This is a 3-credit course with two 80-minute class meetings per week. Students are expected to spend about 9 hours of outside of class studying and completing assignments per week (although some students may require more time than this).

**Prerequisites**
ALEKS score of 46 or higher, or completion of MTH 111 or a higher numbered math course with a grade of C- or better, or concurrent enrollment in MTH 095 or MTH 103.

**Course Description**
A course for students who need some extra preparation before enrolling in a general chemistry course. This course will look at the skills it takes to be successful in general chemistry while examining the importance of chemistry in our everyday lives.

**Instructors**
Margie Haak  
Email: margie.haak@oregonstate.edu  
Office: 139 Gilbert Hall  
Office Hours: Monday 3-4 pm  
Michael Burand  
Email: michael.burand@oregonstate.edu  
Office: 231 LPSC  
Office Hours: Friday 1-2 pm

Office Hours held in the Mole Hole (3rd floor of Valley Library)  
Students can also make an appointment to meet at another time, if necessary.

**Teaching Assistants (TAs)**
Katie Ash, ashk@oregonstate.edu  
Dillon Crook, crookd@oregonstate.edu  
Alexa Singer, singeral@oregonstate.edu  
Clara Wheeler, wheeclar@oregonstate.edu

**Meeting Times**
Section 001 TR 10:00 – 11:20 am  
Section 002 TR 2:00 – 3:20 pm

**Course Materials**
2. Access code for Smartwork5 (comes with the textbook above if purchased new)  
3. Scientific calculator

**Student Learning Outcomes**
Successful students will be able to:
1. Solve quantitative problems using basic mathematical skills as measured by performance on in-class work, quizzes, and exams.  
2. Use dimensional analysis to solve problems while using proper units and significant figures as measured by performance on in-class work, quizzes, and exams.  
3. Demonstrate problem-solving skills applicable to a wide variety of problems drawn from the topics covered in this course as measured by performance on in-class work, quizzes, and exams.
4. Demonstrate knowledge and usage of metacognitive learning strategies as measured by performance on discussion board posts and portfolio assignments.

5. Use the language of chemistry, nomenclature, terminology, and symbolic representations, as measured by performance on in-class work, quizzes, and exams.

**Course Content Includes**

- Proportional Reasoning
- Problem Solving
- Scientific Notation
- The Metric System
- Significant Figures and Units
- Interpreting Graphical Information
- Atoms and Ions
- The Periodic Table
- Significant Figures
- Nomenclature
- Dimensional Analysis
- Chemical Equations and Reactions
- Stoichiometry

**Course Format**

This is not a class where you simply come each day to listen, watch, and take notes! The primary method for learning new concepts will be by working through practice problems in class, participating in class activities and discussions, and working through homework assignments.

Internalizing a discipline’s way of thinking about and solving problems is a time consuming process, with the keyword being “process”. It is not something that can be taught to students in a term, or even year–long, course. Learning chemistry takes much more than memorizing definitions and equations. It requires active participation and questioning both in and out of the classroom. The instructors of this course will provide you with many opportunities to learn the material through class activities, readings, and homework assignments, but in the end, you will have to do all of the hard work of actually learning that material. Our role in this course will be to help you understand the concepts and materials in the course. We welcome questions, and will do our utmost to help you, but in the long run what you get from this course depends on you.

Evidence-based research on learning indicates that when students are actively involved in their education they are more successful and less likely to fail. A new *Proceedings of the National Academy of Sciences* report by Freeman et al., shows a significant decrease of failure rate in active learning classroom compared to traditional lecture (see the following plots).
Fig. 1. Changes in failure rate. (A) Data plotted as percent change in failure rate in the same course, under active learning versus lecturing. The mean change (12%) is indicated by the dashed vertical line. (B) Kernel density plots of failure rates under active learning and under lecturing. The mean failure rates under each classroom type (21.8% and 33.8%) are shown by dashed vertical lines.

There are different levels of learning, from simply memorizing information verbatim to developing independent problem-solving skills. Many students are not aware of this and spend the majority of their effort on memorization tasks. Bloom’s taxonomy (shown below), represents a hierarchy of learning levels. Commonly, successful high school performance can be accomplished while operating at the two lowest levels, namely, remembering and understanding (to answer such questions as “Is HCl a strong or a weak acid?”), while college demands mastery at higher levels.

Fig. 2. Bloom’s taxonomy of educational objectives
Evaluation of Student Performance

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Quizzes</td>
<td>100</td>
</tr>
<tr>
<td>Pre-Class Quizzes</td>
<td>20</td>
</tr>
<tr>
<td>Exams</td>
<td>300</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
</tr>
<tr>
<td>Class Participation</td>
<td>100</td>
</tr>
<tr>
<td>Discussion Posts</td>
<td>80</td>
</tr>
<tr>
<td>Portfolio</td>
<td>100</td>
</tr>
<tr>
<td>Online Homework</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>1000</td>
</tr>
</tbody>
</table>

Quizzes

Unit quizzes (taken during class) must be completed before the Exams (listed below) to earn full credit. A score of 90% or better is required to pass each quiz. Students are only allowed one attempt per unit quiz per day.

Pre-Class quizzes (taken outside of class via Canvas) must be completed by 11:59 pm the day before the corresponding class period. In order to access a pre-class quiz, the reading and video must be completed first.

Exams

There will be three exams worth 100 points each during the term.

Exam 1 (covers Modules 1 – 4, Quizzes 1 - 3) - Tuesday, October 22 during class.
Exam 2 (covers Modules 1 – 11, Quizzes 1 - 7) - Tuesday, November 12 during class.
Exam 3 (covers Modules 1 – 15, Quizzes 1 - 9) - Tuesday, November 26, during class.

There are no alternative exam times. You will have 55 minutes to complete each exam. You must bring your OSU ID card to the exams and present it to the proctor upon completion of the exam.

Departmental Policy for Midterm Exams in General Chemistry

Unless otherwise stipulated by OSU rules and regulations, no make-up exam is provided for a missed midterm.

For excused absences, the student’s performance on the final exam is used to replace the missed midterm.

For students participating at an OSU-sanctioned event, a good faith effort to accommodate students will be made to have the exam proctored at the OSU-sanctioned event during the same date and time as the exam is occurring at OSU. The student is expected to notify the instructor of the event via email during the 1st week of the term. For unexpected events, the student should notify the instructor within 3 days of announcement of the OSU-sanctioned event.

Final Exam

The final exam will cover Modules 1-18, Quizzes 1 - 10 (all topics covered in this course) and will be 200 points.
For Section 001 – The final exam will be administered on Friday, December 13, 9:30 am.
For Section 002 – The final exam will be administered on Monday, December 9, 6:00 pm.

There are no alternative exam times. You will have 110 minutes to complete the exam. The final exam is comprehensive. You must bring your OSU ID card to the exams and present it to the proctor upon completion of the exam. A missed final exam will receive a score of zero.

**Departmental Policy for Final Exams in General Chemistry**

Unless otherwise stipulated by OSU rules and regulations, no make-up exam is provided for a missed final exam.

For excused absences, the student will be given a grade of I/F and be allowed to take the final exam the next time the exam is offered at OSU. The grade from this final exam will be used in place of the missed final exam to calculate the final grade in the course.

For students participating at an OSU-sanctioned event, a good faith effort to accommodate students will be made to have the exam proctored at the OSU-sanctioned event during the same date and time as the exam is occurring at OSU. The student is expected to notify the instructor of the event via email no later than two weeks prior to the final exam. For unexpected events, the student must notify the instructor within 3 days of announcement of the OSU-sanctioned event.

If a student shows improvement on the final exam over the average score of their midterm exams, the final exam percentage will be used as a score for both midterm exams.

**Unit Quizzes**

Quizzes will be given for each unit. Students must earn a score of at least 90% on the unit quiz to pass the unit and move on to the next unit. Students are only allowed one attempt per unit quiz per day.

**Class Participation**

*Attendance at all class periods is mandatory, and roll will be taken.* The class periods will be devoted to developing an in-depth understanding of the concepts covered in this class, applying these concepts to challenging problems, and investigating the interrelationship of the concepts covered in this class. Please bring a calculator to every class.

**Discussion Posts**

Each week there will be a reading on a topic pertinent to success. By Friday of that week students must post a reflection on the Discussion Board and by Sunday students must post a response to another student's reflection. The purpose of this weekly assignment is to expose students to ideas and research that can help them be successful in their college courses and to have them think about how they can apply these ideas to their academic life.

**Portfolio**

One of the goals of this course is to introduce you to academic success strategies and encourage you to try them out for yourself. To promote the application of course content, you will be asked to submit a portfolio of work demonstrating your application of specific metacognitive learning strategies. The assignments will be posted on Canvas and discussed in class.

**Homework**

Homework in this class will be completed using the online program *Smartwork5*. 
Conduct in the Classroom
Student conduct is governed by the university's policies, as explained in the Code of Student Conduct. In an academic community, students, faculty, and staff each have responsibility for maintaining an appropriate learning environment, whether online or in the classroom. Students, faculty, and staff have the responsibility to treat each other with understanding, dignity, and respect. Activity not related to classroom instruction such as phone calls, texting, emailing, surfing the web, talking unnecessarily, etc. is distracting to other students and the instructor and takes time and attention away from your educational experience.

Students with Disabilities
Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Reach Out for Success: University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at http://oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

Student Conduct Expectations Link
http://studentlife.oregonstate.edu/code