

Physics 213: Fundamentals of Physics I

Fall (12) 2019

Course Information

Instructor: Mark Taylor **Office:** Gerstacker 118 **Phone:** (330) 569-5241 (office)
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Office Hours: MWF 4:15-6:00, Tues. 2:00-6:00, Thurs. 6:30-9:30, Sunday 3:00-6:00.

Also, feel free to stop by at other times, call me, or send me email.

Physics Study Session: Thursday evenings 6:30-9:30 in Gerstacker 123.

Meeting Times: MWF 2:30-3:50, Colton 2

Textbook: Six Ideas That Shaped Physics, 3rd edition, Units C, N, & T, by Thomas Moore
(C=Conservation laws, N=Newtonian mechanics, T=Thermodynamics)

Course WebPage: <http://www.hiram.edu/academics/majors-minors/physics/program/courses/fundamentals-of-physics-i>

Course Overview: Physics is a quantitative study of the world around us. The science is based on experimental observation and measurement. However, the underlying goal of the subject is to summarize or explain the results of all such experiments with a small set of fundamental theoretical "laws". These "laws of physics" are thought to apply to all physical systems and all observable phenomena. Thus physics seeks to provide a simple and unified description of the world and this description serves as the foundation for the other sciences. This course is the first half of a two-part *calculus-based* sequence intended to provide an introduction to these fundamental laws of physics. An important goal will be to gain a conceptual understanding of how any physical situation can be analyzed using the laws of physics (that is we will learn to "think like a physicist"). Emphasis will also be placed on developing analytic skills and problem solving. The lab part of this course provides hands-on experience in applying these laws of physics and in the analysis of experimental data and uncertainty.

Reading Assignments: For each class meeting we will cover one chapter of the textbook (see syllabus for reading assignments) and it is essential that you read this chapter *before coming to class!* The focus of the class session will be to clarify and solidify your understanding of the reading material through lecture, discussion, demonstrations, and problem solving exercises.

Homework: Weekly problem sets will be distributed each Friday in lecture and are due the following Friday in lecture. Graded homework and solution sets will be returned within a week. *Homework grading will be based not only on correctness, but also on effort and clarity.*

No late homework will be accepted!

Please note that problem sets comprise a significant portion of your grade. You are encouraged to work together on these assignments and discuss them with me. However, all work you submit for a grade must be your own (i.e., simply copying someone else's solutions is not acceptable).

Quizzes: Each Friday, we will end class with a short (5-10 minute) quiz based on the "two-minute" problems covered in the week's reading assignment.

Exams: There will be two in-class exams (see syllabus) and a comprehensive final exam.

Help: This course involves a steady workload and it is essential that everyone keep up. I am here to help you and I encourage each of you to plan to visit me on a regular basis, either individually or in small groups. I will be holding regular Thursday evening study/problem set sessions in Gerstacker 123.

Laboratory: Attendance at your weekly lab session is mandatory. Labs meet Tuesday (Sec. I = 8:30-11:30, Sec. II = 1:30-4:30) and Thursday (Sec. III = 8:30-11:30) in Colton 17. You should already be assigned a lab section ... if you have a conflict, see me as soon as possible. Labs begin Tuesday, Aug. 27. You will need to purchase a quadrille-ruled lab notebook, available in the bookstore, before your first lab session.

Lab Report: During the term you will prepare a formal report for one of the labs, written in the style of a scientific research paper. Detailed instructions are given in the lab manual.

Grading:	Problems sets	30%
	Lab*	20% (weekly lab work=12%, lab report=8%)
	Quizzes	10%
	In-class exams	25% (high grade=15%, low grade=10%)
	Final Exam	15%

Final grades are based on a fixed scale: $\geq 88\%$ =A, $\geq 76\%$ =B, $\geq 64\%$ =C, $\geq 52\%$ =D.

(For each letter grade, a "+" or "-" corresponds to the upper and lower 4% of the range.)

*(The fine print: If you do not pass the lab portion of the class, you do not pass the course.)

General Hiram College Course Policies: <http://www.hiram.edu/wp-content/uploads/2017/08/HiramCoursePolicy.pdf>