Instructor:
Brett Esry
CW 325
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Textbook:

Supplements:
In roughly the order of increasing difficulty level:
- Introduction to Quantum Mechanics, Griffiths
- Quantum Mechanics, Zettl
- Quantum Mechanics, Cohen-Tannoudji, Diu, and Laloe
- Modern Quantum Mechanics, Sakurai
- Quantum Mechanics, Merzbacher

Grading:
Exam 1 15% A 85-100
Exam 2 15% B 75-84
Final 20% C 65-74
Homework 50% D 55-64

Course philosophy:
This course will challenge you. I expect that you will learn the most from the homework, so there will be quite a bit of it: assignments will be given roughly once per week and will likely take 10 or more hours each. Some assignments will require numerical solutions using your own codes, Mathematica, or your favorite numerical package.

Guidelines for homework:
- Discuss your homework with classmates as much as you like, but write your homework solutions on your own! Do not copy a classmate’s work and do not ask for, accept, or use copies of my solutions from previous semesters. This is the best way for you to learn the material as well as an issue of academic honesty.
- As a scientist in training, you need to learn to communicate scientific information in an effective, efficient manner. You should consider homework assignments as practice in this art. It is your responsibility to present your homework solutions in a readable, logical manner—not mine to decipher and interpret them.
- Also as a scientist in training, you need to clearly acknowledge the contributions of others to your work. For example, if you benefitted from discussing the homework with someone, you should acknowledge them. Or, if you found the solution on the web (in a book or elsewhere) and copied it—even if not verbatim—then you should cite the source. If you use computer code that you did not write, you should cite the source of that code. These are issues of professional ethics and academic honesty.
- You will often be required to plot your results. You should do this on your own to develop your own sense of how to best present scientific results. Similarly, if you are required to carry out a numerical solution, do so on your own. You may use a code that you did not write, but you should run it to produce the needed results on your own.
- In an incorrect solution, I will reward statements that show you know it is incorrect and why. I will also reward (correct!) effort sufficiently above and beyond what is explicitly asked for in a problem. Conversely, if you give a grossly incorrect solution, but make no indication that you know it is grossly incorrect, there will be a grade penalty beyond just getting the problem wrong.

Tentative Course Outline:
We will tentatively cover the following topics (in no particular order):
- Mathematics of quantum mechanics
- Periodic potentials
- Variational principle
- Dynamics and time-dependent perturbation theory
- Postulates of quantum mechanics
- Systems with any degrees of freedom
- Symmetries and quantum numbers
- Angular momentum: orbital and spin
- Connections with classical mechanics
- Wavepacket scattering

The exact topics covered will evolve somewhat during the semester.

Required statements:

Statement Regarding Academic Honesty:
Kansas State University has an Honor System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one’s work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor System. The policies and procedures of the Honor System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. The honor system website can be reached via the following URL: http://www.ksu.edu/honor. A component vital to the Honor System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

Statement for Academic Accommodations for Students with Disabilities:
Any student with a disability who needs a classroom accommodation, access to technology or other academic assistance in this course should contact Disability Support Services (dss@k-state.edu) and/or the instructor. DSS serves students with a wide range of disabilities including, but not limited to, physical disabilities, sensory impairments, learning disabilities, attention deficit disorder, depression, and anxiety.

Statement Defining Expectations for Classroom Conduct:
All student activities in the University, including this course, are governed by the Student Judicial Conduct Code as outlined in the Student Governing Association By Laws, Article VI, Section 3, number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.