

**PHYSICS 322**  
**“Introduction to Modern Physics II”**  
**Spring 2008**

**Syllabus**

Adam Kaminski, Instructor

A307 Zaffarano Hall; email: adamkam at iastate dot edu Tel: 4-0849

Office Hours: normally M 1-3 pm, but feel free to stop by any time (A307, A304-314)

Andrew Nelson

email: nefqu at iastate dot edu

office hours: Tuesdays 1-2 pm

**Course Web Page:** <http://www.public.iastate.edu/~adamkam/teaching>

**Time and place:** Tuesdays and Thursdays 9:30 am – 10:50 am, Room: Physics 38.

**Prerequisites:** Physics 222 (Introductory calculus-based Physics) or equivalent, and Math 266 (Elementary Differential Equations) or equivalent, Physics 321 (Introduction to Modern Physics I)

**Textbook:** *Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles, 2nd Edition*, by Eisberg & Resnick.

**Course goals:** This course covers some of the most important developments in Physics that form a foundation of our current understanding of Nature. It builds on knowledge acquired in Physics 321 and applies the concepts of Quantum Mechanics to complicated systems, such as solids, nuclei and world of particle physics.

**Homework:** Typically 6-12 problems per chapter are assigned during first lecture of the chapter. Homework is due on the beginning of the lecture discussing next chapter. It will be graded by a graduate student, 5 points per problem. Late penalty: 1 point per day.

**Quizzes:** typically administered at the end of the final lecture for the chapter.

**Exams:** Three midterm and one final exam covering ~ one quarter of the material each. One – two sided letter size page formula sheet allowed. All necessary formulas will be provided on demand.

**Preparation for the class:** Reading of appropriate part of chapter as outlined in the schedule is required prior to the class.

**Grades**

Homework	15 %
Quizzes	5 %
Three midterm exams (20 % each)	60 %
Final exam (not comprehensive)	20 %

**Outline:**

**Chapter 11:** Quantum statistics

**Chapter 12:** Molecules

**Chapter 13:** Solids – conductors and semiconductors

**Chapter 14:** Solids – superconductors and magnetic properties

**Chapter 15:** Nuclear models

**Chapter 16:** Nuclear decay and reactions

**Chapter 17:** Elementary particles I

**Chapter 18:** Elementary particles II



**Exam 1**



**Exam 2**



**Exam 3**



**Final**

## SCHEDULE

<u>Week</u>	<u>Lecture</u>	<u>Date</u>	<u>Subject</u>
1	1	Jan. 15 <sup>th</sup>	Chapter 11
1	2	Jan. 17 <sup>th</sup>	“
2	3	Jan. 22 <sup>th</sup>	“
2	4	Jan. 24 <sup>th</sup>	Chapter 12 <b>HW#1 due</b>
3	5	Jan. 29 <sup>th</sup>	“
3	6	Jan. 31 <sup>th</sup>	“
4	7	Feb. 5 <sup>th</sup>	Chapter 13 <b>HW#2 due</b>
4	8	Feb. 7 <sup>st</sup>	“
5		Feb. 12 <sup>th</sup>	EXAM #1
5	9	Feb. 14 <sup>th</sup>	“
6	10	Feb. 19 <sup>th</sup>	“
6	11	Feb. 21 <sup>th</sup>	Chapter 14 <b>HW#3 due</b>
7	12	Feb. 26 <sup>th</sup>	“
7	13	Feb. 28 <sup>nd</sup>	“
8	14	March 4 <sup>st</sup>	“
8	15	March 6 <sup>th</sup>	Chapter 15 <b>HW#4 due</b>
9		March 11 <sup>th</sup>	EXAM #2
9	16	March 13 <sup>th</sup>	“
10		March 18 <sup>th</sup>	SPRING BREAK
10		March 20 <sup>th</sup>	SPRING BREAK
11	17	March 25 <sup>nd</sup>	“
11	18	March 27 <sup>th</sup>	Chapter 16 <b>HW#5 due</b>
12	19	April. 1 <sup>th</sup>	“
12	20	April 3 <sup>rd</sup>	“
13	21	April 8 <sup>th</sup>	Chapter 17 <b>HW#6 due</b>
13	22	April 10 <sup>th</sup>	“
14		April 15 <sup>th</sup>	EXAM #3
14	23	April 17 <sup>th</sup>	“
15	24	April 22 <sup>th</sup>	Chapter 18 <b>HW#7 due</b>
15	25	April 24 <sup>th</sup>	“
16	26	April 29 <sup>th</sup>	“
16	27	May 1 <sup>st</sup>	“ <b>HW#8 due</b>
17		May 6 <sup>rd</sup>	<b>FINAL EXAMS WEEK</b>
17		May 8 <sup>rd</sup>	<b>FINAL EXAMS WEEK</b>