PHYS 460: Quantum Physics

Dr. Jeremy Qualls

Course Description: Lecture, 3 hours. The Schrödinger equation, coordinate and momentum representation, harmonic oscillator, angular momentum and spin, Hilbert space, eigenvalues and eigenvectors, completeness relations, central potentials, hydrogen atom, scattering, perturbation theory, and Dirac notation. Extensive use of a symbolic processing program. Prerequisites: PHYS 314 and 325.

Class meeting time: 1:00-2:15 pm M,W (Ives Hall 35)
Learning Objectives http://www.phys-astro.sonoma.edu/learningobjectives.doc

Welcome to Quantum physics. This course covers the fundamentals of wave mechanics and quantum physics. It is a challenging course in terms of the mathematical treatment and the concepts themselves. However to get the most out of this class and to do well on the exams it requires that you master the homework and read your text. A key component to understanding the material will be in your ability to vocalize and discuss the concepts. It is highly recommended to develop groups to work on homework and to discuss the incredible and often non-intuitive nature of quantum physics.

Grading Policy:

Exam 1	20%
Exam 2	20%
Final Exam	20%
Homework	40%

Materials Needed:

1. **Text Book**: Introduction to Quantum Mechanics, 2nd ed., by David J. Griffiths (Prentice Hall, 2005).
2. **Mathematical Handbook:** there are a number of available handbooks. Please check with me and I can let you know if your handbook will suffice.

Homework and in class Presentation:

Homework for each chapter will be due before the Exam. You are encouraged to discuss and work on problems with your colleagues or me. I have a solution manual in my office and the text has a solution manual easily accessibly.

Exams and Quizzes:

You are allowed to develop and use your own formula sheets. The formula sheet should not have problems worked out or text excerpts.

Information and Announcements

My homepage is http://phys-astro.sonoma.edu/people/faculty/qualls and it also has some nice links and a review of my research here at SSU.

Professor's Information

Dr. Jeremy Qualls Ph.D.: 1999 Florida State University
Office: Darwin 300K Lab: 303
Phone: 664-2256 Lab Phone: 664-3448
Email: quallsj@sonoma.edu
Research Interest: Material Science, High Magnetic fields, Low Temperature Physics

Below is my current tentative schedule this semester. I have an open door policy regarding office hours. If I am around please feel free to ask questions regarding the course or research at SSU. My cell phone is 707-479-3951 and texting me is OK.

Fall 2009 Schedule for Dr. Qualls

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9:30 am			9:30-11:00 Office Hour		
11:00 am	PHYS 214 Darwin 35		PHYS 214 Darwin 35	PHYS 214 Art 102	PHYS 214 Darwin 35
12:00 pm	Lunch		Lunch	Lunch	Lunch
1:00 pm	PHYS 460 Ives Hall 35		PHYS 460 Ives Hall 35	PHYS 216 Darwin 311	STUDENT RESEARCH
2:00 pm					
3:00 pm	2:30-4:00 Office Hours		Department Meeting		
4:00 pm	What Physicist Do				
5:00 pm – 7:40 pm	Dinner with speaker	PHYS 209A Darwin 308			

It is recommended to maintain homework in bound notebook and refer to other quantum text for deeper appreciation of the topic.

Nice Links for Modern and Quantum Physics from Dr. Tenn

http://www.phys-astro.sonoma.edu/people/faculty/tenn/ModernPhysicsLinks.html

University Policies

There are important University policies that you should be aware of, such as the add/drop policy; cheating and plagiarism policy, grade appeal procedures; accommodations for students with disabilities and the diversity vision statement. (Go to this URL to find them: http://www.sonoma.edu/uaffairs/policies/studentinfo.shtml)

Topic	**Dates**
Chapter 1	Start August 26
Chapter 2	Start September 16
Exam 1	**September 30**
Chapter 3	Start October 5th
Chapter 4	Start October 14th
Exam 2	**November 9**
Chapter 5	Start November 11
Special Topics and Review	
Final Exam	**Wednesday, Dec. 16 2 p.m. -3:50 p.m.**

Note: A number of days must be established as furlough days in agreement with CFA and Sonoma State University to address budget concerns. You will be notified as soon as those dates are established. On furlough days no courses will be taught and Dr. Qualls will be unavailable that day.

Here are the days I have requested as Furlough Days. After these dates have been approved I will notify the class.

September 8, 28
October 30
November 2,20,23,24
December 11, 15