

Whatcom Community College  
CHEM&163 A, BS, CS, Spring 2014

Credits: 5

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Canvas Login:

<https://wcc.instructure.com/login>

Office hours: M W F 12:30-1:30, or by appointment

Spring quarter begins April 8 and ends June 20.

**Schedule:**

Section	Days	Times	Room in Kulshan Hall
A	M W F	9:00AM-9:50AM	208
	T Th	9:00AM-11:00AM	104
BS	M W F	11:30AM-12:25PM	109
	T Th	11:30AM-1:20PM	104
CS	M W F	11:30PM-12:25PM	109
	T Th	2:00PM-4:00PM	104

**COURSE NUMBER AND TITLE:** CHEM& 163: General Chemistry w/Lab III  
(to replace CHEM 123 to match the current CCN for the Chemistry sequence)

**COURSE OUTCOMES:** *By the end of this course, students will be able to . . .*

- interpret acid-base reactions using Arrhenius, Bronsted-Lowry, and Lewis theories.
- assess the composition of equilibrium mixtures containing acidic and basic species.
- assess the composition of equilibrium mixtures containing slightly soluble ionic compounds and complex ions.
- apply thermodynamic data to determine the position of a chemical equilibrium and the direction of spontaneity.
- interpret oxidation-reduction reactions using the concepts of oxidation states and half-reactions.
- demonstrate competency in basic laboratory skills.

**Course description:**

Third of a three-course sequence designed for science, engineering, and other majors needing a full-year general chemistry sequence. Covers acids, bases, acid-base equilibria, solubility and complex-ion equilibria, thermodynamics and equilibrium, electrochemistry, and special topics. Lab work included. Prerequisite: CHEM& 162 with a "C-" or better. (MSI)

**Core learning abilities:**

WCC's core learning abilities (CLAs) – quantitative literacy, information literacy, communication, critical thinking, and global awareness – are skills taught and reinforced throughout our curriculum. These skills

are integral to students' professional and personal lives. This course will give you the opportunity to practice and develop quantitative literacy.

**Texts:**

- *General Chemistry: Atoms First, Second Edition*, McMurry and Fay, Pearson  
The WCC bookstore has a custom edition of this text that is packaged with access to the on-line homework system required for this course. If you choose to purchase your text book elsewhere, you will need to purchase access to the on-line home system separately (see below).

**On-line Homework:**

- *Mastering Chemistry*  
Access to this on-line homework system is included in the textbook package available at the WCC bookstore. If you do not purchase this package, you will need to purchase an access code to Mastering Chemistry for \$66. This can be done directly through the publisher at [masteringchemistry.com](http://masteringchemistry.com)  
Once you have registered for Mastering Chemistry, you can log into the course website using the following course identification code: **MCFRAZEY82208**

**Other Material:**

- Scientific calculator
- Laboratory safety goggles
- Composition book

**Assessment:**

Your learning will be evaluated by the following assessments. The weight of each assessment toward your final grade is indicated in the following table.

Assessment	Weight
Exams	60%
Labs	25%
Homework	15%

**Grading:**

Grades will be assigned based on the following scale.

94-100%	A	77-79%	C+	0-59%	F
90-93%	A-	74-76%	C		
87-89%	B+	70-73%	C-		
84-86%	B	67-69%	D+		
80-83	B-	60-66%	D		

Students taking the course on an S/U basis are expected to earn at least a "C-" to receive a "Satisfactory" grade. If you stop attending class and do not officially withdraw, you will receive a failing grade.

**Incompletes:**

An "incomplete" for this course is discouraged. However, for a number of verifiable personal emergencies we may discuss grading options as long as you have shown sufficient effort and satisfactory progress as defined by the instructor (assignments up-to-date, 72% average on exams, group

participation, good effort, and discussion with teacher). If circumstances in your life prevent your succeeding in this course at this time, you should withdraw before the official withdrawal date (check with the Registration Office) and try the course at another time.

**Exams:**

There will be 4 exams, each covering 2 chapters from the textbook (see schedule at the end of this syllabus for dates). Exams will be on the material covered in the textbook, homework, lecture, and lab.

**Laboratory:**

Attendance in the laboratory is required and there will be no makeup labs. Do not plan on leaving lab early or schedule work or appointments during the laboratory period. Lab reports are due by 4:00 pm on the due date (see lab schedule for dates).

**Homework:**

Homework will be administered through an on-line homework system, Mastering Chemistry. This is one of the most widely used and effective homework systems available. This system provides the prompt feedback to students that is essential for learning. The homework assignments should take approximately 5 hours to complete. Due dates for the homework assignments can be found on the course calendar at the Mastering Chemistry course website.

**Policy on missed exams and late work:**

In general, make up exams will not be given. If you know that you will be absent from an exam ahead of time, contact me prior to the exam to make alternate arrangements. After the exam date, you will need some type of verification of a medical or other type of emergency in order to take a make-up exam. Late lab reports will be penalized 20 percent per day late and will not be accepted after one week.

**Policy on Academic Dishonesty:**

Academic honesty is essential to learning in college. Cheating and plagiarism are serious violations of the WCC Student Rights and Responsibilities and will result in college disciplinary action such as probation, suspension or expulsion. If you represent the work or ideas of another as your own, a grade of "F" may be given for that assignment. A second violation may result in an "F" for the course.

**Classroom Conduct and Civility:**

- Respect-please respect the rights of your classmates to learn during class and be considerate by keeping your dialogue directly with the instructor, except when asked to work in groups.
- Actively contribute to class discussions by sharing appropriate comments or questions that are relevant to the topic and express interest in the course content. Avoid inappropriate comments that are disrespectful, monopolize the discussion, or are unrelated to the topic.
- Show respect for the ideas of others and their right to express themselves. Express differences in a considerate and constructive manner. Keep a balance between speaking and listening.
- Please turn off cell phones and pagers before coming to class.
- Avoid eating noisy foods in class.
- Please make every effort to arrive to class on time. If you arrive late, please minimize the disruption to the class by taking your seat quietly.
- Please do not leave class early unless you have told me in advance.
- If you are absent, it is your responsibility to contact a classmate to obtain notes or handouts.

According to the **WCC Student Rights and Responsibilities** (WAC 132U-120-010):

Students and college personnel share the responsibility for contributing to a learning environment that promotes social justice, understanding, civility, and nonviolence within a safe and supportive college community. Enrollment in Whatcom Community College carries with it the obligation to be a responsible citizen of the college community and to treat others with respect and dignity. Students shall be subject to disciplinary action for interfering with the personal rights or privileges of others or the educational process of the college. Students are prohibited from engaging in any unlawful conduct. Grounds for disciplinary action include, but are not limited to, the following:

1. Disorderly, abusive, or bothersome conduct. Disorderly or abusive behavior that interferes with the rights of others or obstructs or disrupts teaching, research, or administrative functions.
2. Failure to follow instructions. Inattentiveness, inability, or failure of student to follow the instructions of a college official, thereby infringing upon the rights and privileges of others.
3. Sexual harassment. Engaging in unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature where such behavior offends the recipient, causes discomfort or humiliation, or interferes with job or school performance.
4. Plagiarism. Plagiarism includes submitting to a faculty member any work product that the student fraudulently represents to the faculty member as the student's work product for the purpose of fulfilling or partially fulfilling any assignment or task required by the faculty member as part of the student's program of instruction.

**Disability Accommodations:** Any student with a disability requiring auxiliary aids, services, or other reasonable accommodations should contact the Disability Support Services office in the Entry and Advising Center (LDC 116) at 360-383-3080 or [VP] 360-255-7182.

**Philosophy on Teaching and Learning:** People learn by watching, listening, thinking, and doing. Individuals differ however in the type of information they prefer to perceive, the way they operate on this information, and the way in which they achieve understanding. All of these components make up one's learning style. I believe it is important to understand the different ways in which people learn and to use teaching strategies that accommodate the diverse learning styles of students. In my lectures, I incorporate active problem-solving exercises, reflective writing assignments, demonstrations, and group discussions. I try to balance theoretical material with concrete examples. I try to illustrate how specific concepts are related to the big picture, and I try to use both inductive and deductive approaches to presenting material.

I believe that it is important for all students to understand that engaging many different styles of learning will make them better learners and will better prepare them for any career. I believe that one way to demonstrate to students the need to engage multiple styles of learning is by providing them with more authentic learning experiences. These may include project-based or inquiry-based activities. When faced with a problem, one must shift from getting involved, to listening, to creating an idea, to making decisions. By working on a problem in small groups, students are exposed to people with different learning styles and can improve their own problem-solving skills. Inquiry-based activities provide a more active learning environment in which students assume more responsibility for their learning, and, because most real-world science involves solving problems, inquiry-based activities provide a more authentic learning environment.

**Getting Help:** Students generally consider me very approachable and ready to help. In fact, helping students is one of the things that I love about my job. I strongly encourage you to ask questions of me

both in and outside of class. I believe that figuring out where you are having difficulty and what you do and do not understand is integral to learning. I am, therefore, almost always willing to answer questions. However, there are some questions that I am not willing to answer. For example, if you miss class, I will not tell you what you missed or review the concepts that I covered in class. It is not my responsibility to keep track of these things or bring you up to speed. On the day of an exam or the day that a lab is due, I will not answer questions. Waiting until the last minute to study or complete an assignment are poor study habits that I will not endorse.

**Keys to Success:** I believe that anyone can succeed in chemistry if they are prepared to work hard. I believe that the concepts of chemistry are fairly straightforward but do require learning a new language. Learning any language requires a certain amount of practice. I believe that the following recommendations will help you to learn the concepts and get the practice that you need to be successful in chemistry.

- Plan your time. The biggest predictor of success in any college class is the amount of time you spend on it. You should expect to spend 2 to 3 hours outside of class for every hour in class. For a 5-credit class, that is 10 to 15 hours per week, or about two hours per day. If you want to be successful, figure out where those hours will fit into your daily schedule and then have the discipline to stick to it.
- Use your time wisely. Try to study some each day, rather than trying to cram 10 to 15 hours into a weekend or the day before an exam. It takes time to digest material and synthesize ideas.
- Come to class prepared. The most successful students come to class prepared, having read and tried some of the problems. That way, they have some familiarity with the material and can then focus on areas of difficulty. I generally cover 3 to 4 sections from the textbook in a lecture. The most successful students read these sections and work the corresponding problems before coming to class.
- Engage different learning styles. Although people generally prefer a particular learning style, learning is most effective if multiple learning styles are engaged. Therefore, spend time reading, listening, thinking, questioning, explaining, and practicing.
- Get help when you need it. Although I believe it is best to construct your own understanding, and this requires a certain amount of grappling with ideas on your own, ask for help when you need it. This might mean asking me questions in or outside of class, requesting tutoring, joining a study group, or attending seminars on study skills. There is a wide range of support for students on campus. Use it.

Course schedule on next page

**Tentative Lecture and Exam Schedule:**

<b>Chapter</b>	<b>Topic</b>	<b>Date</b>
14	Aqueous Equilibria: Acids and Bases	April 9
	<b>Exam 1</b>	<b>April 23</b>
15	Applications of Aqueous Equilibria	April 25
	<b>Exam 2</b>	<b>May 9</b>
16	Thermodynamics: Entropy, Free Energy, and Equilibrium	May 12
	<b>Exam 3</b>	<b>May 28</b>
17	Electrochemistry	May 30
	<b>Exam 4</b>	<b>June 18</b>

**Tentative Lab Schedule :**

<b>Start Date</b>	<b>Lab</b>	<b>Report Due Date</b>
April 8	Check-in/Safety	
April 10	Nickel Exercise	April 11
April 15	Determination of a Weak Acid -KHP	April 18
April 22	Titration Curves & $K_a$	May 2
May 6	Chemistry of White Wine	May 16
May 20	Copper Sulfate Synthesis	May 23
May 27	Qualitative Analysis	May 30
June 3	Electrochemical Cells	June 6
June 10	Check-Out	