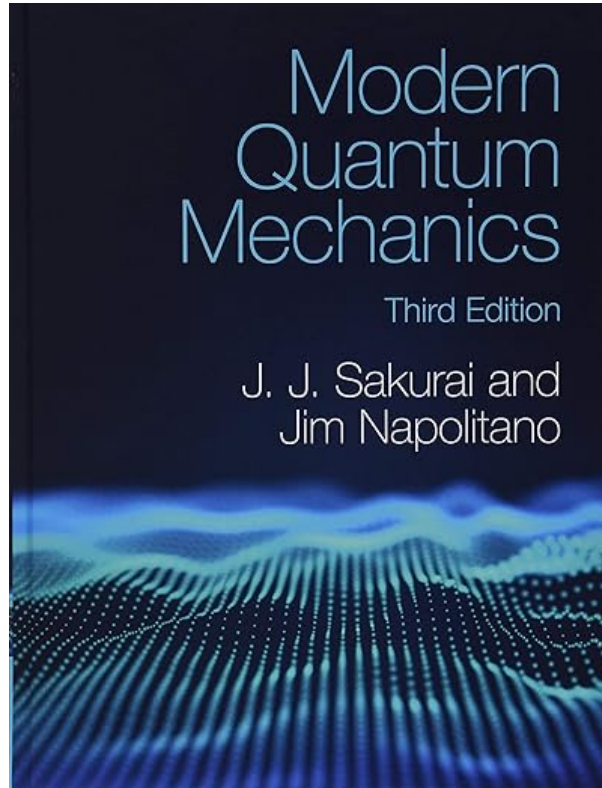




Book

Phys 712

Course Outline

- Course: Quantum Mechanics II
- Instructor: Dr Alakabha Datta
- Office: 209 Lewis Hall
- Meeting: MWF 10 am to 10.50 am, Lewis 109
- Office Hours: By in person or zoom appointment
- Email: datta@olemiss.edu, datta@phy.olemiss.edu
- Phone: (662) 915-5611
- Course homepage: Check Blackboard.

Course Goals

- Learning to apply the basic postulates and rules of Quantum Mechanics learnt in QM I to solve problems in various areas of research.
- Independent study: The course will also involve solving problems that will require students to research material on published journals to complete the project. The purpose of this is to help the student acquire skills to pursue independent research. The students will also complete a report on a topic of current research interest.

Homework policy

There will be short homework assigned almost everyday to be turned in the next class or in less than a week's time. Longer homework will be assigned after a chapter is completed. You will have 3 weeks to complete those assignments. There is no late homework submission unless you provide a valid reason.

Grading

- Homework: 60 %
- Mid Term Report/Exam: 15%
- Final Exam: 25% Take home Exam

An overall course average of the following percentages will guarantee the corresponding letter grade:

90 %	A
80 %	B
70%	C
60 %	D

Topics will be taken from

1. Potentials and the Electromagnetic Field.
2. Density matrix and Tensors Operators.
3. Symmetries: Parity, Lattice and Time reversal transformation.
4. Time independent Perturbation Theory: Stark Effect, spin-orbit and Zeeman effect.
5. Relativistic corrections, Lenard Jones potentials.
6. Time dependent problems with simple systems.
7. Dyson Series, Dipole atomic transitions, Photoelectric effect.
8. Identical particles and many particle system.

9. Scattering: Born approximation and partial wave analysis
10. Dirac Equation and simple ideas of Field Theory.

Attendance

There is no attendance requirement. However if you miss an exam or cannot turn in homework on time because of illness I will require a doctor's note. If you will be away on other reasons inform me prior to your absence and get a note if applicable.

Academic Integrity

We will follow the University's policy of academic integrity (M-book). Violations of these policies will result in a failing grade and other disciplinary actions. In particular you are not allowed the use of the Instructor's Solution Manual.