Physics 110: Mechanics and Relativity Fall 2017
Course Information Sheet

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Format:
This course contains both lectures and workshops. The entire class meets for one-hour lectures held in Wright 201 on Mon, Wed, and Fri. at 9:00 a.m.

The class breaks into small groups for two-hour workshops held in Wright 107. These will consist of laboratory experiments, discussion of physics demonstration and posed problems, help with assigned homework and other teaching that does not fit well into a large group format.

By now you should have already registered for either the:
Monday –Wednesday workshop from 2:30 – 4:20 p.m: Scudder
Tuesday – Thursday workshop from 9:00 – 10:50 a.m: Scudder
Tuesday – Thursday workshop from 11:00 – 12:50 a.m: Stinebring
Tuesday – Thursday workshop from 2:30 – 4:20 p.m: Stinebring

From time to time our Friday 9:00 a.m. class will consist of informal talks given by members of the faculty to introduce you to current research topics in physics and astronomy.

Office Hours (FitzGerald)
Tuesday 11:00 - 12:00 a.m., Friday 2:30 – 3:30 p.m, or by appointment.

Course Description
This course introduces you to the laws of physics and in particular those laws that manifest themselves in our everyday lives. In the laboratory we will use common objects to try to explore these laws and observe how they work. In the classroom we will see how these laws can be used to make predictions about the world around us.

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Many laws in physics are summarized using equations. This is an extremely efficient and powerful way to present very complex ideas. However, it is totally useless method unless you understand the meaning of the equations and the language of mathematics that generated them. This will be our goal for the semester.

Textbook:
Fundamentals of physics by Halliday, Resnick, and Walker 10th edition.
Earlier versions are fine although the problems at the end of each chapter may be numbered differently.

Supplemental reading:
(The following books are on reserve in the science library).
Problem solving tips and techniques
The portable TA: A physics problem solving guide by Andrew Elby
(Oversize QC32.E56 1998)
Outline of physics for engineering and science by Michael E. Browne
(QC21.2.B77 1999)
How to solve it by George Polya Mudd (QA11.P6 1973)

Physics in the everyday world
A short history of everything by Bill Bryson (Q162. B88 2003)
Amusement Park Physics by Nathan A. Unterman (Oversize QC32.U57 2001)
The flying circus of physics by Jearl Walker (QC32.W2 1977)

Exams:
There will be two in-class midterm exams on:
Wednesday September 27th and Wednesday November 8th.

Problem Sets:
In general problem sets are handed out on Wednesday and due the following Wednesday. You are allowed to miss/drop one problem set for the semester. Do not ask for any extensions.

Grades:

1st midterm: September 27th	20 %
2nd midterm: November 8th	20 %
Final Exam Dec 13th 2:00 – 4:00	25 %
Weekly Problem sets	20 %
Workshop Grade	15 %

DISABILITY STATEMENT:
The College makes reasonable accommodations for persons with disabilities. Students should notify the Office of Disability Services located in Peters G-27/G-28 and their instructor of any disability related needs. For more information, see http://new.oberlin.edu/office/disability-services/index.dot. Any student eligible for and needing academic adjustments or accommodations because of a disability is requested to speak with the professor.

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Course Topics: A tentative list of topics and the workshop lab schedule.

Dates	Topics	Workshop Lab
Week 1 Aug. 28, 30, 1	Introduction and measurement	Estimation and dimensional analysis
Week 2 Sep. 6, 8	Kinematics in one dimension	Bouncing Ball
Week 3 Sep. 11, 13, 15	Vectors, motion in 2 dimension and circular motion	Car/Bike Jump
Week 4 Sep. 18, 20, 22	Force and motion	Carts and Forces
Week 5 Sep. 25, 27, 29	**1st Midterm Exam**	Terminal Velocity
Week 6 Oct. 2, 4, 6	Kinetic energy and work	Carts and Energy
Week 7 Oct. 9, 11, 13	Potential energy & conservation of energy	Pendulum Challenge
Fall Recess		
Week 8 Oct. 23, 25, 27	Gravitation	Bicycle gears and conservation of energy
Week 9 Oct. 30, 1, 3	Simple Harmonic Motion	Simple Harmonic Motion
Week 10 Nov. 6, 8, 10	Center of mass and conservation of momentum **2nd Midterm Exam**	Car collision conservation of momentum
Week 11 Nov. 13, 15, 17	Rotation	Torque, rotation and angular momentum
Week 12 Nov. 20, 22,	Torque and angular momentum	Thanksgiving
Week 13 Nov. 27, 29, 1	Relativity	Relativity paradoxes
Week 14 Dec. 4, 6, 8	Relativity	Review

HONOR CODE:
Oberlin takes the honor code seriously, and expects the same of its students. You should all be familiar with the honor code (available at http://www.oberlin.edu/~stlife/Honor_Code/Honor_Code.html), and expect your professors to describe its application on their syllabi. In particular, it is essential that you write and sign the honor code on all work you hand in for this class. The Honor Code reads: "I affirm that I have adhered to the Honor Code on this assignment."