

# Physics 113: General Physics with Calculus II

Fall 2003

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## 1. Course Material

This course is a calculus-based introduction to physics. During this term we will study waves, optics and modern physics, covering Chapters 17,18, and 34-45 in the text *Fundamentals of Physics(6th edition, Extended)* by Halliday, Resnick and Walker, published by Wiley and Sons, 1997. I will use the WebCT page to post HW and test solutions, etc. for this course. The WebCT address is <http://classweb.uah.edu>.

## 2. Assignments and Grading

There will be 14 homework assignments, three midterm exams, and the final exam. The contribution of each of these to your final numerical score will be:

Homework:	20%
1 <sup>st</sup> midterm:	20%
2 <sup>nd</sup> midterm:	20%
3 <sup>rd</sup> midterm:	20%(drop lowest of three midterms)
Final exam:	40%
	<b>100%</b>

**The Rules:** The homework must be turned on the date indicated; no late homework accepted. On the exams, permission to take a later makeup exam because of unavoidable conflicts must be obtained at least 2 days before exam. This is not recommended unless absolutely necessary, since the makeup exam will be more difficult.

For the time being, we will assume that the final score-letter grade correspondence will be approximately:

A	80%
B	65%
C	50%
D	35%

This is likely to be one of the more challenging (hopefully also fun?) courses you have encountered. It is *extremely* important that you stay current in your mastery of the homework problems and the lecture material. Experience has shown that slacking off in these areas is generally fatal (grade-wise) in physics, especially at the introductory levels.

### **3. Consultation**

You are strongly encouraged to come for help. My office hours are tentatively set at TTh 9:00-10:30 AM. You can and should feel free to contact me via email and/or phone, even if you can't come to the office personally, whatever is most convenient for you.

### **4. Reserve Reference Books**

The following books have been reserved for up to overnight use in the Reserve section of the library:

1. Feynman, R. P., R. D. Leighton, and M. Sands, *The Feynman Lectures on Physics*, Addison-Wesley, 1964.
2. Sears, F., *College Physics*, Addison-Wesley, 1957.
3. Alonso, M., and E. Finn, *Fundamental University Physics*, Addison-Wesley, 1967.
4. Schaum, D., and C. van de Merwe, *Theory and Problems of College Physics*, McGraw-Hill, 1970.
5. Semat, H., and P. Baund, *Fundamentals of Physics*, Holt, Rinehart, and Winston, 1974.
6. Fowler, R. G., and D. I. Meyer, *Physics for Engineers and Scientists*, Allyn and Bacon, 1958.

### **5. Items from the College of Science**

**Students with Disabilities:** Students with disabilities are encouraged to register immediately with Student Development Services in the University Center, UC 113. SDS will provide necessary academic accommodations privately to all instructors upon receipt of proper documentation. Regardless of disability, I would like to hear from anyone that may require a modification of seating, testing or other class procedure in order to make your learning as productive as possible. Please see me after class or during my office hours to discuss appropriate modifications.

**Complaint Procedure:** If you have difficulties or complaints related to this course, your first action is to discuss them with the instructor of the class. If such a discussion would

be uncomfortable for you or if that discussion fails to resolve your difficulties, you should then contact Professor Lloyd Hillman, Chair of the Department of Physics, office OB201, phone number 824-2481. If you are still unsatisfied, you should then discuss the matter with Dr. Debra Moriarty, Associate Dean of the College of Science, office MSC 207, phone number 824-6605.

**Academic Honesty:** The UAH catalog states: “Students at the University of Alabama in Huntsville have the following academic responsibilities:

... (6) To maintain the integrity of the classroom by practicing academic honesty. Students should refer to the student handbook for details regarding academic dishonesty. Plagiarism and other forms of cheating are subject to penalties as outlined in the student handbook.”

<u>Lecture</u>	<u>Chapter/Section</u>			<u>Homework Problems</u>	<u>HW</u>
<u>No.</u>	<u>Date</u>		<u>Material</u>		
<u>Due</u>					
1	8/26	17	Waves-I	<u>17.</u> 14,22,26,42,51	9/02
2	8/28	18	Waves-II	<u>18.</u> 8,12,16,22,34,38,42,51	9/09
3	9/02	18	Waves II		
4	9/04	34	EM Waves	<u>34.</u> 18,24,28,36,51,56,60	
	9/11				
5	9/09	35	Images	<u>35.</u> 11,16,29,36	9/16
6	9/11	35	Images		
7	9/16	36	Interference	<u>36.</u> 5,11,22,28,39,47,50	9/30
8	9/18	17-18,34-35	1 <sup>st</sup> Exam		
9	9/23	36	Rev. Exam, Interference		
10	9/25	37	Diffraction	<u>37.</u> 10,22,29,40,60,63	10/07
11	9/30	37	Diffraction		
12	10/07	38	Relativity	<u>38.</u> 9,12,20,25,42,50	10/14
13	10/09	38	Relativity		
14	10/14	39	Photons/Matter Waves	<u>39.</u> 11,24,30,36,42,47,54,73	10/21
15	10/16	35-38	2 <sup>nd</sup> Exam		
16	10/21	40	Rev. Ex, More Matt. Wvs	<u>40.</u> 10,16,21,32,42,47,52	10/28
17	10/23	40	More Matter Waves		
18	10/28	41	All About Atoms	<u>41.</u> 4,10,20,34,40,50	11/04
19	10/30	42	Cond. Elect. Solids	<u>42.</u> 10,17,31,36,40	11/06
20	11/04	42	Conduction of Electricity in Solids		
21	11/06	43	Nuclear Physics	<u>43.</u> 8,16,24,37,44	11/18
22	11/11	40-42	3 <sup>rd</sup> Exam		
23	11/13	43	Rev. Exam, Nuclear Physics		
24	11/18	44	Energy from Nucleus	<u>44.</u> 8,14,22,29,36,51	11/25
25	11/20	44	Energy from Nucleus		
26	11/25	45	Quarks...Bang	<u>45.</u> 7,18,28,33,38	12/04
27	12/02	45	Quarks, Leptons, Big Bang		
28	12/04	All	Review for Final		

## Syllabus Physics 116

**Scope of Course:** Physics 116 is an independent, 1 credit hour lab course normally taken parallel with PH 113. The lab course includes the experimental study of wave motion, sound, optics and selected experiments in quantum and nuclear physics.

**Lab Manual:** The manual is locally published and is available in the bookstore.

**Prerequisites:** This lab should be taken concurrently with the PH 113.

**Instructor:** The lab instructor is normally a graduate teaching assistant. The GTA will notify you of his or her office hours and where they will be. The GTA is responsible for explaining the lab experiment, conducting the lab class, grading your written reports and keeping the records to determine your semester grade.

**Lab Goals:** The goals of this course are to give you:

Direct experience with the physical phenomena  
Experience in connecting the real world to concepts and theories  
An introduction to the art of experimentation and measurement

### **Grading and Attendance:**

Semester grades are based on the individual grades for twelve (12) weekly experiments (60%) as well as your performance on the midterm (20%) and final (20%) examinations. Your attendance and actually doing all scheduled experiments is absolutely essential. Should you have a valid, excused absence, please arrange a time with your lab instructor to perform the make-up lab as soon as possible.

Your grade for the weekly experiments will be assigned as follows: 50% data collection and performing the experiment, 35% lab report, and 15% quiz. A quiz will be given at the beginning of each lab meeting covering the information in the lab manual. You are expected to read the manual before coming to lab and be prepared to conduct the experiment. Written lab reports are due within one week of being performed. These are graded based on your ability to accurately perform required calculations, organize data in a clear manner, graph results when required, perform error analyses and state your conclusions. The general purpose of any lab report is to present the information in such a way that it could be repeated by another scientist.

Your overall grade for the lab will also include a grade for the midterm and the final exam. These will be conducted during your scheduled lab times in the middle and at the end of the semester. The exams will be experiment based and will require knowledge of each of the experiments you have completed. Your lab instructor will provide further details concerning the exams.

**Experiments:**

The schedule of experiments is posted at the entrance to the lab room.

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