



General Chemistry I, F105X

4 Credits
Spring, 2023

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](#). 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.

General Information

<i>Instructor:</i>	Sarah Ellen Johnston	<i>Office Location:</i>	REIC 180
<i>Email:</i>	Sejohnston2@alaska.edu	<i>Office Hours:</i>	MW 10:15-11:15
<i>Telephone:</i>	907-474-5231	<i>*Course Type:</i>	Lecture
<i>**Course Location:</i>	REIC 201	<i>Meeting Time:</i>	MWF 11:45-12:45

Prerequisites

Placement in WRTG F111X; placement in MATH F151X; or a B- or better in CHEM F103X; or permission of instructor and department.

Co-requisites

Co-requisite: CHEM F105L. Students must be enrolled in both CHEM F105X and CHEM F105L to receive full credit.

Course description

This course is an introduction to general chemistry and explores topics to a much greater depth than preparatory courses. Topics include: measurement, energy and matter, periodic trends, chemical composition, chemical reactions, solutions, bond theory, gasses, thermodynamics, problem-solving (applied mathematics), and special topics. Students must be enrolled in both CHEM F105X and CHEM F105L to receive full credit.

In-depth Course description

In this course students will learn introductory chemistry topics that will prepare them for future courses that require CHEM105. In addition, students will learn scientific literacy through the investigation of different sources of scientific information and learn to distinguish between primary and secondary sources of science information. This class will be interactive and students are encouraged to participate during in class activities so they get the most out of the course. Regular, online homework will be used to reinforce topics covered in class as well as occasional homework assignments that give students the opportunity to link what they are learning in class to real world topics. Chemistry is a core science discipline and critical for being able to understand the world around us, particular emphasis is placed on understanding periodic trends and

Course Readings/Materials

The materials for this course can be purchased from the UAF bookstore and elsewhere. When purchasing the textbook ensure that it includes an access code for the homework system. The ebook comes with homework access automatically.

1. *Chemistry: An Atoms-Focused Approach*, 3rd edition, Gilbert et al.



General Chemistry I, F105X

4 Credits
Spring, 2023

Complete Book - ISBN: 978-0-393-67402-6 (Hardcover), 978-0-393-69744-5 (ebook)

2. Norton Smartwork 5 for *Chemistry: An Atoms-Focused Approach* registered through the Canvas course page
3. Experiments in General Chemistry 105X: A Laboratory Manual (free! Handouts can be printed from Blackboard, updated weekly)

A note from the publisher: "Students can order our low-cost Ebook directly from our website: <https://digital.wwnorton.com/atoms3>. That would be 720 day access for only \$79.95, and that price includes SmartWork."

Technology Requirements

An @alaska.edu email address is required for all course communication. This will also provide access to the Canvas course page.

Regular access to a computer with internet will be required to complete homework assignments and access course materials through Canvas. Smartwork5 homework assignments will be accessed through the Canvas course page. All students need to purchase and register through Canvas within the first 2 weeks of classes. If you have any challenges doing this please contact me before a deadline approaches so we can solve the issue. DO NOT access Smartwork5 directly- you must access Smartwork5 through Canvas to complete and submit homework assignments.

A non-programmable, non-graphing scientific calculator will be required for each exam. A \$15 calculator will meet the needs of this course as long as it has standard arithmetic keys as well as 10x, LOG, EXP or ex, LN, and xy functions (i.e. a TI-30XS calculator).

Course Goals

The primary goal of this course is for you to be able to interpret, explain, and predict the physical and chemical properties of substances based on their atomic and molecular structures. We also want you to be able to link your understanding of chemistry with other disciplines and in your life, using what you learn in this course to understand the world around you.

This course focuses on problem solving skills. As you will learn from the first lecture onward you will learn to take information and develop strategies for solving problems in chemistry and approach new situations in chemistry with critical thinking to answer complex questions.

Finally, chemistry is an experimental science. The laboratory should illustrate and reinforce concepts learned in the lecture.

Student Learning Outcomes

Specific learning Outcomes are addressed at the beginning of each chapter and will be discussed throughout each days lectures.

General learning outcomes for this course are:

Demonstrate a knowledge of basic chemical concepts, such as stoichiometry, states of matter, atomic structure, molecular structure and bonding, thermochemistry, equilibria, and kinetics.

Demonstrate strength in quantitative chemical problem solving including mathematical skills.



General Chemistry I, F105X

4 Credits
Spring, 2023

Predict the physical and chemical properties of substances, including reactions, based on their atomic, molecular and electronic structure.

Use the periodic table to explain the electronic and nuclear properties of elements.

Demonstrate competency in basic laboratory skills and the analysis of data.

Demonstrate how chemistry is linked to other scientific disciplines.

Place the development of theories and hypotheses of chemistry in a historical context.

Instructional Methods

Lectures: All lectures will be delivered in person. Attendance to all lectures is highly encouraged and students are responsible for all material covered in class as well as class announcements. This class will use active learning strategies meaning students will interact with one another and complete short in class activities that will be used as participation credit. In person attendance for exams is required.

Textbook: At the beginning of each chapter is a section containing the learning outcomes. Reading the textbook and being aware of the learning objectives will ensure you are staying up to date on the content.

Homework: We will use Smartwork5 administered through Canvas for homework assignments. Homework will become available at the beginning of each chapter and students will have until the following Friday to complete the assignments. Homework problems will allow unlimited attempts, if after a couple tries you cannot solve the problem, come talk to me for assistance. Unless otherwise indicated all homework assignments will be due at 11:59 pm Alaska Time on the due dates listed below. Late homework will be accepted for 3 days following the deadline and will receive a 10% penalty per day. If you find yourself falling behind on homework assignments please schedule a time to meet with me and make a plan to get back on track. Do not wait until the end of the semester to ask for help. Each homework assignment will be 20 points; 10 assignments x 20 points = 200 points total.

Written assignments: Written assignments will be short and link chemistry to the world around you. Assignments will consist of short written summaries of real world chemistry questions. Each assignment will be 12.5 points; 4 assignments x 12.5 points = 50 points.

In class activities: Brief in class activities and small group discussions will reinforce lecture topics. Students will turn in activity sheets or short "minute papers": 2 to 3 sentence summaries of their group discussions. The purpose of these exercises is to allow students space to discuss topics with their peers and participate actively in the course. Points for in class activities will count toward attendance and participation.

Exams: All exams will be administered in class and will consist of multiple choice and short answer problems. Exam questions will come from the textbook, lecture, and homework assignments. The Learning Outcomes at the beginning of each chapter serves as an excellent guide while preparing for exams. Three exams and a cumulative final exam will be given per the course schedule. All students are required to take the final exam to pass the course.

Explanation of Student Effort

Students are expected to spend 2 to 3 hours per credit hour per week outside of class to be successful. You should expect to spend 8 to 12 hours per week outside of class completing assignments, studying, and reading the textbook. This amount of time may vary based on your prior experience studying chemistry. If you find yourself consistently spending more time on this course please meet with me or seek assistance through the Chemistry Learning Center (https://www.uaf.edu/chem/student_resources/clc/).



General Chemistry I, F105X

4 Credits
Spring, 2023

Course Calendar

Week	Dates	Topic/Activities	Due Dates
Week 1	Jan 18 Jan 20	Chapter 1: Matter and Energy Reading: Ch. 1	Register for Smartwork5
Week 2	Jan 23 Jan 25 Jan 27	Chapter 1: Matter and Energy cont. Chapter 2: Atoms, Ions, and Molecules Reading: Ch. 2	Smartwork Chapter 1 HW Due: Friday, Jan 27
Week 3	Jan 30 Feb 1 Feb 3	Chapter 2: Atoms, Ions, and Molecules cont. Chapter 3: Atomic Structure Reading: Ch. 3	Smartwork Chapter 2 HW Due: Friday, Feb 3
Week 4	Feb 6 Feb 8 Feb 10	Chapter 3: Atomic Structure cont. Feb 8: Exam Review Feb 10: Exam I (Chapters 1-3)	Smartwork Chapter 3 HW Due: Wednesday, Feb 8 EXAM I: Friday, Feb 10
Week 5	Feb 13 Feb 15 Feb 17	Chapter 4: Chemical Bonding Reading: Ch. 4	Written HW 1 Due: Friday, Feb 17
Week 6	Feb 20 Feb 22 Feb 24	Chapter 5: Bonding Theories Reading: Ch. 5	Smartwork Chapter 4 HW Due: Friday, Feb 24
Week 7	Feb 27 Mar 1 Mar 3	Chapter 6: Intermolecular Forces Reading: Ch. 6	Smartwork Chapter 5 HW Due: Friday, Mar 3
Week 8	Mar 6 Mar 8 Mar 10	Chapter 6 cont. Mar 8: Exam Review Mar 10: Exam II (Chapters 4-6)	Smartwork Chapter 6 HW Due: Wednesday, Mar 8 EXAM II: Friday, Mar 10
Week 9	Spring Break		
Week 10	Mar 20 Mar 22 Mar 24	Chapter 7: Stoichiometry Reading: Ch. 7	Written HW 2 Due: Friday, Mar 24
Week 11	Mar 27 Mar 29 Mar 31	Chapter 7: Stoichiometry cont. Chapter 8: Reactions in Aqueous Solutions Reading: Ch. 8	Smartwork Chapter 7 HW Due: Friday, Mar 31
Week 12	Apr 3 Apr 5 Apr 7	Chapter 8: Reactions in Aqueous Solutions cont.	Written HW 3 Due: Friday, Apr 7
Week 13	Apr 10 Apr 12	Chapter 9: Properties of Gases	Smartwork Chapter 8 HW Due: Friday, Apr 14



General Chemistry I, F105X

4 Credits
Spring, 2023

	Apr 14		
Week 14	Apr 17 Apr 19 Apr 21	Chapter 9: Properties of Gases cont. Apr 19: Exam Review Apr 21: Exam III	Smartwork Chapter 9 HW Due: Wed, Apr 19 Exam III: Friday, Apr 21
Week 15	Apr 24 Apr 26 Apr 28	Chapter 10: Thermochemistry	Written HW4 Due: Friday, Apr 28
Week 16	May 1	May 1: Final Exam Review	Smartwork Chapter 10 HW Due: Monday, May 1
Final Exam: 10:15 a.m. – 12:15 p.m., Friday, May 5			

Evaluation

Grades will be posted to Canvas, which can be accessed from the UAF homepage. Class grades will only be adjusted in favor of the students. Below is the point assessment for components of this course.

	Points	Grade Range	Letter Grade	Points
Exam I	100	90-100%	A	1000-900
Exam II	100	80-89%	B	800-899
Exam III	100	70-79%	C	700-799
Final Exam	100	60-69%	D	600-699
Smartwork Homework	200	<60%	F	<600
Written Assignments	50			
In class activities and participation	100			
Lab and Groupwork	250			

Course Policies

1.) Expectations On Progress In Coursework

Students are expected to complete Smartwork5 homework in a timely manner and attend class in person during the scheduled times for all exams. Please provide a written excuse via email, preferably before a missed deadline, so appropriate arrangements can be made to make up missed assignments.



General Chemistry I, F105X

4 Credits
Spring, 2023

2.) Attendance, Tardiness, Class Participation, Make-up Exams

Students will get the most out of this class by participating and being actively involved during lectures. Participation will be measured using short in class assignments (< 5 min) where students can share what they have learned, concepts they are struggling with, and any other relevant information. Verbal participation is also encouraged throughout the class. Attending class on time will ensure there are no important announcements missed, if you are late it is your responsibility to make up what you have missed. Make-up exams will only be offered if a legitimate excuse is provided in writing.

3.) Plagiarism & Academic Integrity

Academic dishonesty applies to examinations, assignments, laboratory reports, fieldwork, practicums, creative projects, or other academic activities. Examples include, but are not limited to:

- a) presenting as their own the ideas or works of others without proper citation of sources;
- b) utilizing devices not authorized by the faculty member;
- c) using sources (including but not limited to text, images, computer code, and audio/video files) not authorized by the faculty member;
- d) providing assistance without the faculty member's permission to another student, or receiving assistance not authorized by the faculty member from anyone (with or without their knowledge);
- e) submitting work done for academic credit in previous classes, without the knowledge and advance permission of the current faculty member;
- f) acting as a substitute or utilizing a substitute;
- g) deceiving faculty members or other representatives of the university to affect a grade or to gain admission to a program or course;
- h) fabricating or misrepresenting data;
- i) possessing, buying, selling, obtaining, or using a copy of any material intended to be used as an instrument of assessment in advance of its administration;
- j) altering grade records of their own or another student's work;
- k) offering a monetary payment or other remuneration in exchange for a grade; or
- l) violating the ethical guidelines or professional standards of a given program.

For more, see [Students Rights and Responsibilities](#).

4.) Classroom Etiquette and Student Behavior Guidelines.

Students are expected to attend class and be actively engaged. Occasionally this can lead to interruptions during lectures, however repeated, off topic interruptions are not acceptable. Additionally, students will respect one another by listening and not interrupting while another student is speaking. Phone usage during class should be minimized. If you need to attend to a pressing class or text you will be asked to please step outside.

5.) Extended Absence Policy

Extended absences are defined as missed classes or course work by students beyond what is permissible by the instructor's written course policies. Students may need to miss class and/or course work for a variety of reasons, including, but not limited to:

- bereavement
- personal illness or injury
- serious illness of a friend, family member or loved one
- military obligations
- jury service
- other emergency or obligatory situations

For more information, go to the student handbook or the Center for Students Rights and Responsibilities.



General Chemistry I, F105X

4 Credits
Spring, 2023

6.) UAF Incomplete Grade Policy:

Your instructor follows the University of Alaska Fairbanks Incomplete Grade Policy:

"The letter "I" (Incomplete) is a temporary grade used to indicate that the student has satisfactorily completed (C- or better) the majority of work in a course but for personal reasons beyond the student's control, such as sickness, has not been able to complete the course during the regular semester. Negligence or indifference are not acceptable reasons for an "I" grade."

For more information, see [the UAF regulations regarding grades](#).

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/>

Disabilities Services Statement

I will work with the Office of Disability Services to provide reasonable accommodation to students with disabilities. The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Services (208 Whitaker, 907-474-5655) to provide reasonable accommodation to students with disabilities uaf.edu/disability/

Non-Discrimination 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
1760 Tanana Loop, 355 Duckering Building, Fairbanks, AK 99775
907-474-7300
uaf-deo@alaska.edu

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](#) (math fee paying students only)



General Chemistry I, F105X

4 Credits

Spring, 2023

- uaf-traccloud@alaska.edu
- Chapman Building
- **[Developmental Math Lab](#)**
- CTC, Room 120, 604 Barnette Street
- Gruening 406
- **[The Debbie Moses Learning Center](#)** at CTC
- 907-455-2860
- 604 Barnette St, Room 120
- **[Elmer E. Rasmuson Library](#)** (help with research)
- 907-474-7481 (phone)
- 907-341-4404 (text)
- AskRasmusonLibrary@uaf.libanswers.com
- 1732 Tanana Loop
- **[Rural Student Services](#)**
- uaf-rss@alaska.edu
- [Tutoring Services](#)
- Main floor Brooks Building
- **[Student Support Services](#)**
- (907) 474-6844
- **[eCampus Student Services](#)**
- 907-479-3444
- toll free 1-800-277-8060
- [contact staff directly](#)
- **[Veterans Resources Center](#)**
- 907-474-2475
- Rm 111, Eielson Building.
- **[Academic Advising Resource List](#)**

Other Student Resources:

- **[Disability Services](#)**
- 907-474-5655
- uaf-disability-services@alaska.edu
- Whitaker 208
- **[Student Health & Counseling](#)** [6 free counseling sessions]
- 907-474-7043
- [Appointments](#)
- Whitaker 203
- **[Center for Student Rights and Responsibilities](#)**
- 907-474-7317
- uaf-studentrights@alaska.edu
- Eielson 110
- **[ASUAF Student Government](#)**
- 907-474-7355
- asuaf.office@alaska.edu
- Wood Center 119



General Chemistry I, F105X

4 Credits

Spring, 2023

Title IX

University of Alaska Board of Regents have clearly stated in BOR Policy that discrimination, harassment and violence will not be tolerated on any campus of the University of Alaska. If you believe you are experiencing discrimination or any form of harassment including sexual harassment/misconduct/assault, you are encouraged to report that behavior. If you report to a faculty member or any university employee, they must notify the UAF Title IX Coordinator about the basic facts of the incident.

Your choices for reporting include:

1. You may access confidential counseling by contacting the UAF Health & Counseling Center at 907-474-7043;
2. You may access support and file a Title IX report by contacting the UAF Title IX Coordinator at 907-474-6600;
3. You may file a criminal complaint by contacting the University Police Department at 907-474-7721. For more information please visit the [UAF Department of Equity and Compliance](#) webpage.

Any UAF employee or volunteer who reasonably suspects or observes minor abuse or maltreatment is required to report the incident. Reporting procedures are available on the UAF Protection of Minors. Violation of this policy by employees shall be reported as well.

Emergency Notification Plan

Students will receive emergency notifications via phone or email. Please check your uaonline account to confirm your emergency notification settings. for more information, please refer to the student handbook. In cases where you do not have access to your devices, as your instructor, I will take responsibility to relay any emergency notifications.