

Chemistry 103: Basic General Chemistry Syllabus

Spring 2023 (4.0 Credits)

Instructor: Dr. Bernard Laughlin
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Office: Murie 223D
Lecture: MWF 3:30 - 4:30, REIC 201
Lab: R 11:30 - 2:30, REIC 245
R 2:45 - 5:45, REIC 245
Office Hours: MWF 2:00 - 3:00, Murie 223D or by appointment

Prerequisites: placement in Math 105 or equivalent; =

Co-requisites: CHEM F103L

Required Course Material: Text book, "Introduction to General, Organic, and Biochemistry" 12th edition or higher (Bettelheim, et al). A **calculator** capable of scientific notation is also required for this course and should be brought to both class and lab. Use of phone as a calculator is NOT permitted for exams

Course Overview: Chemistry 103 (4.0 credit course) is the first semester of a two-semester series in general chemistry. This introductory chemistry survey course for health science majors and preparatory course for science majors will include the fundamentals of chemistry including historical and descriptive aspects. We will cover chapters 1 – 9 of the text. Topics include: measurement, energy and matter, periodic trends, chemical composition, chemical reactions, solutions, bond theory, phases, oxidation-reduction, and introduction to nuclear chemistry, problem-solving (applied mathematics), and special topics.

Blackboard: <https://classes.uaf.edu>. Syllabus and student grades will be posted on the UAF Blackboard website. Time sensitive information and reminders will be sent occasionally to all students using blackboard, so it is important that you verify that your email address attached to Blackboard is correct and current. Lecture notes will be posted on course website.

Exams: The two one-hour exams will cover material from the textbook chapters, additional materials presented in class, as well as associated concepts from the laboratory. Exams cannot be made up unless you arrange a time with me to take the exam prior to the scheduled exam and you have a valid excuse. You may be asked to document your excuse. In the event of an unforeseen emergency, contact me as soon as possible.

Final Exam: The final exam will be held during finals week on Thursday, May 4, 3:15 PM – 5:15 PM. The final exam will be cumulative: 50% from the final section of class and 50% from the previous sections.

Homework: Success in Chem 103 requires practice working through problems and applying the knowledge you have acquired. Higher achievement on exams is usually a direct result of time spent doing homework assignments in their entirety. We will work example questions in class but you should work more problems at home. I will give you suggested homework that corresponds to each chapter we cover in the book and an answer key. This will not be graded. Questions from the suggested HW as well as problems done in class often appear on exams.

Final Project: Students will prepare a final project throughout the semester and present the project to the rest of the class in the last weeks of the semester. The final project is intended to give you the opportunity to explain a core chemistry concept to the class (e.g. covalent bonding, atomic structure, states of matter, pH, nuclear chemistry etc.). A full list of available topics for you to choose from will be given well in advance to allow for proper preparation time. Your project core concept and “plan” must be cleared by me in advance. These projects are intended to spur your creativity. Innovative approaches and media are encouraged, such as Claymation, music videos, textiles, woodworking, ceramics, etc. Your final project will be presented in class. Your project should convey your core concept clearly to your classmates. No project may use and/or hazardous materials and/or methods. (When in doubt, ask me first.)

Laboratory: The lab component of this class offers you the opportunity for hands-on investigation and to gain skills in scientific reasoning, experimental design, and use of chemicals and laboratory equipment. The labs are conducted by a graduate teaching assistant (TA) who will have specific office hours. Lab reports will be handed in each week, to be graded and returned by the teaching assistant. Any questions regarding your lab should be directed to your TA. Eleven experiments are scheduled for the semester. The laboratory portion of your grade (100 points) will be based upon the average of your ten best lab grades. There are no make-up labs scheduled and students must attend at least 8 labs in order to pass the course. The first scheduled lab includes a safety review. **STUDENTS MUST ATTEND THE SAFETY REVIEW IN ORDER TO STAY IN THE COURSE.**

Computer: Currently, Department of Computing and Communications (DCC) maintains two open labs on campus: the Bunnell Lab and the Node (Rasmussen library). The Node has 24-hour access.

Support Services: There are a large number of resources available to help students that may be having difficulty in the course or with a particular topic. TAs and I both hold regular office hours. You may attend office hours for ANY chemistry TA; you are not restricted to the hours for the TA for your lab. Students can also make an appointment to see me for help if office hours do not fit with the student's schedule. Additional services are available through Student Support Services (<http://www.uaf.edu/sssp/>) at UAF.

Disabilities Services:

We will work with the Office of Disabilities Services (<http://www.uaf.edu/disability/>) to provide accommodations for students with disabilities. If you have a disability and require special assistance, please contact the instructor as soon as possible. Students with disabilities must provide documentation of the disability and a written statement indicating any special arrangements that need to be made.

Cheating/Academic Dishonesty: The Chemistry & Biochemistry Department Policy on

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.

Amending this Syllabus: The instructor may make changes to this syllabus. Any changes will be clearly communicated via email sent to your **UAF e-mail account and posted on Blackboard.**

Grading:

Exam (2)	200 pts (100 pts each)
Final Project	100 pts
Laboratory	100 pts
<u>Final Exam</u>	<u>100 pts</u>
Total	500 pts (max.)

Final grade intervals: A+ 97-100, A 93-96, A- 90-92, B+ 87-89, B 83-86 B- 80-82, C+ 77-79, C 73-76, C- 70-72, D+ 67-69, D 63-66, D- 60-62, F 0-59.

COVID-19 statement: Students should keep up-to-date on the university’s policies, practices, and mandates related to COVID-19 by regularly checking this website:

<https://sites.google.com/alaska.edu/coronavirus/uaf?authuser=0>

Further, students are expected to adhere to the university’s policies, practices, and mandates and are subject to disciplinary actions if they do not comply.

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/>.

Student Academic Support:

- Speaking Center (907-474-5470, uaf-speakingcenter@alaska.edu, Gruening 507)
- Writing Center (907-474-5314, uaf-writing-center@alaska.edu, Gruening 8th floor)
- UAF Math Services, uafmathstatlab@gmail.com, Chapman Building (for math fee paying students only)
- Developmental Math Lab, Gruening 406
- 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/lr/SKM_364e19011717281.pdf)

Student Resources:

- Disability Services (907-474-5655, uaf-disability-services@alaska.edu, Whitaker 208)
- Student Health & Counseling [6 free counseling sessions] (907-474-7043, <https://www.uaf.edu/chc/appointments.php>, Whitaker 203)
- Center for Student Rights and Responsibilities (907-474-7317, uaf-studentrights@alaska.edu, Eielson 110)
- Associated Students of the University of Alaska Fairbanks (ASUAF) or ASUAF Student Government (907-474-7355, asuaf.office@alaska.edu, Wood Center 119)

Nondiscrimination statement: The University of Alaska is an affirmative action/equal opportunity employer and educational institution. The University of Alaska does not discriminate on the basis of race, religion, color, national origin, citizenship, age, sex, physical or mental disability, status as a protected veteran, marital status, changes in marital status, pregnancy, childbirth or related medical conditions, parenthood, sexual orientation, gender identity, political affiliation or belief, genetic information, or other legally protected status. The University's commitment to nondiscrimination, including against sex discrimination, applies to students, employees, and applicants for admission and employment. Contact information, applicable laws, and complaint procedures are included on UA's statement of nondiscrimination available at www.alaska.edu/nondiscrimination. For more information, contact:

UAF Department of Equity and Compliance
 1692 Tok Lane, 3rd floor, Constitution Hall, Fairbanks, AK 99775
 907-474-7300
uaf-deo@alaska.edu

Additional syllabi statement for courses including off-campus programs and research activities:
 University Sponsored Off-Campus Programs and Research Activities

We want you to know that:

1. UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual: www.alaska.edu/nondiscrimination.
2. Incidents can be reported to your university's Equity and Compliance office (listed below) or online reporting portal. University of Alaska takes immediate, effective, and appropriate action to respond to reported acts of discrimination and harassment.
3. There are supportive measures available to individuals that may have experienced discrimination.
4. University of Alaska's Board of Regents' Policy & University Regulations (UA BoR P&R) 01.02.020

Nondiscrimination and 01.04 Sex and Gender-Based Discrimination Under Title IX, go to: <http://alaska.edu/bor/policy-regulations/>.

5. UA BoR P&R apply at all university owned or operated sites, university sanctioned events, clinical sites and during all academic or research related travel that are university sponsored.

For further information on your rights and resources [click here](#).

Schedule

Week	Day	Date	Chapter	Description
1	M	16-Jan		No Class
	W	18-Jan		Introduction, Syllabus
	F	20-Jan	1	Scientific method, Measurements, conversion factors
2	M	23-Jan	1	States of matter, Energy,
	W	25-Jan	1	Density, Specific gravity, heat
	F	27-Jan	2	Dalton's theory, atoms
3	M	30-Jan	2	Periodic table
	W	1-Feb	2	Electron configurations
	F	3-Feb	3	Octet rule, anions, cations, ionic bonds
4	M	6-Feb	3	Covalent bond
	W	8-Feb	3	Lewis structures, Measurements resonance
	F	10-Feb	3	Polarity
5	M	13-Feb	4	Chemical reactions, Balancing reactions
	W	15-Feb	4	Precipitation, Oxidation and Reduction
	F	17-Feb		Exam Review
6	M	20-Feb	Chapters 1-3	Exam II
	W	22-Feb	4	Formula and Molecular weights, Moles
	F	24-Feb	4	Mass relationship, Heat of a reaction
7	M	27-Feb	5	States of matter, gases
	W	1-Mar	5	Avogadro's law
	F	3-Mar	5	Intermolecular forces
8	M	6-Mar	5	Liquids, solids, phase changes
	W	7-Mar	6	Solutions, solubility
	F	10-Mar	6	Concentration
9	M	13-Mar		Spring Break
	W	15-Mar		Spring Break
	F	17-Mar		Spring Break
10	M	20-Mar	6	Water as a solvent
	W	22-Mar	6	Colloids and colligative Reactions properties
	F	24-Mar		Exam Review
11	M	27-Mar	Chapters 4 -6	Exam II
	W	29-Mar	7	Reaction rates
	F	31-Mar	7	Chemical equilibrium
12	M	3-Apr	7	Le Chatelier's principle;
	W	5-Apr	8	Acids and bases
	F	7-Apr	8	Conjugate acids and bases
13	M	10-Apr	8	pH, titrations
	W	12-Apr	8	Buffers
	F	14-Apr	9	Radioactivity, types of

14	M	17-Apr	9	Half-life, nuclear medicine
	W	19-Apr	9	Fusion and fission
	F	21-Apr		Final Presentations
15	M	24-Apr		Final Presentations
	W	26-Apr		Final Presentations
	F	28-Apr		Exam Review
16	T	4-May		Final exam 3:15-5:15