PHYSICS 829

QUANTUM MECHANICS 3

SPRING QUARTER 2001

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Grader: ???

Required text: C. Cohen-Tannoudji, B. Diu, & F. Laloë, "Quantum Mechanics. Volumes 1-2," (Wiley-Interscience 1977).

Other texts: In addition to the above two texts, I have placed a variety on closed reserve in the science library

Grading: There will be one mid-term examination and a final examination. Homework assignments will be handed out weekly and graded.
The grading will be apportioned as follows:

Homeworks....	25%
Midterm ...	30%
Final...	45%

SYLLABUS

I. Time Independent Approximation Methods *(CT Chapter 11; Comp's. A, E, G)*

3/26	M	Perturbation Theory
3/28	W	Perturbation Theory - cont.
3/30	F	Perturbation Theory – cont.
4/2	M	Variational Method
4/4	W	Variational Method – cont.
4/6	F	Variational Method – cont.

II. Time Dependent Approximation Methods *(CT Chapter 13; Comp. A)*

4/9	M	Time-dependent perturbation theory
4/11	W	Sinusoidal Perturbation
4/13	F	Einstein Coefficients
4/16	M	Fermi's Golden Rule
4/18	W	Photoionization

III. More Time Independent Approximation Methods

4/20	F	SCF (Hartree) Method
4/23	M	WKB Approximation
4/25	W	WKB Approximation – cont.
4/27	F	**NO CLASS**

IV. The Semiclassical and Quantum Theories of Radiation *(CT Chapter 13; Comp. A)*

4/30	M	Semiclassical Radiation Theory
5/2	W	Semiclassical Radiation Theory – cont.
5/4	F	Optics
5/7	M	Second Quantization

V. More Time-Dependent Methods

5/9	W	The sudden approximation
5/11	F	*****MIDTERM EXAMINATION*****
5/14	M	The adiabatic approximation

VI. Systems of Identical Particles *(CT Chapter 14; Comp's. A, B)*

5/16	W	Introduction
5/18	F	Exchange degeneracy
5/21	M	Pauli exclusion principle
5/23	W	Physical kets
5/25	F	Ket Construction – cont.
5/28	M	**NO CLASS**
5/30	W	Interference Effects
6/1	F	Intro. To Atomic Physicss