

CHEM 260 Ì Advanced Physical Chemistry  
Fall 2022 Syllabus

Instructor: Prof. Michael T. Ruggiero, Ph.D. (he/him)

collaboration, collusion, cheating, corroboration, or any other related offense will be fully investigated according to the rules set by the UVM Academic Integrity Office, and will simultaneously merit a zero for that assignment.

- The midterm and final will be primarily conceptual in nature. No calculators will be allowed.
- It is entirely acceptable and somewhat encouraged to work with your peers on the weekly problem sets. The problem sets will be assigned on Mondays and are due the following Monday | late assignments will not be accepted.

**COVID-19 Policy:** This class is intended to be fully in-person. Absences will only be excused with a valid medical exemption from a physician or other authorized source. Lectures will not be recorded by default, so requests for accommodations must be made in advance of the class you will miss.

### Student Learning Accommodations

In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact SAS, the office of Disability Services on campus. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course. A student's accommodation letter lists those accommodations that will not be implemented until the student meets with their faculty to create a plan.

Contact SAS:

A170 Living/Learning Center;

802-656-7753;

[access@uvm.edu](mailto:access@uvm.edu)

[www.uvm.edu/access](http://www.uvm.edu/access)

### Religious Holidays

Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time.  
<https://www.uvm.edu/registrar/religious-holidays>

### Academic Integrity

The policy addresses plagiarism, fabrication, collusion, and cheating.  
<https://www.uvm.edu/policies/student/acadintegrity.pdf>

Tentative Course Schedule (\*subject to change\*)

| Week Number | Class Numbers | Topics   | Reading     |
|-------------|---------------|--|-------------|
| 1           | 1-3           | Introduction to QM, de Broglie, Bohr, uncertainty, classical waves, wavefunctions, operators, probability                              | Chs. 1-2    |
| 2           | 4-5           | Particle in a box, correspondence principle, postulates of QM.   | Chs. 3-4    |
| 3           | 6-8           | Harmonic Oscillator, Hermite polynomials, Morse potential and anharmonicity, particle on a ring, angular momentum, spherical harmonics | Chs. 5-6    |
| 4           | 9-11          | Spectroscopy, hydrogen atom  | Chs. 13 & 6 |
| 5           | 12-14         | Hydrogen atom, orbitals, variational method, multi-electron atoms, perturbation theory   | Chs. 6-8    |
| 6           | 15-17         | Pauli exclusion, Slater determinant, Hartree-Fock, MO theory, self-consistent field  |             |