



# USC University of Southern California

## Chem 105bL: General Chemistry Discovery Section (4.0 Units) - TENTATIVE Fall 2020

**Lecture Time:** TuTh, 7-8:20pm

**Location:** ONLINE

**Instructor:** Dr. Jessica Parr

**Office:** SGM 445

**Office Hours:** Th 3-5pm (online) , additional appointments may be requested by email

**Contact Info:** parr@usc.edu (preferred contact method)

**Lab Director:** Dr. Catherine Skibo

**Office:** SGM 138

**Office Hours:** MW 1:30-3pm

**Contact Info:** (213) 740-8265, skibo@usc.edu

**Course Coordinator:** Paperwork should be emailed as a PDF.

**Electronic Office Hours:** MW 1:30-3pm, emailed questions answered at this time

**Contact Info:** [coord105@chemmail.usc.edu](mailto:coord105@chemmail.usc.edu)

**Teaching assistant contact information and office hours times/location can be found on the course Blackboard site.**

### Course Description

The purpose of CHEM 105b is to introduce the basic chemical principles that underlie all of the molecular sciences (from materials and nanoscience to medicine and the machinery of biology). It will introduce good lab practice and how to make decisions based on sound data. Topics covered include reaction kinetics, equilibrium (including applications), acids and bases, entropy and thermodynamics, electrochemistry, and selected topics in inorganic and organic chemistry. After this course students will be both better prepared for continuing studies and have an understanding of molecular principles relevant to everyday life.

### Prerequisite(s):

Chem 105A or Chem 107 or Chem 115A

### Learning Objectives

Students who successfully complete CHEM 105b will be able to:

- Compare experimental conditions that influence reaction rates using rate laws, reaction mechanism, and collision theory.
- Connect forward and reverse reaction rates to describe a system at equilibrium.
- Determine the equilibrium constant for a chemical system and use it to qualitatively describe the relationship between amounts of reactants and products.

- Predict the equilibrium state of a chemical system in partial pressures or concentrations of reactants and products based on initial conditions.
- Predict the behavior of a chemical system at equilibrium when that system is perturbed by a change in conditions.
- Apply the First, Second, and Third Laws of Thermodynamics in relation to chemical systems by predicting the spontaneity of various processes.
- Describe the energetics of a chemical system using the state functions enthalpy, entropy, and free energy.
- Explain the equilibrium state of a chemical system using thermodynamic principles.
- Combine the kinetic and thermodynamic properties of a chemical system to explain whether a reaction will occur on an observable time scale.
- Explain electrochemical systems and the work produced in terms of thermodynamic principles.
- Use isomerism (structural, geometric, and stereo) to explain variation in chemical and physical properties.
- Apply bonding models to the structural study of organic molecules and transition metal coordination complexes.
- Use structural properties to classify the chemical nature of ions and molecules.
- Illustrate the concepts of kinetics, thermodynamics, and equilibria using reaction coordinate diagrams.
- Illustrate examples of the particulate level as related to the concepts above.
- Assess experimental data for accuracy and precision. Evaluate sources of error in laboratory measurements.

### Required Materials

Chemistry: A Molecular Approach (5th edition) by Tro (package available in USC Bookstore includes for free the eText and Mastering Chemistry (MC not required); also available on Amazon).

Chem 105b: Discovery Section Laboratory Manual (available for purchase in USC Bookstore).

An internet-enabled device (smartphone, tablet, or computer) is required for every lecture and laboratory.

### Optional Materials

Solutions Manual for textbook

Calculations in Chemistry (2<sup>nd</sup> Edition) by Dahm (optional, recommended for students who desire additional practice with critical math and chemistry skills)

### Description and Assessment of Assignments

Assignments in the course include quizzes, homework assignments, writing assignments, laboratory reports, video quizzes, and in-class work (typically worksheets / case studies with clicker questions).

### Grading Breakdown

Your grade will be determined according to the following distribution:

Assignment	Points	% of Grade
Module Quizzes	150	16%
Data Analysis Assignments	200	21%
Homework	130	14%
Individual Write-Ups	130	14%
In-Class Participation	60	6%
Lab Reports	100	10%
Video Quizzes	30	3%
Final Project	150	16%
<b>TOTAL</b>	<b>950</b>	<b>100%</b>

To receive a passing grade, satisfactory work must be done in both lab and the lecture portions of the course. You are encouraged to check your grades on Blackboard.

## Grading Scale

Course final grades will be determined using the following scale:

Grade	Points	%
A	884-950	93-100
A-	850-883	90-92.9
B+	827-849	87-89.9
B	789-826	83-86.9
B-	760-788	80-82.9
C+	732-759	77-79.9
C	694-731	73-76.9
C-	665-693	70-72.9
D+	637-664	67-69.9
D	599-636	63-66.9
D-	570-598	60-62.9
F	Below 570	Below 60%

*Week 8 grade:* We do our best to inform you on your progress in the course by assigning an approximate letter grade at the end of the eighth week. This is based on your performance in the course to date. Note: this advisory letter is no guarantee of your final grade. Final grades are assigned using the grading scale, above.

## Course Notes

Keys for lecture/lab activities will be posted on the course Blackboard site for you to review.

## Office Hours

You are strongly encouraged to see any TA during their office hours, not just your own. Office hours for all TAs are posted on Blackboard.

## Supplemental Instruction (SI)

The University has a Supplemental Instruction Program (<https://dornsife.usc.edu/chem105b/>) that we encourage you to use. The SI instructors hold weekly sessions going over the course material and problems. They also prepare mock exams, which you can use to test yourself before the midterms and finals. The SI leaders attend all of the lectures and are familiar with the lecture material.

## Assignment Submission Policy

Homework and Individual Write-Up assignments will be submitted through Blackboard. Homework assignments are opened on Wednesdays and will be due at 10 am the following Wednesday. Individual Write-Up assignments are opened on Fridays and will be due at 10 am the following Friday. Information on the Laboratory Reports, Data Analysis Assignments, and the Final Project will be provided as needed.

## Grading Timeline

Graded assignments will be returned one week after they are submitted.

## Additional Policies

## Laboratory

**Laboratory Orientation:** The mandatory lab orientation will take place during the first lecture period Monday 8/17.

**Laboratory Attendance:** *This is a laboratory course and attendance to all lab periods is mandatory.* Absences will be excused only for medical reasons or in the case of extreme necessity. For lab absences, email Dr. Parr (parr@usc.edu) as soon as possible in order to arrange a make-up lab. You must arrive on time and prepared for lab. If you show up more than 10 minutes late, you will not be admitted to lab. Satisfactory completion of all labs and assignments is required to pass the class.

## Homework and Graded In Class Assignments

**Video Quizzes:** Prior to each lecture you will be asked to watch a short video and complete a related quiz on Blackboard. There are a total of 30 videos throughout the semester. You will earn 1 point for answering each question correctly. Your top 30 scores will count toward your final grade. You will not earn points for submitting answers after the deadline. Each quiz is due by 9am. Please carefully note all due dates and times (found in Blackboard). There are no make-ups and no late submissions.

**Homework:** There will be a homework assignment posted on Blackboard on Wednesdays. The homework assignments are to be completed and submitted through Blackboard by 10 am the following Wednesday. Homework assignments will be graded. There will be a total of 14 assignments throughout the semester, your top 13 scores will count toward your grade at the end of the semester.

**Individual Write-Up:** There will be short written assignments posted on Blackboard on Fridays. The written assignments are to be completed and submitted through Blackboard by 10 am the following Friday. Written assignments will be graded. There will be a total of 14 assignments throughout the semester, your top 13 scores will count toward your grade at the end of the semester.

**In-Class Participation:** During each lecture there will be clicker questions that you will use Poll Everywhere to answer. If you are not able to attend the synchronous zoom session, there will be an asynchronous assignment that will be completed for class participation credit.

## Classroom norms

Listen actively and attentively.

Be courteous. Don't interrupt or engage in private conversations while others are speaking.

Ask for clarification if you are confused.

## Course evaluation

Students will submit confidential course evaluations, available online during week 15. More information will be provided in lecture.

## Dates

Monday, August 17 <sup>th</sup>	First Day of Class and Lab Orientation
Wednesday, August 19 <sup>th</sup>	Labs Begin
Monday, September 3 <sup>rd</sup>	No Classes – Labor Day
Friday, November 13 <sup>th</sup>	Last Day of Classes

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](http://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](http://policy.usc.edu/scientific-misconduct).

### Support Systems:

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*

[studenthealth.usc.edu/counseling](http://studenthealth.usc.edu/counseling)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*

[suicidepreventionlifeline.org](http://suicidepreventionlifeline.org)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*

[studenthealth.usc.edu/sexual-assault](http://studenthealth.usc.edu/sexual-assault)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298*

[equity.usc.edu](http://equity.usc.edu), [titleix.usc.edu](http://titleix.usc.edu)

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

*Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*

[usc-advocate.symplicity.com/care\\_report](http://usc-advocate.symplicity.com/care_report)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

*The Office of Disability Services and Programs - (213) 740-0776*

[dsp.usc.edu](http://dsp.usc.edu)

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

*Campus Support & Intervention - (213) 821-4710*

[campussupport.usc.edu](http://campussupport.usc.edu)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

*Diversity at USC - (213) 740-2101*

[diversity.usc.edu](http://diversity.usc.edu)

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

*USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu), [emergency.usc.edu](http://emergency.usc.edu)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

*USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu)

Non-emergency assistance or information.