You are strongly encouraged to take advantage of office hours and other opportunities for remediation, advancement, and enrichment. You will get the most benefit from attending office hours if you have first rolled up your sleeves and put some elbow grease into working your way through the material.

Course Meetings Lectures are held Tuesday and Thursday from 8:10am-9:30am in 180-362. You will find it much easier to succeed in the course through regular, active attendance.

Course Website Course materials and important announcements will be posted on PolyLearn, accessible through the Cal Poly portal (my.calpoly.edu). You should regularly refer to the course website, which will be updated on an ongoing basis with information relevant to the course.

Reading The text for the course is Silberberg, CHEMISTRY; The Molecular Nature of Matter and Change 6th Edition. You will get the best return from your investment in your textbook by completing the assigned reading before lecture. Older editions of the text are suitable substitutes for the 6th Edition. You are also responsible for watching assigned videos posted on the course website prior to class. Specific assignments will be posted on an ongoing basis on the course website.

Homework Suggested practice from multiple sources will be provided and posted online after each lecture. Sources for practice will include problems from the textbook and “Mastery Questions” provided by the instructor. Quiz material will closely reflect these practice problems.

Quizzes There will be a short quiz nearly every week in class. Through thorough reading, active attendance in lecture, and diligent practice of homework problems from the previous week, you will be well prepared for these quizzes. Quiz topics may include material from the lab.

Exams Exams provide the largest opportunity for you to demonstrate your mastery of the course material. There will be two exams during the quarter and a comprehensive final exam that covers the content of the course. The best way to prepare for exams is to be consistent with your study and work throughout the quarter.

Laboratory The laboratory portion of the course constitutes 20% of your total grade. See the laboratory syllabus for additional details.

Course Policies

- The lecture classroom is a studio classroom where laboratory activities are carried out in other courses. As a result, you should wear closed-toed shoes and not bring food or drink to class.
- Only non-programmable calculators may be used in the course. Calculators may not be shared during exams or quizzes.
- There are no make-up exams. For conflicts, requests to reschedule quizzes should be made at least one week in advance; requests for exams should be made at least two weeks in advance.
- This is an inclusive learning environment. Be respectful and strive for success together.
- Maintain a high standard of academic integrity. Breaches of academic integrity may result in immediate failure in the course.
Schedule  This schedule is tentative. Dates of exams and material are subject to change.

<table>
<thead>
<tr>
<th>Week</th>
<th>Text</th>
<th>Notes</th>
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<tbody>
<tr>
<td>1</td>
<td>Chapter 18</td>
<td>No class Tuesday, first meeting: Wed lab</td>
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<tr>
<td>2</td>
<td>Chapter 18</td>
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<tr>
<td>3</td>
<td>Chpts 18, 19</td>
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<tr>
<td>4</td>
<td>Chapter 19</td>
<td>Exam 1: Thursday, 4/23</td>
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<td>5</td>
<td>Chapter 19</td>
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<tr>
<td>6</td>
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<td>7</td>
<td>Chapter 23</td>
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<td>Chapter 11</td>
<td>Exam 2: Thursday, 5/21</td>
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<td>9</td>
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<tr>
<td>10</td>
<td>Chapter 24</td>
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*The Final Exam will take place Tuesday, June 9 at 7:10am.*

Grades  Cutoffs may be lowered, but will not be raised.

<table>
<thead>
<tr>
<th>Item</th>
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<tbody>
<tr>
<td>Quizzes</td>
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<td>Exams (2)</td>
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<td>Final Exam</td>
<td>25%</td>
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<tr>
<td>Lab</td>
<td>20%</td>
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<tr>
<td>Total</td>
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Strategies for Success  This course serves as an introduction to the underlying principles of the broad field of chemistry. You should strive for a level of understanding that will allow you to ask insightful questions, solve novel problems, and relate the course content to a range of your broad interdisciplinary interests.

Learning how to work and study effectively can be daunting, particularly in the transition to college, but with hard work you will succeed! Because this course moves quickly and covers a lot of material, good time-management will be critical to your success and it is important that you do not let yourself get behind. Below are some specific suggestions that you may find useful as you hold yourself to high expectations in this course.

On-Going
- Treat your mind and body well: get plenty of sleep, eat well, and exercise.
- Use a calendar and schedule your time.
- Continually review material from the early parts of the course as the quarter progresses.
- Don’t be embarrassed by things you don’t know; seek out understanding!

Reading
- Complete assigned reading before classes.
- Read actively.
  - Write down important ideas and questions that you have.
  - Work example problems along with the text.
- Watch provided videos before class.

In-Class
- Attend every lecture. Be on time.
- Take excellent notes.
  - Keep your notes well-organized.
  - Review your notes soon after class and again before the next class.
- Actively participate in class discussions and ask questions.
- Think critically during activities.

Practice and Study
- Study a minimum of 8-10 hours per week.
- Study thoughtfully and with purpose.
- Schedule study time so that you don’t have to cram.
- Do the Mastery Questions.
- Do suggested problems from the text.
- Work online problems.

Use Additional Resources
- Come to Office Hours with questions.
- Use online resources for additional explanations and practice.
- Enroll in a Supplemental Workshop.
- Utilize tutoring through the department.
- Join a Study Session and attend regularly.
- Engage in Piazza discussions.
- Make your own study-group, but be sure to practice alone sometimes too.
- Utilize open General Chemistry office hours.
Course Learning Objectives

1. Identify, describe and differentiate between Arrhenius, Bronstead-Lowry, and Lewis acids and bases as well as strong and weak acids and bases.

2. Use structural arguments to correctly estimate the acidity (Ka and pKa values) of organic and inorganic compounds, including polyprotic acids and amino acids.

3. Generate and/or interpret titration curves for mono- and polyprotic acids and bases.

4. Perform numerical calculations, including determination of pH, for aqueous solutions containing strong or weak, acids or bases or inorganic salts.

5. Demonstrate an understanding of buffers by carrying out Henderson-Hasselbalch calculations, choosing reasonable chemicals and amounts of chemicals to make target buffers, making and testing buffer solutions, and predicting the behavior of buffer solutions.

6. Use Ka and pKa values to estimate the equilibrium position of acid/base reactions and determine the charge state of amino acids.

7. Write chemical reactions associated with and perform calculations for equilibria including Ksp and Kr reactions.

8. Use molecular orbital theory, valence shell electron pair repulsion theory, hybrid orbital theory, ligand field theory and/or crystal field theory to describe bonding in small organic and inorganic molecules.

9. Solve problems and make predictions involving coupled equilibrium.

10. Explain optical, magnetic, and electronic properties of materials based on their structural characteristics.

11. Describe the products of, the applications of, and the biological impacts associated with fundamental nuclear reactions.