

PH 253-001 - Modern Physics

MEETINGS: TMWF 9:00 – 9:50 a.m. Room 200 Gallalee Hall

CREDIT: 3Hrs

INSTRUCTOR: Dr. Chester Alexander
Office: 108 Gallalee, 231 Bevill
Telephone: 348-3783 e-mail: calexand@bama.ua.edu
348-6367 (Bevill)

OFFICE HOURS: MWF 8:15-9:00 am and by appointment

COURSE WEBSITE: <http://www.bama.ua.edu/~calexand/PH253/>

TEXT: Physics for Scientists and Engineers , by Serway and Beichner, 5th edition
You will also need a calculator with trig and log functions.

PREREQUISITE: Physics 101-102, 105-106, Math 125-126

GENERAL COURSE DESCRIPTION: This is an introduction to modern physics and thermodynamics.

COURSE GOALS AND OBJECTIVES: Upon completion of the course, you should have a basic understanding of the course topics on both a qualitative and quantitative level. You should be able to solve basic problems using mathematics through calculus.

INSTRUCTIONAL PHILOSOPHY: You are expected to read assigned sections in the textbook before class, and attend class. A short quiz will be given at the beginning of Thursday classes on materials specified in the course syllabus. Class lectures will be devoted to helping you develop a conceptual understanding of some of the basic topics covered in the text. Lectures will not consist simply of repeating material in the textbook, and you will be responsible for the assigned topics in the text even if some of these topics are not covered in class. Problem solving will be emphasized through assigned problems from the end of the chapters that will be collected and corrected. Students will be assigned to teams and you are encouraged to work with team members on problems assignments. The hour exams and the final exam will include questions similar to the assigned homework problems.

GRADING POLICY:

Weekly quizzes	25%
Class exams (2)	40 %
Homework	10%
Final exam	25 %

DISABILITY ACCOMODATIONS: To request disability accommodations, please contact Disability Services (348-4285). After initial arrangements are made with that office, contact your professor.

	12	19	10	Chp. 19
	14	20		
	17	20		
	19	20	11	Chp. 20
	21	21		
	24	21		
	26	21		
	28	Thanksgiving Holiday		
Dec.	1	22		
	3	22		
	5	22		
	XX	Final Exam		

PROBLEM ASSIGNMENTS (From Serway & Beichner, 5th edition) Problems have been assigned for each chapter, and they will be on the web site. You are required to work the problems alone, they will be graded by the computer, and the grades will be sent to me. If they are not done by the date assigned, the computer will not accept them.

LOGGING IN AS A STUDENT

The initial login requires students to register into your course using the unique PIN code that you previously generated. During this registration process, students create their own user IDs and passwords, which they will use for all subsequent logins.

Initial Login

Registering with the PIN Code (PINCode: E-5ETBR3MN4UDG8)

1. In your browser, type and go to <http://bca.brookscole.com>.
2. Click **First Time Users**.
3. If your school *is not loaded* in the School field (under the PIN code field):
 - a. Click **Find Your School** in the bottom sentence.
 - b. In the Name of School field, type the first few words of **your school's name**; then click **Search**. A list of schools will appear on the right.
 - c. Click **your school** to load it.
4. If your school *is loaded* in the School field, then type the **PIN code** for your course/section (which was given to you by your instructor). The PIN code is case sensitive, so type it exactly as it appears (all upper case).
5. Click **Register**.

Viewing Results of the Session

You are then presented with a Results chart, listing the overall score, each problem's score, and a view link to each problem.

1. Click **View** for any question. Note that the actual algorithmic version of the question as presented in the session is preserved, your answer is identified, the correct answer is revealed, the specific rejoinder is recorded, and times answered is recorded. This assessment, as taken, may be printed (see link in the upper right). Also, this information is saved in the instructor's gradebook.
2. In the left-hand menu, click **My Assignments** to see how the attempt number, score, and the hyperlinked details are now preserved.

Viewing Progress

1. In the left-hand menu under General, click **Progress**. A chart will then load, listing Course, Assignment name, date Assigned, Due date, Taken On date, student's Score, Possible score, Extra credit, and Notes.
2. Now that you have completed an assessment as a student and have viewed your progress, logout as students. In the upper-right menu, click **Log Out**.

Ph 253-001 Revised Schedule

Oct.	1	Hour Quiz #1		Chp. 39-43
	3	44		
	5	44		
	8	44	6	Chp. 44
	10	44		
	12	45		
	15	45	7	Chp. 44 +45
	17	45		
	20	45+46		
	22	46	8	Chp. 45
	24	46		
	27	46		
	29	Hour Quiz #2		Chp 43-46
	31	19		
Nov.	3	19		
	5	19	9	Chp19
	7	19		
	10	20		
	12	20	10	Chp. 19 + 20
	13	20		
	17	20 + 21		
	19	21	11	Chp. 20
	21	21		
	24	21		
	26	22		
	28	Thanksgiving Holiday		
Dec.	1	22		
	3	22		
	5	Review		
	XX	Final Exam		

PH 255-001

MODERN PHYSICS LAB

Spring, 2004

MEETINGS: M 2:00–5:00 p.m., Room 322 Gallalee

CREDIT: 1 hour

INSTRUCTOR: Dr. Don DeSmet

Office: 107 Gallalee

Email: ddesmet@bama.ua.edu

OFFICE HOURS: TR 9:00- 10:00 a.m., or by appointment

TEXT: Handouts for each experiment

COREQUISITE/PREREQUISITE: Physics 253

GENERAL COURSE DESCRIPTION: This is a lab course where experiments are designed to measure fundamental physical constants, (e , e/m , c , h , R), to observe the wave and particle nature of radiation and particles, and to observe nuclear decay.

COMPUTER: There is a computer in the lab for your use.

INSTRUCTIONAL PHILOSOPHY: You are expected to read about the experiments before lab, and a short lecture about the experiments will be given at the beginning of each lab. Students will be assigned to teams and you will work together with other team members on each experiment. Each student will hand in an individual report. Lab reports should be handed in one week after the experiment is complete. Some experiments will require more than one lab period.

ACADEMIC MISCONDUCT POLICY: All acts of dishonesty in any work constitute academic misconduct. The Academic Misconduct Disciplinary Policy will be followed in the event of academic misconduct.

LAB WRITEUPS: The format of the lab reports will vary with individual preference and with the type of experiment, but a suggested outline is:

- 1 Purpose of experiment
- 2 Description of equipment
- 3 Procedure
- 4 Theory
- 5 Data
- 6 Sample calculations
- 7 Error analysis
- 8 Results and comments on results

You should write the report in such a way that you will be able to look at it in a few years and recall what you did. It is particularly important that the results be clearly presented and their significance and deviation from expected results understood.

EXPERIMENTS:

- 1 Measurement of the speed of light
- 2 Photoelectric effect
- 3 Balmer series of Hydrogen
- 4 Electron diffraction
- 5 Measurement of e/m for the electron
- 6 Measurement of the charge on the electron
- 7 Michelson interferometer
- 8 Franck-Hertz experiment
- 9 Geiger Muller counter/counting statistics
- 10 Absorption of gamma rays in lead
- 11 Scintillation counter