conservation of Energy
Oct. 4-11 Center of Mass, Midterm I Friday Oct. 11
Oct. 14-18 Collisions
Oct. 21-25 Fall Break Monday, Rotational Kinematics
Oct. 28-Nov. 1 Parallel Axis Theorem
Nov. 4-8 Angular Momentum
Nov. 11-15 Simple Harmonic Motion, Midterm II Friday Nov. 15
Nov. 18-22 Simple Pendulum and the Wave Equation
Nov. 25 Introduction to Thermal Physics, Thanksgiving Break 27th- 29th
Dec. 2-6 Ideal Gas and the 2nd Law of Thermodynamics
Dec. 13 Final Exam 2-5 PM, 058 ESC