CHEM F103X: Introduction to Basic Chemistry

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Office Hours: MWF 10:15am-11:15am

Lecture Schedule: MWF 9:15am-10:15am
Lab Schedule: Section 901 - R 11:30am-2:30pm, Section 902 - R 2:45pm-5:45pm

Course Description:
Fundamentals of chemistry including historical and descriptive aspects. Fulfills the laboratory part of the natural science requirement and prepares the student for CHEM 105X and CHEM 104X.

Philosophy:
At the same time health scientists and policy experts worry about a social system which faces an increasingly technological world, university=ites work to show students the role of basic chemical and biochemical sciences as they function within the context of complex medical systems. Chemistry and biochemistry are central to the world around us and it is not that difficult to understand them or their importance to our social and economic systems.

Course Objectives:
The overall objectives of this course are to provide each of you with an understanding of some chemical principles, an appreciation of how chemistry pervades our society, the historical aspects of its concept development, an ability to understand some of the scientific issues which confront us as citizens, and an appreciation of how, and the extent of which, science is able to solve our problems (or create them).

Goals:
1. Become familiar with the methods of science used by chemists and biochemists
2. The role of experimentation and hypothesis testing
3. Major concepts of chemistry such as conservation of matter, catalysts, pH, etc…
4. The role of chemistry in society and medicine as evidenced by readings or magazine reports

Learning Objectives:
1. What is the difference between matter and energy?
2. What feature of the atom determines its density?
3. What are the fundamental types of chemical bonds, and how are they formed?
4. What is a chemical reaction? How does one balance a reaction? What is the definition of a mole? And how does it allow for the determination of mass-mass relationships in chemical reactions?
5. What are the states (phases) of matter and how do intermolecular forces affect the phase at a given temperature?
6. What is a solvent, and what general feature of the solvent determines the types of solutes that will dissolve?
7. What is the activation energy for reaction, and how does this energy influence the rate of a reaction?
8. What is the definition of an acid? A base?

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>3 Exams</td>
<td>300</td>
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<tr>
<td>Final Exam</td>
<td>100</td>
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<tr>
<td>Lab</td>
<td>100</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>500</strong></td>
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The grades will not be curved and I reserve the ability to adjust grades upward. Individual effort will be noted. Letter grades will be assigned with the following approximate cutoffs: A = 450, B = 400, C = 300, D = 200. Plus and minus grades will be used:

Exams:
The hour exams will cover material from the textbook chapters as well as associated concepts from the laboratory. The final will cover the whole course, but the major component of the exam will focus on material covered following the third exam.

Lab:
Each experiment will require a report (generally to be turned in before you leave). You will be graded on the quality of your personal results (where appropriate), your report, and your level of participation in group activities will be noted. Your teaching assistant will be responsible for assigning lab grades, and he/she will explain how your point total for the lab will be determined. Some lab activities may be reviewed for exams, videos of issues in modern chemistry, safety instruction, and assessment exercises.

Lab Section:
Be aware of what lab section and time you are registered for. Contact your teaching assistant if you are going to miss a lab. If you ignore the teaching assistants lab safety rules, you will be dismissed from the lab.

Homework:
Doing homework problems is the key to success, I will suggest problems in the exercises section at the end of each chapter. The solutions to the problems can be found in the back of the book. You do not need to turn in any of this work. However, if you have questions, please bring them up in class. Working with these exercises is part of what you must do to prepare for exams.
Lecture Text:
This year we are using a classic text that is organized by sections and is based on current issues related to biomedicine. The first part is structure of matter and some chemical concepts. Other chapters are related to organic chemistry and biochemistry.

Department Policy on Cheating:
The Department of Chemistry & Biochemistry Policy of CHeating is: "Any student caught cheating will be assigned a course grade of F. The student's academic advisor will be notified of this failing grade and the student will not be allowed to drop the course." The Department considers performing unauthorized “dry labs” as cheating.
Partnering during the lab may be acceptable but lab reports must show your own calculations and ideas.

Semester Schedule: *Schedule is subject to change*
| Oct 23       | ● Solutions - Ch 6  
|             | ● Water as a Solvent - Ch 6 |
| Oct 30      | ● Colligative Properties - Ch 6 |
| Nov 6       | ● Reaction Rates - Ch 7  
|             | ● Equilibrium - Ch 7 |
| Nov 13      | ● Acid and Bases - Ch 8 |
| Nov 20      | ● Ionization Constants - Ch 8 |
| Nov 27 - No class Friday | ● Exam 3 |
| Dec 4       | ● pH Scales/Buffer - Ch 8  
|             | ● Radioactivity and Half-Life - Ch 9 |
| Dec 11 - Finals Week | ● Final Exam |
Student protections statement: UAF embraces and grows a culture of respect, diversity, inclusion, and caring. Students at this university are protected against sexual harassment and
discrimination (Title IX). Faculty members are designated as responsible employees which means they are required to report sexual misconduct. Graduate teaching assistants do not share the same reporting obligations. For more information on your rights as a student and the resources available to you to resolve problems, please go to the following site: https://catalog.uaf.edu/academics-regulations/students-rights-responsibilities/.

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**Student Academic Support:**
- Communication Center (907-474-5470, uaf-speakingcenter@alaska.edu, Gruening 507)
- Writing Center (907-474-5314, uaf-writing-center@alaska.edu, Gruening 801)
- UAF Math Services, uaf-traccloud@alaska.edu, Chapman 305 (https://www.uaf.edu/dms/mathlab/, for math fee paying students only)
- Developmental Math Lab (Gruening 406, https://www.uaf.edu/deved/math/)
- The Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120, https://www.ctc.uaf.edu/student-services/student-success-center/)
- For more information and resources, please see the Academic Advising Resource List https://www.uaf.edu/advising/students/index.php

**Student Resources:**
- Disability Services (907-474-5655, uaf-disability-services@alaska.edu, Whitaker 208)
- Office of Rights, Compliance and Accountability (907-474-7300, uaf-orca@alaska.edu, 3rd Floor, Constitution Hall)
- Associated Students of the University of Alaska Fairbanks (ASUAF) or ASUAF Student Government (907-474-7355, asuaf.office@alaska.edu, Wood Center 119)

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of nondiscrimination available at www.alaska.edu/nondiscrimination. For more information, contact: UAF Office of Rights, Compliance and Accountability 1692 Tok Lane, 3rd floor, Constitution Hall, Fairbanks, AK 99775 907-474-7300 uaf-orca@alaska.edu

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University Sponsored Off-Campus Programs and Research Activities

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3. There are supportive measures available to individuals that may have experienced discrimination.
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