PHYSICS 107
Winter 2002

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Course Description
The course description for Physics 107 reads: Introduction to Modern Physics. (Lect. 3). An elementary survey of the modern concepts in physics and their applications: relativity, blackbody radiation, the Bohr atom, particles and waves, quantum mechanics, atoms, molecules, solids, statistical mechanics, radioactivity, nuclei, and elementary particles. (Math 22 and Physics 24 or 25.)

Text
The text is *Concepts of Modern Physics*, fifth edition, by Arthur Beiser, McGraw-Hill, publisher. This book is designed to follow the standard two semester introductory, calculus-based, classical physics course. An understanding of the concepts of calculus is prerequisite. The necessary differential equations and wave mechanics are explained as needed.

Exam Schedule
Physics 107 meets from 3:30-4:20, Monday, Wednesday, and Friday. A calendar for the course is included in this syllabus. There are three scheduled hour examinations and a final:
Exam I -- Chapters 1 to 4. Wednesday, February 13.
Exam II -- Chapters 5 to 7. Wednesday, March 13.
Exam III – Chapters 8 to 10. Monday, April 22.
Comprehensive Final Examination. To be arranged by the class.

Hour Examinations and Final Exam
There are three one hour multiple choice examinations worth 10% each. The exams will cover concepts and definitions, assigned problems with minor numerical changes, and problems similar to those presented in the homework and quizzes but requiring a deeper understanding of concepts or more complex calculations or derivations. No books, notes or other written material, or headphones are allowed during examinations, except you may use any calculator containing any information you want. The final examination will consist of multiple choice questions covering the last two chapters, plus a substantial comprehensive content for the material covered during the semester.

Reading
It appears that reading the text before hearing a lecture on the material serves to format the brain, preparing regions for the eventual long term storage of incoming material. You are responsible for reading each chapter by the date indicated on the calendar. Due to circumstances beyond my control, the reading assignments will be replaced by short quizzes on the dates indicated as

reading assignments (R?) on the calendar. These quizzes will be given just before the first lecture covering the assigned concepts.

~~Webwork~~ Homework

The homework for this course has been changed from webwork problems selected from those available from the University of Texas Homework Service for Modern Physics due to operational difficulties. Homework assignments are found in the Reading and Assignment section below. You will now be responsible for mastering the assigned end-of-chapter problems by the deadlines for each assignment. Please write out your solutions and turn them in to the course instructor at or before the last lecture on each chapter. This homework is critical, because your mastery of quizzes and hour exams will depend upon your mastery of these problems. ***If you don't do the homework, you won't do well on the quizzes and on the exams, not to mention the 20% drop in your course grade.***

Quizzes

Twelve quizzes will be given during the semester. The quizzes will test your comprehension of recently assigned lecture material and homework. Quizzes are announced in advance in the syllabus. Numerical constants and equations required for the quizzes will be given to you with each quiz. The quizzes are variable format: talking, notes, book, or combinations of save. You may use any calculator you wish. At the end of the semester, your lowest quiz score will be dropped for the computation of your percentage. Your quiz scores will depend on how well you master the homework. Because this is a survey course, we will review many topics in a relatively short time. You are urged to form a study group to help you master the large amount of material covered in this course.

Make-Up Policy

The lowest **homework, quiz, and reading** assignment scores will be dropped. One exam may be taken early if notice is given to the course instructor one week prior to the scheduled exam. This course has many Seniors who will be scheduling job interviews. Please explain to the potential employer that you have a prior commitment to the exam schedule for this course. The hour exams are scheduled on Wednesday (I and II) and on Monday (III), thus leaving the weekends available for job interviews. The Final cannot be made up or taken at other than the scheduled time. Beware!

You may take an exam on a regularly scheduled exam day at some other than the normal time and place that day if you have a formal excused absence to participate in a major university or intercollegiate event and if the event's faculty sponsor can insure exam security. To do this, you must submit no later than 72 hours before the exam a written request to your course instructor, signed by you and the UMR faculty sponsor of the event, stating the nature of the event and the sponsor's willingness to arrange proctoring and to insure test security.

Regrade Requests

If you want a regrade, please write the reason for the regrade request on a separate sheet of paper, staple the sheet to the front of your copy of the exam or quiz, and hand to Dr. Sparlin during lecture. Be sure to specify which problem you want regraded. **Regrade requests must be submitted at the next lecture after the exam/quiz was taken.**

Dropping Physics 107

The last day to drop this class without a withdrawal showing on your transcript is Monday, February 25, 2002. The last day to drop this class is Friday, April 19, 2002. ***Do not assume I will***

automatically drop you for non performance.

Points
The following table summarizes the percentage distribution for the elements of the course:

Three hour Exams (3)   30%   (Exams drawn from quizzes, homework, and examples.)
Comprehensive Final   10%   (Multiple answer exam drawn from quizzes and Exams.)
Quizzes (12)   30%   (Quizzes drawn from the Homework and Examples.)
Homework (29)   20%   (Problems used to pace your course effort.)
Reading (11)   10%   (Questions answered prior to lecture.)

Grades
Semester letter grades for Physics 107 will be assigned as follows:
A (90.0%)
B (80.0%)
C (70.0%)
D (60.0%)
F (below 60.0%)

There is no limit to the number of A's, B's, etc. It is expected that the grade point average for Physics 107 will be very close to the class average grade point.

How To Irritate Your Physics 107 Instructor
•Don't read this syllabus.
•Don't do the homework, and then complain because you can't do the quizzes and exams.
•Come in at 2:00 p.m. on exam day, say you haven't done the homework yet and you don't understand the material for today's exam, and then ask to be shown how to do the homework.

Homework Solutions for end of Chapter Problems.
Homework solutions for many of the End of Chapter problems in your text are available on the internet at http://www.umr.edu/~sparlin/Phys107. Physics 107 homework solutions are in the form of Mathcad documents with file names like chapter1.mcd, chapter2.mcd, etc. You can load these solutions into Mathcad, or you can copy the files to a floppy disk or a drive on any permanent computer account you might have, for later use. The Mathcad files work on the Physics CLC computers, but are not guaranteed to be compatible with different versions of Mathcad which may be installed elsewhere. *Warning*: *These problems are now assigned this semester and are to be considered an important part of your study*. These homework solutions are also be available in Adobe Acrobat format. You can read these files on any computer which has the free Acrobat Reader installed, but you cannot do mathematical manipulations with them in Acrobat.

Lecture Notes
Lecture notes courtesy of Dr. Pringle are available on the Internet at http://www.umr.edu/~sparlin/Phys107 . The notes are in Adobe Acrobat format. My presentation of the content of this course will closely follow your text, as do Dr. Pringle's lecture notes. Please, don't all of you rush out right after class and print out the complete set of lecture notes. Please don't print multiple copies of the lecture notes and leave them lying around the Physics CLC. Please don't leave multiple copies of the lecture notes in the recycling boxes. Please don't

sit in class and read the lecture notes. I will assume that you have completed the Reading assignment before I begin our discussion of the relevant chapter.

Old Exam Files
Exam files from previous years as taught by Dr. Pringle are available on the internet at http://www.umr.edu/~sparlin/Phys107 . The files are in Adobe Acrobat format and are suited for group study and review of your current skill.

E-Mail
You must check your email at least daily. Most administrative messages concerning the course will be given during class and duplicated by email to all members of the class. Mass mailings will go to your UMR account. It is your responsibility to maintain any forwarding matters. You can send e-mail to me at sparlin@umr.edu. Anonymous messages will be trashed.

Unresolved Complaints
It is hoped that any complaints about the course can be resolved in a collegial manner through discussions between student and instructor. However, if there are any complaints that cannot be resolved, you may take them up with the Physics Department Chairman, Dr. Paul Parris (parris@umr.edu) or the Dean of the College of Arts and Sciences, Dr. Russell Buhite (rbuhite@umr.edu).

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Reading and Homework Assignments
Exam and quiz questions will be drawn from the following assignments directed to reading, example problems, and the assigned homework. ***Hand all homework in for counting on the days indicated in the calendar.***

Chapter 1.
Skip sections 3, 10; example 4.
Examples: 1, 5, 6, 7, 8.

Chapter 2.
Skip sections 5, 6, 7, 8.
Examples: 1, 2, 8.

Chapter 3.
Examples: 1, 2, 3, 4, 5, 6, 7, 8, 9.

Chapter 4.
Skip sections 6, 7.
Examples: 1, 2, 3, 4.

Exam I, Ch. 1-4, Wednesday, Feb. 13.
MODIFIED SYLLABUS
Chapter 5.
Examples: 2, 3, 4, 5.
Homework: 1-5, 11-12, 15, 17, 22-25, 29-30, 33.

Chapter 6.
Skip section 10.
Examples: 2, 3.
Homework: 3, 10-22, 24.

Chapter 7.
Skip sections 6, 7, 8.
Examples: 1, 7, 8.
Homework: 3, 9, 11, 16, 40-41.

Exam II, Ch. 5-7, Wednesday, Mar. 13.

Chapter 8.
Skip sections 6, 7, 8.
Homework: 1, 2, 3*, 4*.

Chapter 9.
Skip sections 7, 10.
Examples: 1, 3, 4, 5, 6, 7, 8.
Homework 1, 2, 7-10, 14, 19-20, 23-26, 30-31, 33, 38-40, 44.

Chapter 10
Skip sections 8, 9, 10.
Examples: 1, 2, 3.
Homework: 2-4, 10-11, 15-16, 21-22.

Exam III, Ch. 8-10, Monday, April 22.

Chapter 11.
Skip sections 5, 6.
Examples: 1, 2, 4, 5.
Homework: 1-6, 12-18.

Chapter 12
Examples: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
Homework: 1-11, 16-18, 21-22, 24-25, 30, 35-40, 43, 54, 60, 64.

Monday	Tues.	Wednesday	Thurs.	Friday
Jan. 14 Q1 Ch. 1	15 H1	Jan. 16 Ch. 1	17 H2	Jan. 18 Ch. 1
Jan. 21 Martin Luther King	22 H3	Jan. 23 R1 Ch. 2	24 H4	Jan. 25 Ch. 2
Jan. 28 Q2 Ch. 2	29 H5	Jan. 30 R2 Ch. 3	31 H6	Feb. 1 Ch. 3
Feb. 4 Q3 Ch. 3	5 H7	Feb. 6 R3 Ch. 4	7 H8	Feb. 8 Ch. 4
Feb. 11 Q4 Ch. 4	12 H9	Feb. 13 Exam. I (1-4)	14	Feb. 15 R4 Ch. 5
Feb. 18 Ch. 5	19	Feb. 20 Ch. 5	21	Feb. 22 Ch. 5
Feb. 25 Q5 Ch. 5 HW due	26	Feb. 27 R5 Ch. 6	28	Mar. 1 Ch. 6
Mar. 4 HW due Ch. 6	5	Mar. 6 R6 Ch. 7	7	Mar. 8 Ch. 7
Mar. 11 Q6 Ch. 7 HW due	12	Mar. 13 Exam. II (5-7)	14 Spring	Mar. 15 Recess
Mar. 18 R7 Ch. 8	19	Mar. 20 Ch. 8	21	Mar. 22 Ch. 8 HW Ch. 8 due
Mar. 25 Spring Break	26	Mar. 27	28	Mar. 29
Apr. 1 Ch. 9 R8	2	Apr. 3 Q7 Ch. 8 Ch. 9	4	Apr. 5 HW Ch. 9due Ch. 9
Apr. 8 R9 Ch. 10 Q8 Ch. 9	9	Apr. 10 Ch. 10	11	Apr. 12 Ch. 10
Apr. 15 Q9 Ch. 10 Ch. 10	16	Apr. 17 Ch. 10	18	Apr. 19 Q10 Ch. 10 Ch. 10 HW Ch. 10due
Apr. 22 Exam. III (8-10)	23	Apr. 24 R10 Ch. 11	25	Apr. 26 Ch. 11

Apr. 29 Ch. 11
  HW Ch.11 due
  Q11 Ch.11
	30	May 1 R11 Ch. 12
		Ch. 12
			2	May 3
				Ch. 12

May 6 Ch. 12	7	May 8 Q12 Ch. 12 Ch. 12 HW Ch. 12 due	9	May 10- Last Class Day

Monday, March 11: Quiz 6 (Ch. 7) Homework due (Ch. 7)
Wednesday, March 13: Exam 2 (Ch. 5 – Ch. 7)
Thursday through Sunday: Spring Recess (St. Pats)
Monday, March 18: Reading 7 (Ch. 8, sections 8.1-8.5)opened and printed from Exams, worked
and submitted during class.
Friday, March 22: Quiz 7 (Ch. 8) closed book, closed notes. Homework from Ch. 8 due. Last
two problems must be done using Mathcad.
Saturday, March 23 through Sunday, March 31: Spring Break
Monday, April 1: Reading 8 (Ch. 9 – statistical mechanics)
Friday, April 4:   Quiz 8(Ch. 9)   Homework for Ch. 9 due.
Monday, April 8: Reading 9 (Ch. 10)
Monday, April 15: Don't forget the IRS! Quiz 9 (Ch. 10)
Friday, April 19: Quiz 10 (Ch. 10) Homework for Ch. 10 due.
Monday, April 22: Exam 3 (Ch. 8 – Ch. 10)
Wednesday, April 24: Reading 10 (Ch. 11)
Monday, April 29: Quiz 11 (Ch. 11) Homework for Ch. 11 due.
Wednesday, May 1: Reading 11 (Ch. 12)
Wednesday, May 8: Quiz 12 (Ch. 12) Homework for Ch. 12 due
Friday, May 10: Last class day for you and for me.

Final: To be determined by the class vote. Having one is not optional. dms