

University of Alabama in Huntsville
Department of Physics
Spring 2008

PH 113: General Physics w/ Calculus III

<u>Time:</u>	Lectures:	MWF 3:00 – 3:55PM	Recitation:	R 8:15 – 9:15PM
<u>Venue:</u>	Lectures:	MSC 113	Recitation:	MSC 102
<u>Instructors:</u>	Professor:	Lior Burko	TA:	Kristen Lackeos
<u>Phone:</u>		824-2934		TBA
<u>Email:</u>		burko@uah.edu		klackeos@bellsouth.net
<u>Office:</u>		OB 210		TBA
<u>Office hours:</u>		MW 1:15 – 2:45PM		TBA

Success Center: Further help is available at the *Success Center*.

Computers are available in the *Physics Computer Lab*, OB 249.

Prerequisites: MA 201; C or better in PH 112

Course objectives: At the conclusion of the course, students will have a general introduction to wave phenomena, special relativity, and selected topics in modern physics, and be able to take more advanced and specialized courses on modern physics or its applications.

Textbook: *Fundamentals of Physics*, 7th edition, Halliday, Resnick, and Walker (Wiley, 2005). Although a newer addition is in existence, we use the 7th edition. You are required to read the textbook. *Effective reading is an active one!*

Homework: Online homework at <http://edugen.wiley.com/edugen/class/cls50175/>. Each homework assignment will have a hard deadline. It is your responsibility to regularly check for homework assignments, and to submit your work on time. You are allowed to drop two assignments for whatever reasons, without having to ask. No additional drops are allowed without affecting your grade. I suggest you save the dropped assignments for emergencies. If you use them up for non-emergency cases, you won't have another one to drop when you do have an emergency, so use the ones you may drop judiciously. In addition to the online assignment there will also be paper assignment, to be submitted by the announced deadlines. You may drop one paper assignment in addition to the online ones, but you may not trade one kind of assignment for another. Late assignments will be accepted only if an appropriate excuse from the relevant University authority is presented.

Attendance policy: College of Science rules require students of 100–level courses to attend all lectures. Attendance will be monitored and enforced. While there is no hard attendance rule regarding recitation hours, it will be extremely difficult to do well in this

course without attending the recitations. All students are therefore strongly encouraged to attend the recitations regularly, and make the effort to benefit from them. Although it is possible in principle to get a good grade without attending the recitation hours, I am yet to see a student who is successful at that.

Topics to be discussed: This class covers basic topics in modern physics. Specifically, the topics to be discussed are: Waves; Electromagnetic waves; Special Relativity; Optics: Images; Interference; Diffraction; Modern physics: Photons and matter waves; Atomic physics; Nuclear physics; Energy from the nucleus; Quarks, leptons, and the Big Bang.

Exam policy: We will have three midterm exams and a final exam. The final exam will be comprehensive. You will only be allowed one A4 sheet with *your own* hand written notes (e.g., important formulas &c). Makeup exams, which may be oral or more difficult, will only be given for absences with an appropriate *prior* written excuse, and will be approved only under the most extreme circumstance.

Grading policy: The breakdown of your final grade will be as follows:

Homework:	20%
Class participation:	10%
First midterm:	15%
Second midterm:	15%
Third midterm:	15%
Final exam:	25%

Total: 100%

Letter grades will be assigned as follows:

90 – 100	A
80 – <90	B
70 – < 80	C
65 – < 70	D
below 65	F

Common Courtesy Guidelines: For the benefit of your fellow students and your instructors, you are expected to practice common courtesy with regard to all course interactions. For example:

- Show up for class on time.
- Turn off your cell phone *before* class begins.
- Do not leave class early, and do not rustle papers in preparation to leave before class is dismissed.
- Be attentive in class; stay awake, don't read newspapers, &c.
- If you must be late or leave early on any particular day, please inform your instructor in advance.
- Play well with others. Be kind and respectful to your fellow students and your teachers.

Tentative Semester Plan (Lectures)

Deviations will be made as necessary. The recitation sessions will follow the lectures.

Date(s)	Topic	Textbook Section	
January 7, 9, 11	Waves - I	Ch. 16	
January 14, 16, 18	Waves - II	Ch. 17	
January 21			No classes
January 23, 25, 28	Electromagnetic waves	Ch. 33	
January 30, Feb 1, 4	Special Relativity - I	Ch. 37	
February 6, 8, 11	Special Relativity - II	Ch. 37	
February 13			First midterm
February 15, 18, 20	Optics: Images	Ch. 34	
February 20, 22, 25	Optics: Interference	Ch. 35	
February 27, 29, March 3	Optics: Diffraction	Ch. 36	
March 5	Photons and matter waves	Ch. 38	
March 7			Second midterm
March 10, 12	Photons and matter waves	Ch. 38	
March 14	Matter waves	Ch. 39	
March 17, 19, 21			Spring break
March 24, 26	Matter waves	Ch. 39	
March 28, 31, April 2	Atomic physics	Ch. 40	
April 4, 7, 9	Nuclear physics and energy	Ch. 42, 43	
April 11	Elementary particles and the Big Bang	Ch. 44	
April 14			Third midterm
April 16, 18	Elementary particles and the Big Bang	Ch. 44	
April 30			Final exam

Exam dates:

First midterm: February 13, during class
Second midterm: March 7, during class
Third midterm: April 14, during class
Final exam: April 30, 3:00 – 5:30PM

*I wish you a successful and an enjoyable semester,
L.B.*