

## Physics 203: General Physics: Waves, Optics, and Modern Physics – Summer 2016

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**Instructor:** Andrew Rice, 472 Science Research and Teaching Center, arice@pdx.edu, 503-725-3095

**Office Hours:** Monday 2-3PM, Wednesday 2-3PM, Thursday 2-3, after class and by appointment.

**Course Website:** <https://d2l.pdx.edu/>

**Course Description** – This course covers: oscillation of a mass on a spring, periodic motion and pendulums; waves, sound, superposition and interference; electromagnetic radiation and waves; geometric optics, lenses, mirrors, optical instruments, and diffraction; introduction to quantum mechanics including particle-wave duality and the Heisenberg uncertainty principle.

**Lectures:** Monday-Friday 8:00-10:20 in Science Building 1 room 107

**Dates:** August 1 – August 19

**Required textbook:** *Physics* James S. Walker, 4<sup>th</sup> edition (ISBN: 978-0-321-61111-6)

**Exams:** There will be three exams given on each Friday for this course. The exams will cover the material from the same week (i.e., M-Th, see schedule below). Exams will not be comprehensive, but some concepts will be needed from previous weeks to understand the current week. Exams will have two parts: the first part will be multiple choice and no partial credit will be given; the second part will be open-ended problems, for which partial credit may be given. Exams are closed book. However, you may bring a 8.5”x11” single-sided sheet of hand written notes with you to the exam. Standard calculators are also permitted. However, under no circumstances will the use of phones, laptops, tablets, or other communication devices be allowed. To each test bring a standard scantron form (available at the PSU bookstore) and a pencil. Make-up exams are not given. If you are taking the exams at the testing center, you will need to sit for the exam at the scheduled exam times.

### **Exam dates and material covered**

Friday August 5: Chapters 13-14

Friday August 12: Chapters 25-26

Friday August 19: Chapters 27-28 & 30

**Grading:** There are two options for grading in this course

**Option A:** Your grade in this course will be entirely based on your performance on the three exams. They will count 25%, 35%, and 40% with your highest score counted the most and your lowest score counted the least.

**Option B:** Your grade will include a homework grade of 25% (below) and exam grades of 20%, 25%, and 30%.

The grade of each exam and the course will follow the traditional scale for:

A- to A            90-100%

B- to B+          80-89%

C- to C+          70-79%

D- to D+          60-69%

F                    <60%

with  $\pm$  grades given within 2% of the cutoff.

**Your benefit of 2%:** Your performance on exams is based on grading, which can have errors associated with it.

To address any flaws in the grading system, each student will be given a flat 2% bonus to their score on each test up to a maximum of 100%. For example a student who scores 85% will automatically be bumped up to 87%. If you choose to challenge your grade on an exam, the flat 2% will be sacrificed and the entire exam will be regraded.

**Homework:** There is homework assigned for each chapter covered in this course (see schedule below).

Working homework problems will help you apply the concepts from lecture and to solve problems. Exam questions will be similar to homework problems. Worked solutions to homework problems will be posted on the D2L course website the day after they are assigned at 8am. I recommend you attempt homework problems before looking at the solutions. Turning in assignments on *Mastering Physics* is optional.

**Homework on Mastering Physics:** If you choose grading option B, graded homework problems will be assigned on *Mastering Physics* (<http://www.masteringphysics.com>, course ID: MPRICE30563) on Mondays and Wednesdays and will cover roughly the first half of each chapter. You will have until 8am the next day (Tuesday and Thursday, respectively) to do the problems online. Homework grades greater than 90% will receive a homework grade of 100% with lower scores scaled accordingly. (note the Introduction to Mastering Physics assignment is not required and not graded)

**Academic Honesty:** ‘Academic honesty is a cornerstone of any meaningful education and a reflection of each student's maturity and integrity. The Code of Student Conduct and Responsibility, which applies to all students, prohibits all forms of academic cheating, fraud, and dishonesty. These acts include, but are not limited to: plagiarism, buying and selling of course assignments and research papers, performing academic assignments (including tests and examinations) for other persons, unauthorized disclosure and receipt of academic information, and other practices commonly understood to be academically dishonest.’ – Portland State University Bulletin, General Catalog Issue, Vol. 49, 2015-2016.

**Absence due to sickness** – Due to the compressed nature of the summer term, exams cannot be rescheduled. However, if you are ill or there is an unforeseen emergency during an exam time, please contact me as soon as feasible.

**Tutoring:** Tutoring is available in physics on the second floor of the library free of charge to PSU students for during the week at scheduled times. They are there for this class for understanding concepts and homework problems. For information about the schedule see: <http://www.pdx.edu/tutoring/>

**Schedule (subject to change)**

Week	Date	Chapter	Homework problems
1	Aug 1-2	13: Oscillations	2,6,11,13,14,18,32,34,39,44,47,49,54,62,66,68
	Aug 3-4	14: Waves and sound	3,10,11,17,26,29,32,33,35,39,44,50,62,65,73,75,76,77
	Aug 5	<b>Exam 1</b>	
2	Aug 8-9	25: Electromagnetism	2,6,11,15,20,27,31,36,41,45,50,54,55,60,66,72,74,75,80
	Aug 10-11	26: Geometric optics	3,9,14,26,27,28,29,37,42,53,56,60,62,70,71,72,73,77,80,81
	Aug 12	<b>Exam 2</b>	
3	Aug 15-16	27: Optical instruments	2,7,8,14,16,20,22,26,32,35,36,45,51,52,57,58,63,67,70,72
	Aug 17	28: Physical optics	14,19,22,24,31,34,37,41,44,49,52,55,56,59
	Aug 18	30: Quantum physics	4,8,21,23,26,27,29,34,38,43,44,61,63,66,67
	Aug 19	<b>Exam 3</b>	