

## PHYSICS 214 (Spring 2004) Syllabus

**Instructor:** Dr. Darin Zimmerman

**Office:** 129I Smith Building

**Office Hours:** W, F (2 – 3 p.m.)

**Phone:** 949-5746

**email:** dtz1@psu.edu

**Meeting Time / Place:** MWF, 4:00 – 4:50 p.m. / 201 Holtzinger (Lecture)  
M 4:15 – 6:05 p.m. / 201 Holtzinger (Lab)

**Textbook:** *Physics for Scientists and Engineers with Modern Physics* by R. Serway (5th Ed.)

**Course Description:** Calculus-based study of the basic concepts of electromagnetic waves, geometrical optics, interference, diffraction, photons and matter waves, Schrödinger's equation, and atomic structure.

**Grade Weighting:** Quizzes (25%) + Labs (25%) + Midterm Exam (25%) + Final Exam (25%)

**Letter Grades:** Exam scores will be curved and averaged with the other areas and compared to this scale:  
A (94-100), A- (90-94), B+ (87-90), B (83-87), B- (80-83), C+ (75-80), C (70-75), D (60-70), F (<60)

**Quizzes:** In lieu of having you turn in homework for a grade, we will have a weekly quiz. Each quiz will be similar to the homework problems. *There will be no makeup quizzes unless since I will drop your lowest score.*

**Homework:** Homework will be assigned but not turned in for a grade (see above). Although the homework is not graded, I *strongly* suggest you work hard at completing it since the problems are good practice for the quizzes.

**Exams:** Exam problems will generally be similar to the homework problems. Each exam will typically consist of 4 problems. The Final Exam will be cumulative. *There will be no make-up exams except in very exceptional cases.*

**Academic Integrity:** Cases of academic dishonesty (cheating, plagiarism, fraud, etc.) will be dealt with harshly. Consequences for such behavior may include receiving a failing grade on the exam or in the course and in more serious cases, permanent expulsion from the University. For the details, see *The Student Guide to University Policies and Rules*.

**Class Cancellation:** In the event that snow or other inclement weather forces a delay or a closing of the campus, class may be cancelled. If this happens you may call my voicemail number above and I will inform you as to whether or not class is indeed cancelled.

**Comments:** Traditionally, a course in physics may be the most difficult subject you encounter in your college career. At the same time it can be one of the most interesting (even if you're not a physics major). One key to your success will be to complete all of the assigned homework. Just as with any acquired skill, practice will sharpen your ability to solve the problems.

My mission is to facilitate your learning and provide you with the tools to complete the work. I will try to provide you with an underlying motivation for the topics we are studying that will make the course more interesting and enjoyable for you. I make myself available for help so you should not hesitate to come to my office when you are struggling (come by even if you're not struggling!). You should feel free to approach me with questions and problems - no matter how "stupid" or "simple" you think they might seem.

## Schedule

M	March	15	Ch. 35.1 – 5: Light, reflection, refraction
W		17	Ch. 35.6 – 9: Dispersion, applications
R		18	Recitation
F		19	Ch. 36.1 – 36.2: Images formed by mirrors
M		22	Ch. 36.3 – 4: Images formed by lenses / Ch. 35 Quiz
W		24	Ch. 37.1 – 3: Interference of light
R		25	Lab (lenses)
F		26	Ch. 37.4 – 6: Thin film interference
M		29	
W		31	Review / Ch. 36 Quiz
R	April	1	Lab (interference)
F		2	Midterm Exam (Ch. 35 – 37)
M		5	Ch. 38.1 – 2: Diffraction
W		7	Ch. 38.3 – 4: Diffraction continued
R		8	Recitation
F		9	Ch. 38.5 – 6: X-ray diffraction, polarization / Ch. 37 Quiz
M		12	Ch. 39.1 – 4: Einstein's theory of special relativity
W		14	Ch. 39.5: Relativistic velocity addition / Ch. 38 Quiz
R		15	Ch. 39.6 – 8: Relativistic mechanics
F		16	Ch. 40.1 – 4: Introduction to quantum mechanics
M		19	Ch. 40.5 – 6: Bohr model, photons / Ch. 39 Quiz
W		21	Ch. 40.7: Wave properties of matter
R		22	Lab (atomic spectra)
F		23	Ch. 41.1 – 3: Wavefunctions, probability
M		26	Ch. 41.4 – 5: Schrödinger's equation / Ch. 40 Quiz
W		28	Ch. 41.6 – 8: Applications
F		30	Review
M	May	3	
W		7	Final Exam (TBA)