

PHY 244 – Spring 2008

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Office Hours: M 12:30 – 1:30 PM and F 11 AM – noon (or by appt) (email preferred means of contact)

Pre-requisite: PHY 240, MTH 230

Co-requisite: PHY 204 and PHY 244R

Credits: 5 quarter hours

PHY 244-01	Lecture: MWF	9:45 – 10:50 AM	340 Oelman	Instructors: Thompson, Petkie, Deibel
PHY 244R-02	Recitation: R	8:30 – 9:20 AM	169 Brehm Lab	Instructor: Deibel
PHY 244R-03	Recitation: R	9:30 – 10:20 AM	169 Brehm Lab	Instructor: Deibel
PHY 244R-04	Recitation: R	10:30 – 11:20 AM	169 Brehm Lab	Instructor: Skinner

Text: *Physics for Scientists and Engineers, 7th Edition, by Serway and Jewett* (6th edition is fine as well)

Clickers: Clickers will be used during lectures to assess student understanding. Participation points will be earned for clicker responses. Students will pick up their labeled clicker at the beginning of lecture from a designated bin and return it at the end of each class. (Clickers borrowed and not returned will be assessed a \$34 replacement fee). If you have a clicker from PHY 240, 242, register it with Dr. Thompson to ensure that your responses are recorded.

Course Description: This course is an introductory survey of thermodynamics, oscillations and waves, sound, and optics. The goals are to achieve an understanding of the basic concepts of these topics and to be able to apply these concepts to a variety of physical situations. Students are expected to acquire skills in scientific methods, critical reasoning, and problem solving. Students are expected to learn to organize their thoughts and to express them clearly in written and oral means.

Lecture: Attendance is expected. You will receive points towards your final course grade for responding to clicker questions in lecture and you can not earn these points if you are not present. Lecture is meant to supplement the text and clarify some of the more difficult material. Students are responsible for all assigned material in the chapter whether covered in lecture or not. It is expected that students read the text prior to class.

Recitation: Recitation is a **required** part of this course. Recitations will begin Thursday, April 3. Note: 10% of your lecture grade is devoted to work associated with recitation.

Laboratory: The laboratory is a separate course (PHY 204) and a co-requisite for PHY 244. The experiments you perform will supplement the lectures and provide you with the opportunity to enhance your scientific reasoning and measurement skills. There is no lab manual but worksheets will need to be printed from the course website.

Evaluations: There will be two midterms and a comprehensive final. Announced quizzes will be scattered throughout the course.

Homework: Weekly homework will be assigned from problems at the end of the chapters. Homework is due at the beginning of lecture on the dates indicated in the course schedule. Your homework solutions must be written neatly and show as much of your work as possible. Please staple your pages together! No late homework will be accepted unless you are absent or alternate arrangements were made ahead of time in person or via email with the lecture instructor. **Students must read or skim each chapter.** Pay particular attention to sample problems within the chapters!

<u>Weighted Grade Distribution</u>	<u>Percent</u>	
Attendance/Participation (clickers)	5%	
Recitation attendance and work	10%	
Homework	15%	
Quizzes	10%	
Exams 1 and 2	30%	<i>Distribution is</i>
Comprehensive Final	30%	<i>subject to change!</i>

Grading Scale:

A (88% and above)
B (75%-87%)
C (62%-74%)
D (50%-61%)
F (under 50%)

Student Code of Ethics

Please understand the policies of the university. They will be adhered to in this course.

Comprehensive Final Exam:

Wednesday June 11 from 8:30 – 10:30 AM

GENERAL COMMENTS - Solutions to the homework will be posted on the bulletin board in the main hallway on the 2nd floor of Fawcett Hall (near room 248) after each due date. If you have difficulties with the material you are urged to seek help (sooner rather than later). You can go to the lecturer, recitation instructor, peer instructor, Help Room or another student. Regardless, the ultimate responsibility for understanding the material is yours!

TENTATIVE SCHEDULE FOR PHY 244 SPRING QUARTER 2008

Week	Date	Homework Assignment
1 <i>Thompson</i>	Ch. 19 Temperature Ch. 20 First Law of Thermodynamics Friday - Quiz 1 (Chapter 19)	Ch. 19 – 6,11,33,18,39,41 [6 th ed. – 10,19,47,26,53,55] Due Monday 4/7
2 <i>Thompson</i>	Ch. 20 continued Ch. 21 Kinetic Theory of Gases Friday - Quiz 2 (Chapter 20 and part of 21)	Ch. 20 – 4,16,28,35,39 [6 th ed. – 6,18,32,39,43] Ch. 21 – 9,13,16,18,22 [6 th ed. – 7,13,18,24,32] Due Monday 4/14
3 <i>Thompson</i>	Ch. 21 continued Ch. 22 Second Law of Thermodynamics Friday - Exam 1 (Chapters 19-22)	Ch. 22 – 6,9,13,30,33 [6 th ed – 8,11,13,35,37] Due Wednesday 4/16 Study for Exam 1
4 <i>Petkie</i>	Ch. 15 Mechanical Oscillations Ch. 16 Wave Motion Friday - Quiz 3 (Chapter 15)	<u>Read Ch. 15 (example problems)</u> Ch. 15- 4,5,9,10,16,17,32 [6 th ed. – 4,5,10,12,18,19,36] Due Monday 4/28 <u>Read Ch. 16 (example problems)</u>
5 <i>Petkie</i>	Ch. 16 Wave Motion – cont'd Ch. 17 Sound Waves Ch. 18 Superposition and Standing Waves Friday - Quiz 4 (Chapters 16 and 17)	Ch. 16- 2,10,14,17,24,30,39,52 [6 th ed. – 2,8,14,17,26,33,41,52] Due Monday 5/5
6 <i>Petkie</i>	Ch. 18 continued Friday - Exam 2 (Chapters 15-18)	Ch. 17- 13,26, 33(a,b only),34a,35 [6 th ed. – 13,31,37,40a,39] Ch. 18- 6, 9 [6 th ed. – 8, 11] Due Wednesday 5/7 Add'l problems to work on but not for graded credit include: Ch. 18- 11,17, 35,38,44a,b [6 th ed. – 13,19,43,46,52a,b] Study for Exam 2
7 <i>Deibel</i>	Ch. 34 Electromagnetic Waves Ch. 35 Light and Geometric Optics Friday - Quiz 5 (Chapter 34 and 35)	Ch. 34 HW – 9,23,55 Ch. 35 HW – 17,119,31,33,35 [6 th ed. – 19,18,21,35,36,39] Due Monday 5/19
8 <i>Deibel</i>	Ch. 36 Image Formation Friday - Quiz 6 (Chapter 36)	Ch. 36 – 12,13,15,29,30,33,46,56 [6 th ed. – 13,14,16,30,32,37,51,62] Due Wednesday 5/28
9 <i>Deibel</i>	Ch. 37 Interference - Light Waves Ch. 38 Diffraction Patterns and Polarization Friday - Quiz 7 (Chapters 35-38)	Ch. 37 – 9,10,27,34,61 [6 th ed. – 8,10,34,42,64] Ch. 38 – 4,11,19,27,35,36 [6 th ed. – 4,11,23,33,41,43] Due Wednesday 6/4
10 <i>Deibel</i>	Ch. 38 continued Final Exam Review & Closing remarks	Study for Final

The Final Exam is scheduled for Wednesday June 11 from 8:30 – 10:30 AM

RECITATION (PHY 244R)

Recitation is a required part of this course. Recitations will begin the FIRST week of classes. All recitation classes will use conceptual worksheets and be conducted in a cooperative learning format. The worksheets have been designed to aid students in the development of important physical concepts and scientific reasoning skills. They have been extensively tested, evaluated and redesigned using student data from the introductory calculus-based physics course for engineers and scientists at many universities across the nation.

The worksheets consist of two parts: one part contains inquiry-based worksheets with exercises and activities that students will perform in recitation class and the other part contains homework exercises that reinforce and extend the material covered in recitation class. The recitation HW pages will be assigned and due the following week. Both the in-class recitation material and the homework will be provided to you at the beginning of each session.

During recitation, students will work together in cooperative learning groups to complete a sequence of tasks and questions given in the tutorial worksheets. The recitation and peer instructors will not lecture, but act as facilitators. The instructors will ask questions to guide the groups to discover their own answers for the worksheets.

Grading:

Students will receive a score of up to ten points for diligently working on the worksheets in each recitation class. The lowest recitation class score will be dropped, giving students a total of 90 possible recitation points for the quarter. Each recitation tutorial has an associated homework assignment. The homework sheets for a given tutorial will be due at the beginning of the following week's recitation class. Each homework assignment will be worth ten points. The lowest homework score will be dropped. Your recitation points from the in-class worksheets and homework will make up 10% of your lecture grade. In addition, 20% of each exam is dependent on conceptual material explicitly covered in recitation. **DO NOT TAKE RECITATION WORK LIGHTLY!!**
If you need to miss your assigned recitation class time, please try to go to another session that week instead.

Weekly schedule of the physics tutorials to be done in recitation:

RECITATION DATES	TUTORIAL ACTIVITY TITLE	TUTORIAL HW (due next recitation class)
4/3	Ideal Gas Law	Page 171 in Tutorial HW Workbook
4/10	1st Law Thermo	Pages 173-174 in Tutorial HW Workbook
4/17	2nd Law Thermo	Separate Handout
4/24	Mechanical Oscillation	Separate Handout
5/1	Superposition and Reflection of Pulses	Page 113-115 in Tutorial HW Workbook
5/8	Reflection and Transmission	Pages 119-120 in Tutorial HW Workbook
5/15	Electromagnetic Waves	Pages 125-126 in Tutorial HW Workbook (skip #3)
5/22	Convex Lenses	Pages 139-140 in Tutorial HW Workbook
5/29	Two Source Interference	Pages 145-146 in Tutorial HW Workbook
6/5	Post-test	None

**schedule of recitation topics is subject to change