CHEMISTRY 1220 – General Chemistry II
Autumn 2019 Lecture Syllabus

Tuesday & Thursday | 11:10 AM-12:30 PM | 1008 Evans Lab (5 credit hours)

Instructor: Dr. Robert J. Zellmer
Email: zellmer.1@osu.edu
Office: 1052 Evans Lab
Office Hours: MWF 9:30-10:30 AM
Home Page: www.asc.ohio-state.edu/zellmer.1

Lab Supervisor: Dr. Amy Moore
Email: chem1220labsupervisor@osu.edu
Office: 280C Celeste Lab
Office Hours: See Carmen

Textbook: Chemistry, The Central Science (14th Ed.) eText, Brown, LeMay, Bursten, Murphy, Woodward, & Stoltzfus
Online Homework: MasteringChemistry
Calculator: TI-30XIIs or TI-30Xa only

Course Description: Continuation of general chemistry for science majors, covering solutions, kinetics, chemical equilibrium, solubility and ionic equilibria, qualitative analysis, thermodynamics, electrochemistry, descriptive chemistry, coordination compounds, and nuclear chemistry.

Prerequisites: Chemistry 1220 requires a prerequisite of 1210/1250/1610/1910H, or 121/161/201H + 1215 and eligibility to enroll in Math 1150. Not open to students with credit for CHEM 2310, 2510 (251), 2610, or 2910H (251H).

Student Responsibility: Each student receives the syllabus on Carmen and on Dr. Zellmer’s web page. It is your responsibility to read this material and be familiar with the course content, procedures, and grading. You are also responsible for announcements made in class, as well as monitoring Carmen and your OSU email for any communications concerning course procedures. If you are absent from class, you are expected to obtain notes, announcements, etc. from another student. Review your separate laboratory syllabus for the laboratory schedule, due dates, policies, and assignments. Any questions about grading of a lab report, quiz, or exam must be made within 1 week of the receipt of said result.

Carmen (Canvas) | carmen.osu.edu: Carmen is the Learning Management System (LMS) used at Ohio State. It utilizes an LMS engine called Canvas. Log in to Carmen on your device to access your course materials, complete assignments, turn in lab reports, view your grades, and track your progress throughout the semester. A free Canvas app is available to download for both Android and iOS, making it easy to log in to your course from anywhere.

Communication: Your instructor(s) will be communicating important information to you throughout the term via email. You should verify that your OSU email is set up appropriately so that you receive all course information in a timely manner. Laboratory and other course administration reminders may be distributed using Announcements in Carmen; check your Carmen notification settings to ensure you receive announcements for your course in a timely manner.

Required Texts and Other Materials: A textbook is essential for success in this course. Your instructor will be teaching from Chemistry, The Central Science, 14th edition eText by Brown, LeMay, Bursten, Murphy, Woodward, & Stoltzfus. The text should include access to MasteringChemistry, the integrated online homework system required in this course. If your used text does not, you are responsible for purchasing accompanying access.
New copies of the 1220 General Chemistry Laboratory Manual and 100 Page Student Lab Workbook by Hayden-McNeil Publishing, Inc. are required for the laboratory (see the laboratory syllabus for full details). Only one of two approved calculator models – either the **TI-30XIIs** or **TI-30Xa** – may be used on quizzes and exams, and can be purchased for ~$15. **NO OTHER CALCULATORS ARE PERMITTED.** Use of any other calculator on quizzes or exams is considered academic misconduct. See [https://uglabs.cbc.osu.edu/gc-calculators/](https://uglabs.cbc.osu.edu/gc-calculators/)

**ONLY the Lecturer and Lab Supervisor of the course may modify due dates and assignment details in this syllabus. Teaching assistants are not authorized to alter any syllabus information or policies.**

**Course Information & Policies**

**Title IV Attendance Requirement:** Federal policy requires that attendance for all university students be verified during the first week of classes. **In order to verify participation in General Chemistry, all students must complete the Academic Misconduct Quiz on the course Carmen page by 11:59 PM on Sunday, August 25th.** You must achieve a perfect score on the Academic Misconduct Quiz and can take the quiz as many times as necessary to achieve a perfect score. This quiz may be taken online from any location (does not need to be completed while physically present for class). Concerns with this policy may be directed to genchem@osu.edu instead of your lecturer/TA.

**Switching Sections:** Section changes after the first Friday of the term require permission from the Chemistry & Biochemistry Undergraduate Studies Office. Switching between sections of General Chemistry is **not** permitted after the second Friday of the term. If you need to change the section of the General Chemistry course in which you are enrolled, you must obtain the necessary permission from the Undergraduate Office in 110 Celeste Lab before **Friday, August 30**. Please be advised that you will be responsible for contacting your TAs to ensure that your grades are transferred from one section to another. You will also need to re-take the Academic Misconduct Quiz for your new section. Switching lecture sections may delay your access to the course Carmen page and any assignments contained therein. Mandatory assignments must be completed again in the new lecture section without exception.

In accordance with the missed laboratory policy detailed in the laboratory syllabus, if you know you will miss more than two laboratory periods (for reasons such as OSU athletic competitions, military training or duties, or religious observances), you are responsible for **contacting the CBC Undergraduate Office (genchem@osu.edu | 110 Celeste Lab)** during the first week in order to move to a laboratory section that minimizes scheduling conflicts, space permitting.

**Lab Safety Statement:** Students are required to read, understand, and implement the safety precautions indicated in the laboratory manual and laboratory handouts. The precautions are summarized on a safety form which must be digitally signed on Carmen by all students before or during their first laboratory period. Until this statement is signed, students are not permitted to participate in laboratory activities.
**Learning Resource Center:** The Learning Resource Center (LRC) is located in 170 Celeste Lab. It is a place where students can come for individual help and instruction in General Chemistry. You are strongly encouraged to make use of the LRC frequently. Computers that have instructional programs for General Chemistry classes are available on a first come, first served basis. These programs involve only single-concept problems that must be understood in order to deal with the more difficult multi-concept questions on exams.

Your teaching assistants (TAs) spend some time each week in the LRC to answer specific questions about their course as well as general questions in any 1000-level Chemistry course. A schedule is posted in the LRC and on Carmen which lists the time each TA is available, as well as the course they teach. Stop by when convenient during posted hours; you do not need to make an appointment. The LRC has limited space and is not designed to be a library or study hall.

**Disability Services:** The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), reasonable accommodations can be established. To arrange accommodations, students must first register with Student Life Disability Services (SLDS). Starting summer 2019, SLDS will implement an Accessible Information Management system (or AIM—[https://slds.osu.edu/aim/](https://slds.osu.edu/aim/)). This new system will allow students to electronically request accommodations for exams, deadline modifications, note takers, etc. Detailed instructions can be found at [https://slds.osu.edu/aim/instructions-for-slds-registered-students/](https://slds.osu.edu/aim/instructions-for-slds-registered-students/). There is a page in your Carmen course that details the steps to take if you choose to request accommodations in general chemistry. If you have additional questions, please use either contact below:

**Disability Services Contacts:**

**Contact SLDS**  
Email: slds@osu.edu  
Phone: 614-292-3307  
Address: 098 Baker Hall  
Website: slds.osu.edu

**Contact Holly Wheaton**  
Email: genchem@osu.edu  
Phone:614-292-6009  
Address:110 Celeste Lab

**Commitment to Diversity:** The Department of Chemistry and Biochemistry promotes a welcoming and inclusive environment for all students and staff, regardless of race, gender, ethnicity, national origin, disability or sexual orientation. There is no tolerance for hateful speech or actions. All violations of this policy should be reported to the OSU Bias Assessment and Response Team (BART, [studentaffairs.osu.edu/bias](https://studentaffairs.osu.edu/bias)). The Department encourages diversity at all levels, particularly among the next generation of scientists. Students are encouraged to participate in organizations that provide support specifically for science and engineering students who are African-American, Asian, disabled, Hispanic, LGBTQ or women. These organizations are listed on the Colleges of Arts and Sciences ([artsandsciences.osu.edu/stem-organizations](https://artsandsciences.osu.edu/stem-organizations)) and Engineering ([engineering.osu.edu/studentorgs](https://engineering.osu.edu/studentorgs)) websites.
Standards of Academic and Scientific Integrity: In addition to the University policy on academic misconduct (studentlife.osu.edu/csc) the Department of Chemistry and Biochemistry, as a part of the greater academic and scientific communities, takes the integrity of both student work and scientific data very seriously. More information about the specifics of academic misconduct as they pertain to general chemistry is included on the last page of this syllabus, and in the required Academic Misconduct Quiz on Carmen.

GE Goals and Learning Outcomes

Chemistry 1220 is a physical science course in the natural science category of the GE, which has the following goals and learning outcomes:
1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries, and understand the potential of science and technology to address problems of the contemporary world.

Office Hours: I will be available in my office, 1052 Evans Lab, M, W, F 9:30 AM – 10:30 AM. You can also make an appointment for other times or stop by any time. I will be around pretty much every day of the week.

Course Schedule

CHEM 1220 consists of lecture sessions (two 80-minute sessions per week), one recitation (55 minutes), and one lab (2 hours 55 minutes) per week. Though attendance is not directly graded in lecture, you are expected to regularly attend all components, as each is integral to the course. Please note: your class schedule on Buckeyelink will have two lab times listed per week; the 55-minute “lab” is your recitation.
**Lecture**: Lecture will be held each day that class is in session according to the University Academic Calendar. This course will cover the topics according to the schedule below:

<table>
<thead>
<tr>
<th>Week</th>
<th>Chapters</th>
<th>Lecture Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 19-23*</td>
<td>13</td>
<td><strong>Properties of Solutions (Ch. 13.4, 13.2, 13.1, 13.3)</strong>: expressing solution concentration; saturated solutions and solubility; the solution process; factors affecting solubility</td>
</tr>
<tr>
<td>Aug 26-30</td>
<td>13, 14</td>
<td><strong>Properties of Solutions (Ch. 13.3, 13.5-13.6)</strong>: factors affecting solubility; colligative properties; colloids; <strong>Chemical Kinetics (Ch. 14.1-14.3)</strong>: Factors affecting reaction rates; reaction rates; concentration &amp; rate laws</td>
</tr>
<tr>
<td>Sept 2-6†</td>
<td>14</td>
<td><strong>Chemical Kinetics (Ch. 14.4-14.7)</strong>: change of concentration with time; temperature and rate; reaction mechanisms; chemical kinetics</td>
</tr>
<tr>
<td>Sept 9-13†</td>
<td>14, 15</td>
<td><strong>Chemical Kinetics (Ch. 14.7)</strong>: Catalysts; <strong>Chemical Equilibrium (15.1-15.5)</strong>: equilibrium, equil. constants and calculations (ICE tables)</td>
</tr>
<tr>
<td>Sept 16-20</td>
<td>15, 16</td>
<td><strong>Chemical Equilibrium (Ch. 15.6-15.7)</strong>: applications of equilibrium constants; Le Châtelier’s principle; <strong>Acid Base Equilibria (Ch. 16.1-16.3)</strong>: acids and bases review; acid-base equilibria; Bronstead-Lowry concept; the autoionization of water</td>
</tr>
<tr>
<td>Sept 23-27</td>
<td>16</td>
<td><strong>Acid Base Equilibria (Ch. 16.4-16.11)</strong>: the pH scale; strong acids and bases; weak acids and bases; relationship between $K_a$ and $K_b$; salt solutions; acidity &amp; structure; Lewis concept</td>
</tr>
<tr>
<td>Sept 30- Oct 4</td>
<td>17</td>
<td><strong>Additional Aspects of Aqueous Equilibria (Ch. 17.1-17.3)</strong>: common ion effect; buffers; acid-base titrations</td>
</tr>
<tr>
<td>Oct 7-11‡</td>
<td>17</td>
<td><strong>Additional Aspects of Aqueous Equilibria (Ch. 17.3)</strong>: acid-base titrations</td>
</tr>
<tr>
<td>Oct 14-18 Midterm 2</td>
<td>17</td>
<td><strong>Additional Aspects of Aqueous Equilibria (Ch. 17.4-17.6)</strong>: solubility equilibria and $K_{sp}$; Factors affecting solubility; selective precipitation of ions; qualitative analysis for metal elements;</td>
</tr>
<tr>
<td>Oct 21-25</td>
<td>19</td>
<td><strong>Chemical Thermodynamics (Ch. 19.1-19.6)</strong>: spontaneous processes; entropy and the 2nd law of thermodynamics; molecular interpretation of energy &amp; the third law of thermodynamics; entropy changes in chemical reactions; Gibbs free energy; free energy and temperature;</td>
</tr>
<tr>
<td>Oct 28-Nov 1</td>
<td>19, 20</td>
<td><strong>Chemical Thermodynamics (Ch. 19.7)</strong>: free energy and the equilibrium constant; <strong>Electrochemistry (Ch. 20.1-20.4)</strong> oxidation states and oxidation-reduction reactions; balancing redox reactions; cells; cell potentials under standard conditions</td>
</tr>
<tr>
<td>Nov 4-8</td>
<td>20</td>
<td><strong>Electrochemistry (Ch. 20.5-20.9)</strong>: free energy and redox reactions; cell potentials under nonstandard conditions; batteries and fuel cells; corrosion; electrolysis</td>
</tr>
<tr>
<td>Nov 11-15§ Midterm 3</td>
<td>23</td>
<td><strong>Transition Metals and Coordination Chemistry (Ch. 23.1-23.5)</strong>: transition metals; transition-metal complexes; ligands; nomenclature; isomerism; color and magnetism of transition metal compounds</td>
</tr>
<tr>
<td>Nov 18-22</td>
<td>23</td>
<td><strong>Transition Metals and Coordination Chemistry (Ch. 23.6)</strong>: crystal field theory</td>
</tr>
<tr>
<td>Nov 25-29§</td>
<td>21</td>
<td><strong>Nuclear Chemistry (Ch. 21.1-21.9)</strong>: radioactivity; patterns of nuclear stability; nuclear transmutations; rates of radioactive delay; energy changes in nuclear reactions; nuclear fission and fusion; radiation in the environment and living systems</td>
</tr>
<tr>
<td>Dec 2-6‖</td>
<td>18</td>
<td><strong>Environmental Chemistry (Ch. 18.1-18.5)</strong>: earth’s atmosphere; human activities and earth’s atmosphere; earth’s water; human activities and water quality; green chemistry</td>
</tr>
</tbody>
</table>

* First day of class is Tuesday, August 20th
† No class Monday, September 2nd due to Labor Day
‡ No class October 10th – 11th due to Autumn Break
§ No class Monday, November 11th due to Veterans Day
‖ No class November 27th – 29th due to Thanksgiving Break
¶ Last day of class is Wednesday, December 4th
Grading

Your performance in the course will be evaluated based on the components below. There is NO extra credit. Any concerns about your grades or performance should be addressed with your instructor promptly. Sixty days after grades are posted, your grade in Carmen is considered final and all other records are destroyed. Some mandatory assignments (such as the Lab Safety Statement, Academic Misconduct Quiz, etc.) do not contribute to your course grade, but students who do not complete these assignments will be given a failing grade (E) in the course. Individual assignments within the Recitation, Online Homework, and Laboratory categories will be scaled to contribute toward the established percentage of your total course grade:

<table>
<thead>
<tr>
<th>Assignment Group</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory Quizzes</td>
<td>--</td>
</tr>
<tr>
<td>Online Homework</td>
<td>7.5%</td>
</tr>
<tr>
<td>Recitation Activities</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm 1</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>12.5%</td>
</tr>
<tr>
<td>Midterm 3</td>
<td>15%</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>20%</td>
</tr>
</tbody>
</table>

**Required Quizzes:** The mandatory Academic Misconduct (COAM) Quiz and Syllabus Quiz on Carmen must be completed by Sunday, August 25 at 11:59 PM. Unless you receive 100% on these quizzes, you will not receive a passing grade in this course (instead, an E will be submitted as your final grade). You may take the quizzes as many times as you need to receive the requisite score.

**Online Homework (MasteringChemistry):** Your course will be utilizing MasteringChemistry, an online tutorial platform that accompanies your textbook. To register, go through your Carmen course and select MyLab & Mastering in the Course Navigation, then select any course link on the Pearson page. You can purchase access by credit card during registration or redeem an access code if purchased from the campus bookstore. Temporary access to Mastering is available for 14 days before needing to pay. DO NOT attempt to register for your course through the MasteringChemistry website - you must register through.

**Laboratory:** The lab portion of this course will be scaled to be worth 20% of your total course grade. However, you must receive a minimum of 50% of the total lab points to pass the course. Regardless of your grades in the remaining components of the course, if you do not meet this minimum, you will receive an E as your final grade. Lab reports will be submitted digitally on Carmen. Late assignments are accepted up to one week with point deductions. No lab reports are accepted after 5:00 PM, Monday, December 2. Consult the laboratory syllabus for full details about the lab component of this course.
**Exams:** Exams are a scheduled part of this course and attendance is required. Midterm exams take place in class shown in the table below. Students are responsible for ensuring that they can attend the exams as scheduled:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm 1</td>
<td>Tuesday, September 17 at 11:10 AM</td>
<td>Chapters 13-14</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>Tuesday, October 15 at 11:10 AM</td>
<td>Chapters 15-17.2</td>
</tr>
<tr>
<td>Midterm 3</td>
<td>Tuesday, November 12 at 11:10 AM</td>
<td>Chapters 17.3-6, 19, 20.1-6</td>
</tr>
<tr>
<td>Final</td>
<td>Monday, December 9 at 12:00-1:45 PM</td>
<td>Cumulative (including Chapters 20.7-9, 21 and 23)</td>
</tr>
</tbody>
</table>

**BuckID cards will be collected at all exams.** Exams will be administered on iPads provided to students by the OSU Digital Flagship Program. Please see the “Exam Policy” page in your Carmen course for more information.

**Alternate/Make-Up Exams:** If a student has a conflict with a scheduled exam, or misses an exam due to emergency circumstances, they may sign up to take an alternate or make-up exam using a form on Carmen. The full Exam Attendance Policy found on Carmen details the steps to take if a student is unable to attend an exam. By default, 15 points will be deducted from a student's score if they choose to test outside the regularly scheduled exam time. However, the student may submit documentation using the form on Carmen of a qualifying conflict to waive this penalty (full details outlined in the Exam Attendance Policy). The instructor is not responsible for coordinating alternate exams or accepting excuse documentation. It is fully the students' responsibility to ensure they understand the details of the Exam Attendance Policy, and all deadlines contained therein.

**NO HEAD COVERINGS or HEAD BANDS ARE TO BE WORN DURING QUIZZES OR EXAMS!!!** (If you wear a head covering for documented religious or medical reasons, please see Dr. Zellmer before the quizzes or exams.)

**NO FOOD OR DRINKS DURING QUIZZES OR EXAMS!!!** (If you may need these for documented medical reasons, please see Dr. Zellmer before the quizzes or exams.)

**NO ELECTRONICS OTHER THAN AN ALLOWED CALCULATOR DURING QUIZZES OR EXAMS** (they must be turned off and put away). The only things on your desk should be an allowed calc. w/o the cover, a pencil and maybe an eraser. An approved calculator must be used or you take the exam/quiz without a calculator. Calculator covers must be removed and put away.

The only things on your desk at the start of a quiz or an exam should be an allowed calc. w/o the cover, a pencil and maybe an eraser.

Any questions about grading of an exam/quiz must be made within 1 week of the receipt of said result.
**Recitation/Quizzes:** Recitations are 55-minute sessions held according to the schedule below. Recitations stress active learning in a supervised environment. You are encouraged to ask questions you have covering material from lecture, textbook, and homework assignments. Regular participation in recitation will contribute to your understanding of the material. A total of 13 activities will be given during recitation according to the schedule below. This will normally be a review followed by a 25-point quiz. Your lowest quiz score will be dropped. If you do not attend the review portion of recitation preceding the quiz your quiz score will be reduced by 20%. 

No makeup assignments will be provided for absences (a score of zero resulting from an absence would be your drop). Quizzes will not be given during the week of an exam, but you must still attend the recitation (there will be a sign-in sheet). Each of these periods will be worth 5 points and will not be dropped. Points earned in recitation will be scaled to contribute 10% to your total course grade.

<table>
<thead>
<tr>
<th>CHEM 1220 Recitation Schedule</th>
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<tbody>
<tr>
<td><strong>Week of</strong></td>
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<tr>
<td>Aug 19-23*</td>
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<tr>
<td>Aug 26-30</td>
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<tr>
<td>Sept 2-6†</td>
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<tr>
<td>Sept 9-13</td>
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<tr>
<td>Midterm 1</td>
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<tr>
<td>Sept 23-27</td>
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<tr>
<td>Sept 30 - Oct 4</td>
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<tr>
<td>Oct 7-11‡</td>
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<tr>
<td>Midterm 2</td>
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<tr>
<td>Oct 21-25</td>
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<tr>
<td>Oct 28 - Nov 1</td>
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<tr>
<td>Nov 4-8</td>
</tr>
<tr>
<td>Nov 11-15§</td>
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<td>Dec 2-6¶</td>
</tr>
</tbody>
</table>

*First day of class is Tuesday, August 20th*
†No class Monday, September 2nd due to Labor Day (this Monday activity and quiz is at the end of the semester)
‡No class October 10th – 11th due to Autumn Break
§No class Monday, November 11th due to Veterans Day
‖No class November 27th – 29th due to Thanksgiving Break
¶Last day of class is Wednesday, December 4th
XNo scheduled recitation (your TA will hold office hours during this period in the recitation classroom)
**Notes on Course Letter Grade Assignment:** To ensure consistent grading among parallel sections of the same course, as well as from one semester to the next, grades in all 1000-level chemistry courses are assigned by your instructor in consultation with the Vice Chair for Undergraduate Studies. The following guidelines may help you better understand the procedure that will be used to determine your final grade:

- Rather than using pre-determined grade cuts, all the total scores in the course are arranged in descending order. Grade cuts are determined based on the overall performance.
- No adjustment is made to the scores earned on individual course components (i.e. exams, activities, homework assignments, or labs) or to the total score achieved in the course.
- The average (mean) total score of all students who finish the course is usually in the C grade range. If you finish with a total score near the class average, your grade will very likely be C+, C, or C-. However, the grade for an average score could fall outside of this range if performance dictates.
- All components of the course factor into the total score. In this course, homework, recitation, and lab averages are often in the 75-90% range, while exam averages are often in the 55-75% range. Overall, classes tend to average about 65-75%.
  - To help you consider what your letter grade is on an individual assignment, a grade in the C range is most indicative of an average score. If a lab report score averages about 85%, then earning 85% on a lab report would be best considered a C. Similarly, earning an exam score of 65% if the average is 65% would best be considered a C.
  - Every student will take exams in this class. Those with better knowledge and understanding tend to do better than average. The instructor will typically give information about interpreting your exam score after each exam in lecture, on Carmen, and/or by email.
  - Generally, the line between an A- and a B+ is at 90% of the total points available, though this does fluctuate based on overall course point distributions and performance.
  - If you receive less than 50% of the total points available in the course, it is likely that you will fail the course (i.e., receive a grade of E).

The prerequisite for the next chemistry course is passing this course with at least a final grade of D. Some majors or programs may require a better grade for this course to count. Check with your major, program, and/or advisor to see what grade you must receive to satisfy all necessary requirements for your degree. Past data shows that students who have achieved a D in 1220/1620 do poorly in organic chemistry due to inadequate preparation. We do not recommend continuing onto organic chemistry without a minimum of a C- in 1220/1620.
Violarions of academic standards in General Chemistry will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules. It is the responsibility of COAM to investigate all reported cases of student academic misconduct; illustrated by, but not limited to, cases of plagiarism and any dishonest practices in connection with examinations, quizzes, and graded assignments. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information see the Code of Student Conduct: studentlife.osu.edu/csc

Student Responsibilities: Any graded material submitted in General Chemistry must represent your own work. This includes exams, quizzes, homework, and laboratory assignments, which are to be an individual effort. Unauthorized group efforts by students, use of another student’s course materials, or assistance from individuals who already have taken the course, could place you in jeopardy of violation of the standards for General Chemistry. In some courses, group work is acceptable on certain activities (as explicitly stated by your instructor). In these cases, it is important that you know and understand where authorized collaboration (working in a group) ends and collusion (working together in an unauthorized manner) begins. Identical answers indicate copying or unacceptable group efforts - always answer questions in your own unique words. It is important that you consult with your instructor for clarification on whether or not collaboration is appropriate on an activity.

You should not assist others in violating academic standards. Students supplying materials for others to "look at" may be charged with academic misconduct. Never allow another student access to your pre-laboratory exercises, lab reports, or other assignments – even after completion of the course. "I didn't know they were going to copy my work" is not an acceptable excuse.

Exams & Quizzes: Examinations are a crucial part of General Chemistry courses, and the integrity of these assessments is taken very seriously. During exams and quizzes, staff will monitor for violations of academic integrity. Video recordings or photos may be taken by department staff during exams or quizzes. Any violation, or appearance of a violation, on exams and quizzes will be immediately reported to COAM. Below is a non-exhaustive list of examples of Academic Misconduct on exams and quizzes:

- Viewing or copying others’ answers, use of crib material (e.g. a “cheat sheet”), or use of stored constants and formulas in calculators on quizzes, activities, midterm examinations, or the final exam. This kind of behavior is regarded as a severe violation of academic standards, no matter how small the action.
- The use of any calculators other than those approved on the course syllabus constitutes academic misconduct. The staff will inspect calculators used on exams and quizzes; unauthorized calculators will be confiscated.
- During exams, students are seated with their lab section to facilitate proctoring of the exam. Desks and aisle ways should be cleared of all unauthorized materials, including cell phones or other internet-enabled devices, which should be completely silenced and placed out of sight.
- Students should take care to preventatively avoid appearances of academic misconduct during testing. Best practices for avoiding the appearance of academic misconduct include focusing on one’s own exam, making efforts to conceal one’s own answer sheet and written work on exam pages both during and after the exam, not allowing one’s own eyes to “wander the room,” avoiding writing answers in the margins to be seen by other students, clearly ceasing working when time is called, and not speaking with other students at any point during the exam, including when in line to turn in the exam. It is the students’ responsibility to inform the instructor ahead of time of any medical conditions that may result in the exhibition of these behaviors, so that appropriate arrangements can be made.
- Unauthorized removal of any exam materials from the exam room will be treated as Academic Misconduct.

Laboratory: Laboratory work is the essence of the science of chemistry. All laboratory work in General Chemistry is to be an individual effort and any lab assignments may be sent through TurnItIn, an originality checker. You are expected to perform all parts of the experiments with your own equipment, chemicals, and unknowns. The accumulation of data, calculations derived from that data, and any conclusions or answers to questions associated with that experiment are to be your own work. Academic misconduct involving lab work includes but is not limited to the following:

- Laboratory data may not be altered or “made up”. All laboratory work must be done in your assigned laboratory room, during your scheduled time period, and under the supervision of your assigned teaching assistant. You are required to have the data sheet/notebook signed by your teaching assistant during lab. Some courses require the submission of carbon copies of the lab notebook every lab period.
- Plagiarism or the submission of work based on old material is considered to be academic misconduct no matter how small the infraction. Possession of another student’s lab report(s) will raise immediate concerns about academic misconduct.
- Evidence of copying or unauthorized "working together" on laboratory course work will be submitted to COAM.
- Individuals retaking the course must complete all work for the course during the current semester, and may not submit any parts of any laboratory assignment from a previous semester (see item #6 in “Ten Suggestions for Preserving Academic Integrity”, http://oaa.osu.edu/coamtensuggestions.html).

If you are found in violation, COAM will decide what disciplinary and/or grade sanctions you receive. Additional information about COAM policies and procedures can be found at https://oaa.osu.edu/academic-integrity-and-misconduct.
LABORATORY

**Laboratory**: Consists of a two hour and 55-minute session each week. The lab portion of this course will be scaled to be worth 20% of your total course grade, and you must receive a minimum of 50% of the total lab points to pass the course. Consult the laboratory syllabus for full details about the lab component of this course. If there are any discrepancies follow the lab syllabus and bring it to my attention. The following items are of particular importance:

- Lab reports will be submitted digitally on Carmen. Late assignments are accepted up to one week with point deductions. **No lab reports** are accepted after **Monday, Dec. 2nd at 5:00 PM**. See your lab syllabus for details.

- Missed Lab Policy: If you miss the first lab, you will be missing important safety information and mandatory assignments. Before attending your next lab, you must complete the ‘Check-in and Safety Quiz’ and read, understand, and sign the laboratory safety statement in Carmen to earn 5 points. Your TA will verify that you have completed this requirement before you will be allowed to attend any subsequent lab. See the lab syllabus for additional information about missing other lab periods and a make-up lab and its requirements.

See the Lab Syllabus for full details about lab.

**LABORATORY NOTEBOOKS**: Will be graded. You are required to keep a lab notebook following the guidelines described in the ‘Guide for Success in General Chemistry’ section of your laboratory manual (printed beginning on page xi). You are required to use the Student Lab Notebook (Hayden-McNeil Publishing) and record **ALL** entries in **Blue or Black INK**. Unless otherwise instructed, no information can be recorded on scratch paper or in the lab manual during a laboratory session. Note, some parts must be completed prior to coming to lab (purpose, procedure, tables to record data). Your TA will not allow you to begin an experiment until your notebook prep is done. Record procedures followed, observations made and data collected, calculations and results only in the notebook (nothing should be written in the manual or other pieces of paper). The notebook should be sufficiently neat and organized so that another person can follow what you did. You should be able to perform the whole experiment using procedure in your notebook (i.e. without the manual). We may tell you to do this during any lab period so you must be fully prepared and have a good procedure in your notebook when you walk into lab. At the end of each lab (**before leaving the lab**), **you and your TA MUST sign and date your lab notebook sheets**. You then **submit the copies** to your **lab instructor** in order to receive credit for the lab. If you fail to get your notebook signed or forget to turn in the pages, you must bring your notebook to the Lab Supervisor for review. You will not receive credit for the associated lab report until the carbon copies are accepted by the Lab Supervisor.

**LABORATORY REPORTS & POST-LAB**: A digital lab report and post-lab assignment will be due 1 week after the completion of the laboratory experiments. A **Report template** and **post-lab templates** are located on Carmen for you to download and must be used to prepare each report or post-lab (if not used, there’s a 2-pt. penalty). Using the report template, you will prepare your report, including all the requirements outlined in the grading rubric, which can be found on Carmen under each assignment. Detailed information about each requirement is located in the ‘Guide for Success in General Chemistry’ in the lab manual, the ‘Longer Descriptions for Report Criteria’ page on Carmen, and each report template. **ALL REPORT REQUIREMENTS MUST BE INCORPORATED IN A SINGLE DOCUMENT, including graphs, charts, etc.** Reports then must be saved as a Microsoft Word document (.docx) or PDF (.pdf) file format. File names must be in the following format: **lastname.#_firstname_semester_experimentcode_report** (for example: Smith.4321_John AU19_SOL_report.docx or Smith.4321_John AU19_SOL_report.pdf). If you fail to correctly name your file, you will lose 2 points for the report.

Digital lab reports will be submitted through each assignment on Carmen. You are responsible for making sure your submission is complete with all report requirements, the correct file, and is not corrupt. You are also responsible for making sure you submit the report to the correct assignment dropbox. To avoid errors, manually download your submission to make sure it was uploaded correctly. If any mistake is made with your report upload, the standard late penalty will apply if the submission deadline has passed. At any time before a grade has been issued, you can submit the report again, but only the most recent file will be graded and will accrue late penalties if the submission deadline has passed. **Reports and post-labs will be accepted through Carmen ONLY – paper copies, emailed material or material uploaded incorrectly will not be accepted.**

Reports (and any required post-labs or data entry) are generally due by the **beginning of the lab session ONE week after** the completion of the experiment (due dates are on Carmen). After this time, Carmen will still accept submissions for one week, but the report will be considered late, even if turned in later the same day, and will incur a 10% per day (24 hours) deduction. If you submit a report late, you should notify your TA via email within 24 hours after submission. **NO credit will be given after 7 days (including weekends)**; at this time, Carmen will no longer accept submissions. Lab reports should be graded by your lab instructor and returned **one week** after submission (let me know if this doesn’t happen). Details for the lab report expectations can be located in the “longer description” of each category in the rubric, and in the lab manual.
There are also similar requirements for the post-labs and there are report quizzes for certain experiments instead of lab reports. See the lab syllabus for more detail.

**Laboratory Safety Requirements:** Students are required to read, understand, and implement the safety precautions indicated in the laboratory manual and laboratory handouts. The precautions are summarized on a safety statement which must be digitally signed on Carmen by all students during their first laboratory period. Until this statement is signed, students are not permitted to participate in laboratory activities. Some particularly important parts are:

1. You must wear department-authorized ANSI code goggles in the laboratory. Goggles will be issued during check-in. After the first free pair, goggles must be purchased from 180 CE. Not wearing goggles will result in the loss of 5 points of the grade for the experiment (the lab performance points). For any subsequent violation, an additional loss of points will result. Continued violations may result in dismissal from the course. Wearing contact lenses is not recommended.

2. Each student must wear adequate clothing to reduce the possibility of injury from chemicals or broken glass (long pants, jeans are best, and shoes which cover your entire foot). **Students wearing inappropriate attire - including but not limited to shorts, sandals, spandex or other thin, skin-tight pants, pants with holes, tank tops, or short skirts - will be sent home.** These students are expected to change and return to complete the experiment in proper attire. Long hair must be confined. See the lab safety module on Carmen for more details.

3. Familiarize yourself with the location of the fire blanket, fire extinguisher, and eye wash in the laboratory.

4. Promptly report all accidents, no matter how small, to your lab instructor.

5. Your work area and common glassware should be cleaned before you leave lab. After cleaning all glassware and putting your equipment away, wipe down your work area with a wet sponge or towel. This ensures that you, and other students who use the space, will not be harmed by chemicals left on the work space. Also, clean up spills in the balance room by brushing chemicals into a weighing dish. Not cleaning up may result in the loss of points for the experiment.

6. No unauthorized experiments are allowed. No chemicals may be removed from the lab.

**Medical Insurance Coverage:** Due to the potentially dangerous nature of laboratory work, you are required to maintain medical insurance coverage through OSU student health insurance or a private agency when enrolling in Chemistry laboratory courses. You are responsible for any medical costs associated with an injury in lab.
Chemistry 1220 Pre-lab and Post-lab Assignments

These pre-lab and post-lab assignments are part of your lab grade. The pre-labs are on line and the links are in the Laboratory module on Carmen or the links below. They are due before the start of lab each week. The post-lab (marked Carmen below) is done on Carmen and is due one week from the time you finish your experiment (before you come to your next lab). You should prepare for each lab by reading the experiment, preparing your notebook and doing the pre-lab. Carmen will not allow pre-labs to be submitted after the start of your lab period. Pre-labs which are completed on an external site (Online# below) will receive zero credit if submitted after your lab period begins. You can use the link listed below if for some reason you can’t reach Carmen and for the online data entry for experiment FPD.

<table>
<thead>
<tr>
<th>Expt</th>
<th>Title</th>
<th>Pre-lab</th>
<th>Post-lab</th>
<th>Points*</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKN</td>
<td>Check In: Introduction to the General Chemistry Laboratory</td>
<td>Online #</td>
<td>Manual Pages turned in before leaving lab</td>
<td>25</td>
</tr>
<tr>
<td>SOL</td>
<td>Variation of Solubility with Temperature &amp; Solvent</td>
<td>Online #</td>
<td>Carmen+ &amp; Report</td>
<td>100</td>
</tr>
<tr>
<td>FPD</td>
<td>Quantifying Freezing Point Depression</td>
<td>Online #</td>
<td>Online#, Carmen+ &amp; Report†</td>
<td>100</td>
</tr>
<tr>
<td>BAR</td>
<td>The Kinetics of the Bleaching of Allura Red Dye</td>
<td>Online #</td>
<td>Carmen+ &amp; Report</td>
<td>100</td>
</tr>
<tr>
<td>CLK</td>
<td>Exploring the Effect of Temperature on Reaction Rate</td>
<td>Online #</td>
<td>Carmen+ &amp; Report</td>
<td>100</td>
</tr>
<tr>
<td>LCP</td>
<td>Le Châtelier’s Principle</td>
<td>Online #</td>
<td>Carmen+ &amp; Report†</td>
<td>100</td>
</tr>
<tr>
<td>SAL</td>
<td>Investigation of the Acid-Base Properties of Salt Solutions</td>
<td>Online #</td>
<td>Carmen+ &amp; Quiz†</td>
<td>100</td>
</tr>
<tr>
<td>SST</td>
<td>Strong Acid &amp; Strong Base Titration</td>
<td>Online #</td>
<td>Carmen+ &amp; Report</td>
<td>100</td>
</tr>
<tr>
<td>WST</td>
<td>Weak Acid &amp; Strong Base Titration</td>
<td>Online #</td>
<td>Carmen+ &amp; Report</td>
<td>100</td>
</tr>
<tr>
<td>VOL</td>
<td>An Exploration of Voltaic and Electrolytic Cells</td>
<td>Online #</td>
<td>Carmen+ &amp; Quiz†</td>
<td>100</td>
</tr>
<tr>
<td>BLP</td>
<td>Lab Practical</td>
<td>None</td>
<td>Quiz†</td>
<td>100</td>
</tr>
<tr>
<td>FCO</td>
<td>Finish and Check-out</td>
<td>---</td>
<td>---</td>
<td>25</td>
</tr>
</tbody>
</table>

* Total lab points of 1050 (9 labs, lab practical, CKN, & FCO) are factored to comprise 20% of the course total.

# [https://uglabs.cbc.osu.edu/1220/](https://uglabs.cbc.osu.edu/1220/) — General Chemistry 1220 Lab website
+ post-lab on Carmen
† Report quiz on Carmen rather than a report.

LABORATORY GRADES: Each lab is worth the points indicated in the table above. The points are from the online pre-labs and post-lab exercises, the performance and notebook scores and the report scores, including unknown scores. A detailed point breakdown may be found on the grading rubric, which can be found on Carmen. A minimum of 50% of the total lab points (525/1050) are necessary for a passing grade in the course.

Any requests for re-grading must be made within 1 week of the receipt of a graded lab report, quiz or exam.

For more information about lab notebooks and reports see the lab manual and the following link:

[https://uglabs.cbc.osu.edu/1220/](https://uglabs.cbc.osu.edu/1220/) — General Chemistry 1220 Lab website (access lab materials from here)
Notebooks - "Student Lab Notebook - OSU Chemistry Dept." (Hayden-McNeil Publishing). Must be written in **ink**.

**Before lab:** Experiment number, title and date exp performed
Purpose (one or two sentences)
Procedure (reference to pages in lab manual and brief outline)

**During lab:** All numerical data (must include label and units) --- *Recorded in Notebook only*
Other observations --- *Recorded in Notebook only*

**At home:** Calculations (using your own data)
Chemical equations
Results

Notebooks are graded each week as the experiment is being performed. **ALL** data and observations made during lab **MUST** be written **directly in the notebook** and **nowhere else**, unless otherwise directed by your TA. Calculations, chemical equations and results will usually not be complete when the notebook is graded. Your TA will **sign** your work, write down your grade, and tell you how your notebook could be improved. The carbon copies will be collected each lab period. Your lab notebook **sheets MUST be signed and dated** by you and then your lab instructor and the carbons given to the TA before leaving the lab or your report will **NOT** be graded. For further information on lab notebooks and examples for writing the procedures, see the lab manual and the following:

https://uglabs.cbc.osu.edu/ - General Chemistry web site (access lab materials from here – very helpful).

**Reports** (the following is in the template on Carmen)
- Cover page: experiment number & title, course number, student's name, TA name, **date exp finished** and **date report submitted**
- Purpose; Procedure reference is sufficient (note any changes)
- Data [**online data entry for exp 3, FPD, as indicated on the previous page**]
- Sample calculations (using your own data)
- Graphs if applicable
- Results and Discussion
- Conclusion

Reports are due by the **beginning** of lab one week after the work is completed (submitted on-line in Carmen). A penalty of **10% per day** is assessed for late labs. After **7 days (including weekends)** NO credit will be given. Graded reports should be returned a week after submission - notify your lecturer and the lab supervisor if they are not. There is a final cut-off date for all reports, as noted previously. For further information on lab reports and examples, see the lab manual and the following:

https://uglabs.cbc.osu.edu/ - General Chemistry web site (access lab materials from here – very helpful).
& https://www.asc.ohio-state.edu/zellmer.1/chem1220/lab/chem1220_sample_lab_report.pdf (my outline for a report)

**BLP – Lab Practical**

For the lab practical, BLP, you will be required to perform the entire experiment from the procedure you’ve written in your lab notebook. You will **NOT** be allowed to use your lab manual for any purpose. The TA will **deduct points** from your report grade if you use the manual. This means you will need to do a good job of preparing your notebook and thoroughly understanding the procedure.
Suggestions for Writing Your Notebook Procedure

When writing the procedure in your notebook it should be in your own words, as much as possible, in an outline form (using reasonably understandable abbreviations when possible). You should be able to follow your own procedure without looking at the lab manual (you should not have to use your manual during lab, although you can, particularly for the pictures of the lab setup). Also, someone with a basic understanding of chemistry should be able to do the experiment by following your procedure without the manual and understand what’s been recorded during lab. Here’s a partial example of a procedure (based on an old 1220 experiment). See the online version at the link on the previous page for an idea of what the procedure in the manual looks like.

Part A:

1a. Clean, dry 30-mL syringe (obtained from TA).
1b. Remove glass plunger, rinse with 5 mL acetone.
1c. Lubricate plunger with graphite using pencil, rubbing entire surface.
1d. Temporarily place plunger in 400-mL beaker.
1e. Rinse barrel using 5 mL acetone. Repeat.
1f. Dry barrel by drawing air through it w. aspirator.

2a. Attach serum stopper to syringe (Fig. 14.5, p 9).
2b. Fold back serum stopper before pushing onto Luer-Lok fitting.
2c. Push small end onto Luer-Lok fitting on syringe.
2d. Do not pull on too tightly – don’t cover slits in fitting.

Note this looks like a “cookbook” using short concise individual steps. This is much easier to read and follow in lab when you’re busy, rather than the paragraph form in the lab manual. Plus, doing this helps you to learn the procedure a better than just copying it word-for-word from the manual. While in lab you can check off each step as you do them to make sure you don’t skip a step or do a step twice.

After preparing your notebook, do the pre-lab (which may include on-line data-entry, depending on the experiment). You should be able to answer the pre-lab questions if you’ve understood the Discussion, Procedure and Data Analysis sections. The on-line pre-lab with data entry (#2, FPD) will have questions pertaining to the experiment and data-entry which will pretty much follow the report sheets you will use for your data collected in lab for the report (as will the on-line data entry for your results from lab). The on-line pre-lab data entry programs use randomly generated data similar to what you will collect in lab. These will be easier to do if you’ve read the manual and written the procedure first.