

Phys-251/252 Modern Physics, Spring 2011
Course Information

”We will cover a wide range of topics; we will be busy and also have fun!”

1. Staff, Lecture, Lab., Recitation, Exam and Homework

(a) Staff and office hours

Prof. Thomas Kuo (lecture), Thomas.Kuo@sunysb.edu

Physics C-137, 632-8125

Office hours: Th. 10-12 am (C-137).

You are welcome to visit me at other times too, just drop in.

H. Dong (recitation), dong@tonic.physics.sunysb.edu

Physics C-115, 631-6329843, office hours TBA

Tyler Corbett (laboratory), corbett.ts@gmail.com, office hours TBA

Pin-Ju Tien (laboratory), ptien@ic.sunysb.edu, office hours TBA

(b) Lecture

Mon. Wed. 3:50-5:10, Rm-P112 (Phys), **beginning 1/31/11**

(c) Recitation

Tue. 8:20 , Rm-111 (Harriman Hall), **beginning 2/8/10**

(d) Laboratory (Phys-252)

Mon. 12:50-14:50, Rm-A133 (Phys), **beginning 2/7/10**

Mon. 5:50-7:50, Rm-A133 (Phys), **beginning 2/7/10**

(e) Exams

Exam-1: Mar. 2, Wed., Phys-P112 3:50-5:10

Exam-2: Apr. 6, Wed., Phys-P112 3:50-5:10

Final : in week 5/16-5/20 (time and room to be announced)

(f) Homeworks

Weekly homework assignments will be announced in lecture.

(g) Course grades (Phys-251/252)

Exam-1 (17%), Exam-2 (17%), Final-exam (36%), Lab (20 %),

Recitation (10%)

(h) Lab. grades

Weekly lab reports (80%), Written exam (20%, held on 5/9)

2. Textbooks

Basic Relativity (R. Mould, Springer-Verlag)

Quantum Physics (Eisberg and Resnick, John Wiley Sons, 2nd Edi.)

3. Reference books (on reserve shelf of Phys-Math library)

1. Modern Physis, R. Serway, C. Moses and C. Moyer (Thomson 2005)

2. Modern Physics, K. Krane (John Wiley Sons, 1983)

3. Introductory Quantum Mechanics, R. Liboff (Addison Wesley 2003)

4. **Course Outline (Syllabus)**

This course is composed of 3 parts:

I. Special relativity (about 4 weeks), based mainly on Chapters 1 to 5 of Mould's book. Topics covered include: Michelson-Morley experiment, light clock, time dilation, length contraction, Lorentz transformation, four vectors, invariant intervals, Doppler effect, relativistic dynamics, four momentum, four force, $E = mc^2$, photons, Compton scattering, Maxwell equations, Lorentz force...

II. Introductory quantum mechanics and applications (about 7 weeks), based mainly on Chapters 1 to 7 of Eisberg-Resnick's book. Topics covered include: matter waves, uncertainty principle, Rutherford scattering, time-independent Schroedinger equation, one-dimensional square well, barrier penetration, harmonic oscillator, time dependent Schroedinger equation, angular momentum, hydrogen atom, perturbation methods, Zeeman effect....

III. Topics in atomic, nuclear, particle...physics (about 3 weeks), few selected topics from Chapters 9 to 17 of Eisberg-Resnick's book.

5. **Disability Support Services (DSS) Statement:**

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services (631) 632-6748 or <http://studentaffairs.stonybrook.edu/dss/>. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website:

<http://www.stonybrook.edu/ehs/fire/disabilities/asp>

6. **Academic Integrity Statement:**

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instance of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at

<http://www.stonybrook.edu/uaa/academicjudiciary/>

7. **Critical Incident Management:**

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students' ability to learn.

Spring 2011, Phys-252 Lab Schedule

We will do 10 experiments. Lab manuals handed out in lab.

week	experiment	comment
1/31	no lab	
2/7	1. Michelson interferometer	
2/14	2. photo-electric effect	
2/21	3. e/m for electrons	
2/28	make-up	exam-1 wed 3/2
3/7	4. Millikan oil drop	
3/14	5. one-dimensional wave motion	
3/21	6. scattering (laser)	
3/28	7. Bragg scattering (microwave)	
4/4	make-up	exam-2 wed 4/6
4/11	8. hydrogen spectrum	
4/18	no lab	spring recess
4/25	9. Geiger counter	
5/2	10. radioactive decays	last lab
5/9	lab exam (5/9) and make-up	