

# Course Syllabus

## Chemistry 31A, Autumn 2022: Chemical Principles I: Structure & Energetics Professor Martínez & Dr. Schwartz

### Course Overview:

The science of chemistry evolves through a process of observation, hypothesis, modeling, and experimentation. This course is structured to develop your skills to participate in this process while building your understanding of how chemical phenomena shape our world. Content assumes no background in college level chemistry, therefore enrollment will be prioritized for students without IB or AP credit. **All students who are interested in taking Chem31A must take the Autumn 2022 General Chemistry Placement Test before the Autumn quarter begins. Students with AP score >4 or IB score >5 should take Chem31M.**

### Course Objectives:

- *Develop your ability to analyze and solve chemical problems through improved critical thinking.*
- *Improve your ability to use conceptual models to qualitatively explain a wide range of chemical phenomena and to make quantitative estimations.*
- *Deepen your understanding of atomic and molecular structure: Identify the interactions among nuclei, electrons, atoms, and molecules, and how they determine the structures and properties of pure substances and mixtures.*
- *Deepen your understanding of energetics: Determine the types and amounts of energy change accompanying reactions and phase changes*
- *Be prepared for the study of chemical dynamics in Chem 31B: Chemical Principles II.*

### General Information

<b>Instructors:</b>	<b>Professor Todd Martínez</b> todd.martinez@stanford.edu phone: (650) 736-8860 office: Keck <b>OH:</b> Wed. 1:30 – 3:00pm Chem Gazebo	<b>Dr. Jennifer Schwartz Poehlmann</b> jks425@stanford.edu phone: (650) 723-9326 office: STLC 204 <b>OH:</b> Mon. 1:30 – 3:00Ppm STLC212D
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**NOTE for all general, administrative, or accommodations related course questions that are not answered in the FAQ, please contact the Head TA: Alex Chang email: achang67@stanford.edu**

**Office hours** Office hours (**OH**) are designated times available to further clarify lecture concepts or assist students in developing an approach towards tackling chemistry problems. Students are highly encouraged to rework misunderstood problems from returned exams and Mastering Chemistry and discuss them during office hours.

<b>TA OHs:</b>	Sun 6-9 pm STLC 114	MW 11:30am-12:20pm STLC 104
	T&Th 7:30 – 10:30pm STLC 114	F 11:30am-12:20pm STLC 116
	Mon 7:30 – 9pm STLC 114	

**Group Study Hall: Wed 6-9pm STLC 114** - We will have extra practice problem worksheets available so students can come practice problem solving together with TA help!

**COVID SAFETY: As Per Stanford Health Alerts: Masks:** Stanford currently requires that face coverings be worn in **all** indoor classroom settings – *this includes all of our lectures, labs, and office hours*. If a student arrives to class, office hours, or another classroom setting without a face covering and does not have an OAE accommodation\*, the instructor or TA will ask them to put one on. If the student refuses to put on a face

covering, the instructor will then ask the student to leave the room. If the student refuses to leave the room, the instructor will cancel the class session. If a student is not compliant with classroom public health guidelines, they will be reported via the [Student COVID Community Concern Reporting Form](#) where the matter will be addressed in the Dean of Students Office.

*\*Disability-related accommodations that allow a student to attend in-person classes and other instructional meetings without a face covering are expected to be very rare. Please make sure to the Head TA your accommodation letter before the first day of class if this is needed.*

**Attendance:** We have intentionally crafted a course structure that builds in many opportunities to interact with the material and turn things in online. It also ASSUMES that all students will likely miss a few lectures or a lab this quarter. There is flexibility in grading to account for this, therefore if you are at all ill or have a red badge, PLEASE follow university instructions, and remain home from class. Better safe than sorry!

### **Course Structure**

**Lectures:** Lecture attendance is compulsory. The same lecture is given at each of the two times. Because we will be working in groups, attend the lecture time in which you enrolled on Axess.

<u>Times:</u>	MWF	10:30am – 11:20am	STLC 114
		or 12:30pm – 1:20pm	STLC 114

*Stanford Focus Listening System is available in this classroom! First, install the Mobile Connect app, available in the [Apple app store](#) or [Google Play](#). Then scan the posted QR code to access the direct audio feed with your headphones or hearing aids (connected to a phone). Additional information can be found at the [Stanford Focus Listening System instructions](#).*

#### **Standard Lecture and Course policies within Chemistry, Physics, and Mathematics courses:**

Students should attend the in-person lecture and discussion section to which they are officially assigned. This ensures that classrooms do not exceed official room capacity, and supports prompt notification should a specific section need to move online at short notice. Course messages are sent out via Canvas, please ensure that your Canvas notifications are on so that you receive any announcements promptly.

As standard practice, lectures and discussion/lab sections in Chemistry, Mathematics, and Physics courses are taught in-person. As such, Zoom links will not be provided. Additionally, in-person lectures and discussion sections will not be recorded.

Students who miss class due to illness (including COVID-19) should make arrangements to obtain lecture notes from other students in the class. As standard practice, there are no make-up exams or remote exams. If you will miss an exam due to illness, please reach out to your instructor for more information.

**Labs:** **In addition to lecture, you must enroll in one lab section on Axess by Monday, Sept. 26<sup>th</sup>.** Lab provides hands-on, guided-inquiry experiments to build your conceptual understanding and problem-solving skills with group learning. Attend ONLY the lab time for which you signed up on Axess. Due to lab availability and logistics, we cannot hold make-up labs.

**Personal Protective Equipment** Students entering the Mudd teaching laboratories must wear appropriate **Personal Protective Equipment (PPE)**, which includes department-specific laboratory safety glasses and laboratory coat, a face mask, and appropriate street clothes (**PPE**), which includes long pants, socks, and solid shoes that cover your entire foot. See PPE Guidelines and announcements on Canvas for more details. **Students must always wear their face masks, glasses, and lab coat during the entire lab section.**

**Course Web Site:** <https://canvas.stanford.edu/courses/158558>

The Chem 31A Canvas website contains all course materials, course announcements, and your scores on graded work. This is also where you will access “Mastering Chemistry” to complete and turn in problem sets

(PLPs) for the course. “Mastering Chemistry” registration instructions can be found in the “Files” section of the canvas site in the “General Course Information” folder.

**\*\*All course communication will occur through the Chem 31A Canvas website.\*\***

### Required Items

**Text:** Tro, “Principles of Chemistry: A Molecular Approach” 4<sup>th</sup> Edition (etext is fine)

**Problem Set:** All Chem 31A students must have a valid license\* for the web-based

**Software** “*Mastering Chemistry*” program (based on our Tro textbook). You can access (and purchase) Mastering Chemistry & etext through Canvas.

\*You may purchase the required access code for MasteringChemistry as part of a package with an electronic version of the textbook (for Mastering Chemistry and the e-book together) through Canvas. You may also purchase an access code bundled with your textbook in the bookstore. **Make sure to purchase a 24-month license if you plan to take both Chem31A and Chem31B. A shorter license will NOT be long enough to extend through Chem31B.**

**Poll Everywhere:** All Chem 31A students must register for a FREE Poll Everywhere account and log in during lecture to answer in-class questions drawn from assigned readings. Questions provide immediate feedback as to your understanding of the current material. **Register on Poll Everywhere by Monday (9/26)** by going to Stanford’s Poll Everywhere page and click on “Access your free Stanford Poll Everywhere account”. Make sure your Wifi device is enabled on the Stanford network before class ( [Wireless Network and Services | University IT \(stanford.edu\)](#))

### Assignments and Graded Work: All due dates can be found on the course calendar.

**Graded Work** The grading scheme for Chem 31A is designed to reward students who engage actively with the course. There are many opportunities to earn credit. This course is graded on a 1000-point basis in 4 components: Course Engagement (max 120 pts.), Labs (max 120 pts.), Midterm Exams (360 pts.), and Final Exam (400 pts.). Details of these components are below:

**1. Course Engagement:** Course participation points can be accumulated through any combination of poll questions, and problem sets *to a maximum* of 120 pts. Details of course engagement components are below:

- **Lecture Participation: Poll questions: (at least 70 pts. available)**  
In-lecture poll questions will be posed throughout the quarter, related to the assigned reading, Pre-Lecture Problems, labs, and lecture discussion. Each correct answer is worth 1 pt.
- **Pre-Lecture Problems: (3 pts. each; max. 75 pts. available)**  
The night before each lecture, you must complete your Pre-Lecture Problems (PLP) through the web-based *MasteringChemistry* system by 11:59pm. You are allowed and encouraged to work on the problems with others, but you must compose your final answers to each problem set on your own. Late assignments will receive partial credit. Final PLP scores will be synched on the last Friday of the course. No additional work will be scored after this point.

**2. Labs:** Each week there is a lab that will engage with the material discussed in lecture through prelab assignments, attendance and participation, and post-lab questions. You can count a *maximum* of 120 points. There are a total of 135 points available, allowing flexibility for missed assignments or attendance.

**Prelab: (5 pts. each; 45 pts available):**

Before each lab, students are expected to read the pre-lab assignment and answer any questions posed. A typed PDF must be uploaded to Gradescope by 11:59 pm the Sunday BEFORE lab.

**Lab Participation and Safety Adherence: (5 pts. each; 45 pts available):**

Because Labs are based on participation in groups and will begin with important safety information, it is critical to arrive on time. Students who are more than 5 minutes late will forfeit their participation points, as will students who are dismissed from lab for not adhering to safety policies or failing to help clean up after the experiment.

**Post-Lab: (5 pts. each; 45 pts available):**

At the end of each lab, students will be expected to turn in their post-lab assignment, verifying proper clean-up protocols have been followed and summarizing the main ideas or skills learned in the lab.

**If you are ill or required to quarantine, please email the Head TA BEFORE the start of lab that week.**

**3. Midterm exams** (Total of 360 pts.): There are three midterm exams (180 pts. each) on **Wednesday evenings 5:30-6:45pm, held on Oct. 12<sup>th</sup>, Nov. 2<sup>nd</sup>, and Nov. 30<sup>th</sup>.** Please mark these on your calendar! To provide built-in flexibility for all students up front, you will each get to drop one exam (your lowest score if you take all three). Therefore, **if you are unable to take the exam that same evening for any reason, that exam will count as your dropped exam score and be dropped.**

**4. Final exam** (Total of 400 pts.): **The final exam is given only at the Registrar scheduled time (Wed. Dec. 14<sup>th</sup> 12:15-3:15pm)** and will be worth 400 pts. Make sure that you are available for this time before enrolling.

**Exam Times:** It is Department of Chemistry policy that exams & quizzes are not given earlier than scheduled for the whole class. Similarly, problem sets and other assignments should not be released to any student earlier than they are released to the class as a whole.

**Grade:** Your final grade is determined on an absolute scale according to the total number of points you have accumulated for course engagement & labs (max 120pts. each), top two midterms (360 pts.) and the final (400 pts.):

A/A- ≥ 900pts    B/B+/B- ≥ 750pts    C/C+/C- ≥ 600pts    D/D+/D- ≥ 450pts    CR ≥ 600pts

Final cut-offs for +/- scores within each grade bucket will be determined at the end of the quarter.

**Grading Flexibility is built in:** To be more equitable and ease student stress we have built in grading flexibility up front rather than having students request exceptions for temporary illness or other one-off issues (e.g. late PLPs, technical issues, late arrival at labs or absences due to travel/illness, exam conflicts) in the moment. Our best advice is to be prompt in arriving at lectures, labs, and exams, be prompt in delivering assignments, and to prepare for and participate in labs. Special exceptions that are accommodated include documented disabilities (thru OAE), University sanctioned absences and extraordinary life events. Such accommodations should be requested from the Head TA **at least one week** in advance if possible.

**Return of Work:** All exams are returned via Gradescope the Friday following the exam. Pre-Lecture Problems are automatically graded, and solutions shown on *MasteringChemistry*. As timely feedback and reflection is critical to effective learning, we encourage all students to promptly review their graded work and bring questions to office hours.

**Regrades:** A regrade request clearly explaining what was overlooked in grading should be made on Gradescope no later than 2:30pm on the Wednesday following the exam. When an exam is submitted for a regrade, the entire exam will be reevaluated, with the possibility of a net gain or loss of points. **Generally, successful regrades require minimal explanation because it should only need point out specific pieces in the original work submitted. Additional work or explanation that was not already on the exam cannot be considered.**

**Students with Documented Disabilities** Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact OAE (<https://oae.stanford.edu/students>) as soon as possible since timely notice is needed to coordinate accommodations. In addition, please inform the Chem31A Head TA as soon as possible. At least one week lead time is needed to set-up exam accommodations.

**Names & pronouns**

In this classroom, we endeavor to refer to people using their preferred names and personal pronouns. You are invited (not required) to use NameCoach to record the correct pronunciation of your name, as well as add preferred pronouns. A link to NameCoach can be found under the “Student” tab on Axess (<https://registrar.stanford.edu/staff/student-services-administrators/name-coach>).

As part of our ongoing efforts to make this course an even better experience for students, our teaching team continually conducts research to improve our teaching methods. In this course, new teaching methods may be used and various aspects of student performance analyzed on an ongoing basis. Information about you and your performance in this course will be held strictly confidential. If you would like to opt out of participating in any new teaching methods or having your performance analyzed as part of this research, you may do so without penalty. For more information, please contact Dr. Jennifer Schwartz Poehlmann ([jks425@stanford.edu](mailto:jks425@stanford.edu)).