# Course Syllabus

**Chem 120A Physical Chemistry**

**"Introduction to Quantum Mechanics and Spectroscopy"**

**Lectures**

MWF 9:10 AM – 10:00 AM,

Zoom: Meeting ID: 259 017 3247
Passcode: Qubit20

Lectures will be recorded and posted on bcourses. Notes will also be provided.

**Discussion**

Tu 7:00 - 8.30 PM, Th 11 - 12.30 AM

Zoom: TBA

Discussions will not be recorded. Notes for the discussions will be provided on bcourses.

**Chem Scholars Discussion Section (led by UGSIs)**

Tu 5-6.30 pm, Th 5-6.30 pm

Zoom: 536 534 1324

**Instructors**

Professor Birgitta Whaley
email: whaley@berkeley.edu
Office hours: M 1.30 – 2.30 PM, F 12 - 1 PM
Zoom: 259 017 3247
Passcode: Qubit20

GSI Ian Convy
email: **ian_convy@berkeley.edu (mailto:ian_convy@berkeley.edu)**
Office hours: Tu 2 - 3 PM, Th 6 - 7 PM
Zoom: 985 1390 9968

GSI Will Yang
email: **yzb@berkeley.edu (mailto:yzb@berkeley.edu)**
Office hours: Tu 11 AM – 12 Noon, W 5 - 6 PM
Zoom: 996 5312 0480 Passcode: 970846

GSI Christian Tanner

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Office hours: W 2 - 3 PM, Th 8 – 9 AM
Zoom: 814 292 2893

UGSI Jason Liang
email: yhljason@berkeley.edu (mailto:yhljason@berkeley.edu)

(mailto:yhljason@berkeley.edu)

UGSI Artur Lyssenko
email: alyssenko@berkeley.edu (mailto:alyssenko@berkeley.edu)

Students who are unable to make office hours but who need to meet with one of the Graduate Student Instructors (GSIs) for course-related issues should contact GSIs through Piazza.

**Course grading**

Problem sets will be assigned for homework on an approximate weekly schedule. Specific due dates for problem sets and examinations will be given in the Lecture Schedule posted in the files folder. Note that this will be updated regularly, so always check that you have the latest version. There will be one midterm examination in class on Monday, October 12, and a final examination on Thursday December 17. Grades will be based upon scores on homework (25%), midterm (30%), and the final examination (45%).

**Turning in assignments, exams, questionnaires**

We shall be using gradescope for collecting homework assignments, exams, and questionnaires. We also have set up a course gmail account, chem120afall2020@gmail.com (mailto:chem120afall2020@gmail.com), which will be used primarily for turning in assignments from different time zones and for correspondence related to these. So if you receive an email from that address, do not delete it!

**Course Websites**

If you are enrolled for this class, you will automatically be given access to the bCourses site (Physical Chemistry 120A, Fall 2020). All course materials (problem sets, solutions and any supplemental materials) as well as all announcements will be posted on the bCourses site. We shall also make extensive use of Piazza, in which you should also already be enrolled. If not please sign up at http://piazza.com/berkeley/fall2020/chem120a (http://piazza.com/berkeley/fall2020/chem120a). All online discussion will be carried out through Piazza.

**Videos**

Lectures will be recorded on Zoom. Links to course recordings and/or uploads will be given on

bcourses.

**Prerequisites**

Chem 4B or equivalent, Physics 7B or 8B, Mathematics 53, and either Mathematics 54 or Physics 89. Concurrent enrollment in Math 54/Physics 89 will not be allowed. If you have not already taken Math 54 or Physics 89, and cannot show an equivalent course on your transcript, you should enroll in that course and take Chem 120A in a subsequent semester.

**Textbooks and Reading Assignments**

The textbook for the course is

- W. Atkins & R. S. Friedman, *Molecular Quantum Mechanics 5$^{th}$ Edition* (Oxford University Press, Oxford, 2010);

Reading assignments from this book are given in the Lecture Schedule.

For supplemental reading on formalism and concepts, we recommend

- H. Mcintyre, *Quantum Mechanics* (Pearson Addison-Wesley, San Francisco, 2012)

For mathematical background, we recommend

- A. McQuarrie, *Mathematical Methods for Scientists and Engineers* (University Science Books, 2003). Available online at Berkeley library via Oskicat or the following direct link: **https://libproxy.berkeley.edu/login?qurl=https%3A%2F%2Fapp.knovel.com%2Fweb%2Ftoc.v%2Fcid%3AkpMMSE001D (https://libproxy.berkeley.edu/login?qurl=https%3A%2F%2Fapp.knovel.com%2Fweb%2Ftoc.v%2Fcid%3AkpMMSE001D)**

Alternative texts that you may find useful:

- A. McQuarrie, *Quantum Chemistry* (University Science Books; 2$^{nd}$ edition, August 15, 2007).
- David J. Griffiths, *Introduction to Quantum Mechanics* (Pearson Prentice Hall, 2$^{nd}$ edition 2004)
- John Townsend *Modern Approach to Quantum Mechanics* (University Science Books, 2$^{nd}$ edition 2000)
- Ira N. Levine, *Quantum Chemistry*, (Prentice Hall; 7$^{th}$ edition, February 16, 2013).

Copies of these books can be found in the Chemistry and/or Physics libraries. They have all been placed on electronic reserves for the class in the Fall 2020 semester and are currently bring scanned by the library. The mathematical methods text is already available online through Oskicat or at the direct link above. Links to the other texts will be provided when the scans are completed.

# Course Summary: