Chemistry 120A Syllabus, Spring 2020

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Grade Composition:
15% Problem Sets
45% Final Exam
20% Midterm 1 (in class, February 21st)
20% Midterm 2 (in class, April 6th)

- Each grade component will be curved separately.
- Problem sets will be graded on a per-question, pass/no-pass basis in which full credit is given for if you made an effort, regardless of the correctness. **Take advantage of this policy to work through the problems on your own and then learn from your mistakes!**
- Late problem sets will receive no credit.
- If helpful, the final exam grade will replace 2/3 of the worst midterm grade.

Text: *Introduction to Quantum Mechanics* by Griffiths
As students often benefit from different perspectives on the material, copies of the following textbooks will be on reserve in the chemistry library:
Introduction to Quantum Mechanics by Griffiths
Molecular Quantum Mechanics by Atkins & Friedman
Physical Chemistry: A Molecular Approach by McQuarrie and Simon

Topics:
motivations for quantum mechanics
mathematical foundations
- vector spaces and inner products
- linear and Hermitian operators
- eigenvectors and eigenvalues
- differential equations
- equations without analytic solutions

postulates of quantum mechanics
the uncertainty principle
particle wave duality
1-dimensional systems
linear momentum and wave packets
the quantum harmonic oscillator
angular momentum
the hydrogen atom
the variational principle
perturbation theory
Fermi's golden rule
spin and quantum statistics
chemical bonds