General Chemistry II, CHEM F106X

4 Credits

Fall 2021

General Information

Instructor:	Dr. Tom Green	*Office Location:*	Reichardt 174 or Home
Email:	tkgreen@alaska.edu	*Office Hours:*	TBA, by Zoom.
Telephone:	(907) 474-1559 office (907) 452-6370 Home 907-744-2726 Cell	**Course Type:*	Lecture: In-person Laboratory: In Person
***Course Location:*	Reichardt 201 Laboratory – see separate syllabus	*Meeting Time:*	MWF 11:45-12:45

Prerequisites

Placement in WRTG F111X; placement in MATH F151X; CHEM F105 Gen Chem I or equivalent

Co-requisites

Co-requisite: CHEM F106L. Students must be enrolled in both CHEM F105X and CHEM F105L to receive full credit.

Course description

CHEM F105X-F106X, together, constitute the standard one-year engineering and science-major general chemistry course with laboratory. Major subjects include measurements, calculations, atomic and molecular structure, gas laws, stoichiometry, an introduction to organic chemistry, chemical reactions and related energy changes.

In-depth Course description

Chemistry is sometimes called the Central Science. The reason for this is that chemistry extends into many scientific disciplines. In order to be proficient in any science, some basic knowledge of chemistry is required. General Chemistry II continues with a more in-depth discussion of the topics covered in Gen Chem I, CHEM F105, including solutions, thermodynamics, kinetics, electrochemistry, nuclear chemistry, and organic/ biochemistry. My vision is that you will build on what you learn as we move through these topics.

Course Readings/Materials

The following materials are ***required*** for the course and can be purchased in the UAF bookstore or elsewhere:

1. *Chemistry: An Atoms-Focused Approach* , 3rd edition, Gilbert et al.
   Complete Book - ISBN: 978-0-393-67402-6 (Hardcover), 978-0-393-69744-5 (ebook). eBook and Smartwork are $80 for 720 days.

2. Norton Smartwork 5 access for *Chemistry: an atoms-focused approach,* 2nd Ed.

3. Experiments in General Chemistry 106X: A Laboratory Manual (free! Handouts can be printed from Blackboard, updated weekly)

4. Access to Packback. Participation is a requirement for this course, and the Packback Questions platform will be used for online discussion about class topics. Cost is $29.

5. Optional: American Chemical Society (ACS) General Chemistry Study Guide
   Essential Algebra for Chemistry Students 2nd Ed. by Ball

A University of Alaska email address is required for all communication in the class. This also provides access to the Blackboard system for individual scores and grades.

Technology requirements

A University of **Alaska email address** is required for all communication in the class. This also provides access to the Blackboard system for individual scores and grades.

Students must have regular **access to a computer and the Internet to access online materials in Blackboard**. Students will be expected to download course material. Lectures will be recorded and posted on Blackboard.

Smartwork 5 Homework problems will be assigned using questions from the textbook in coordination with the Smartwork 5 program. **All students need to purchase the access code and promptly register through Blackboard. Course ID 488550 . DO NOT REGISTER OUTSIDE OF BLACKBOARD.**

A non-programmable non-graphing **scientific calculator** is required for each exam. A $10 calculator will meet the needs of this course as long as it has standard arithmetic keys as well as 10*x*, LOG, EXP or e*x*, LN and x*y* functions.

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Course Goals

The primary goal 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 understand how chemistry is linked to other disciplines as well as your life. Another goal is to illustrate how chemistry is all around you, in the air you breathe and the food you eat, and how understanding chemistry will help you solve problems in this course and beyond.

The course will also focus on problem-solving. Your goal should be to develop strategies for solving chemical problems. Your approach should be to study and know the facts, and then apply that knowledge to new situations in chemistry.

Another goal is to realize that chemistry is an experimental science. The laboratory should illustrate and reinforce concepts learned in the lecture.

Student Learning Outcomes

Specific Learning Outcomes are defined for each chapter in the textbook. Please refer to the Blackboard course under Course Content for listing of these Learning Outcomes.

General Learning Outcomes for the Course are:

- Demonstrate a knowledge of basic chemical concepts, such as properties of solutions, thermodynamics kinetics, equilibria, electrochemistry, nuclear chemistry, and organic/biochemistry structures.
- Demonstrate strength in quantitative chemical problem solving including mathematical skills.
- 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.
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Instructional Methods

Lectures: All lectures will be delivered in-person. The laboratory component has a separate syllabus but reference to laboratory will be made in lecture.

Homework: We will use the online digital platform called Smartwork 5, which accompanies the textbook. **All students need to purchase the access code and promptly register through Blackboard. Do not** register directly with the publisher, otherwise your grades will not be recorded into Blackboard. Smartwork will

typically consist of approximately 15-20 questions, and will be ~18 pts each x 11 HW for a total 200 pts. Smartwork will be due typically Friday, 11:59 pm AST.

Exams. All exams will be delivered in class and will consist of multiple choice and short answer problems. The student is responsible for all information from the assigned text, lecture, and homework. Any of these sources will be used to construct exam questions. Three exams and a cumulative final exam will be given as per the course schedule. **All students are required to take the Final Exam in order to pass the course.** Practice exams will be made available by Blackboard.

Packback Requirements. Your participation on Packback will count toward 10% of your overall course grade. There will be a Weekly Saturday at 11:59PM deadline for submissions. To receive full credit, you should submit the following per each deadline period.

1. Open-ended Question every week with a minimum Curiosity Score of 50, worth 33.33% of each assignment grade.
2. Responses every week with a minimum Curiosity Score of 50, worth 66.67% of each assignment grade.

Half credit will be provided for questions and responses that do not meet the minimum curiosity score.

Explanation of Student Effort

Students are expected to spend 2-3 hours per credit hour outside of class to be successful. Thus, you should expect to spend 8-12 hours outside of class on study for this class. Although this is typical, you may spend more or less than this, depending on your previous experience studying chemistry.

Course Calendar

This is a tentative schedule. Assignments and dates are subject to change.
Smartwork are always due on Friday, 11:59 pm AST. Packpack responses/questions are due on Saturday, 11:59 pm.

Date	Chapter	Topic	Due Dates
Aug 23 Aug 25 Aug 27	Review 11 11	Solutions	Register Smartwork on Blackboard!!!!
Aug 30 Sep 1 Sep 3	11 12 12	Thermodynamics	 Smartwork 11
Sep 6 Sep 8 Sep 10	Labor Day 12 13	 *Kinetics*	 Smartwork 12

Sep 13 Sep 15 Sep 17	13 13 Problems/Review		Smartwork 13
Sep 20 Sep 22 Sep 24	Exam 1 Ch 11-13 14 14	*Chemical Equil*	
Sep 27 Sep 29 Oct 1	14 15 15	*Acid-Base Equil*	Smartwork 14
Oct 4 Oct 6 Oct 8	15 16 16	Aq. Equilibria	Smartwork 15
Oct 11 Oct 13 Oct 15	16 Problems/Review Problems/Review		Smartwork 16
Oct 18 Oct 20 Oct 22	Exam 2 Ch 14-16 17 17	*Electrochemistry*	
Oct 25 Oct 27 Oct 29	17 18 18	*Solid State*	Smartwork 17
Nov 1 Nov 3 Nov 5	18 21 21	Nuclear Chem	Smartwork 18
Nov 8 Nov 10 Nov 12	21 Problems/Review Problems/Review		Smartwork 21
Nov 15 Nov 18 Nov 20	Exam 3 Ch 17,18, 21 19 19	Organic Chem	
Nov 22 Nov 24 Nov 26	19 Thanksgiving Thanksgiving		Smartwork 19
Nov 29 Dec 1 Dec 3	20 20 Review	Biochemistry	Smartwork 20
Dec 10 10:15	ACS Final	*FINAL EXAM*	

Evaluation

Grades will be posted to blackboard, which can be accessed from the UAF homepage. Class grades may be adjusted (curved) from the following schedule only in the students' favor.

	Points
Examination 1	100
Examination 2	100
Examination 3	100
Final Examination	150
Lab and Groupwork	250
Packback Discusssion	100
Smartwork	200
Total	1000

Grade Range	Letter Grade	Points
100 - 90%	A	1000-900
89 - 80%	B	899-800
79 - 70%	C	799-700
69 - 60%	D	699-600
59% or less	F	< 600

Course Policies

Expectations on Progress In Coursework.

Students are expected to complete all online homework in a timely manner. Students are expected to take all exams during the scheduled times. If these are not completed on time, the students is expected to provide a *legitimate excuse or explanation to the Professor in writing*, preferably prior the anticipated missed deadline, so that appropriate rearrangements can be made to make up the missed assignment.

Plagiarism and Academic Integrity

Academic dishonesty applies to examinations, assignments, and laboratory reports. Examples include, but are not limited to:

- Presenting as their own the ideas or works of others without proper citation of sources;
- Utilizing devices not authorized by the faculty member;
- Using sources (including but not limited to text, images, computer code, and audio/video files) not authorized by the faculty member;
- 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);
- Submitting work done for academic credit in previous classes, without the knowledge and advance permission of the current faculty member;
- Acting as a substitute or utilizing a substitute;

- Deceiving faculty members or other representatives of the university to affect a grade or to gain admission to a program or course;
- Fabricating or misrepresenting data;
- 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;
- Altering grade records of their own or another student's work;
- Offering a monetary payment or other remuneration in exchange for a grade; or
- Violating the ethical guidelines or professional standards of a given program.
  For more, see Students Rights and Responsibilities.

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:

- Official UAF activities such participation in athletic events, conferences, etc.
- 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.

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

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/

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://www.uaf.edu/handbook/

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. https://uaf.edu/oeo/civil-rights/aa-eo/

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.

Equal Opportunity Employer

UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual: alaska.edu/nondiscrimination.

Library

Contact the Elmer E. Rasmuson Library at UAF reference desk for help with research. library.uaf.edu or 907-474-7481

Student Support Services

The Student Support Services (SSS) program, located in 514 Gruening Building, provides opportunities for academic development, assists students with college requirements, and serves to motivate students towards successful completion of their degree program.

Students have access to services if they meet any of the three eligibility requirements: a) limited income, b) documented disability, or c) first generation college student. Students receive intensive advising, one-one-one tutoring, technology check-outs, free printing and copying, computer lab space, and many other services. Additional information is at https://www.uaf.edu/sss, or contact them directly at (907) 474-6844.

Rural Student Services

Responding to student needs by providing quality services to Native and rural students who expend positive effort in the pursuit of higher education and its opportunities. Please see: https://uaf.edu/ruralss/. Additional student support services can be found here: https://www.uaf.edu/ruralss/tutoring-services/.

UAF Help Desk

Go to https://alaska.edu/oit/ to see about current network outages and news. Reach the Help Desk at: helpdesk@alaska.edu or 907-450-8300 (in the Fairbanks area) or 1-800-478-8226 (outside of Fairbanks).

eCampus Student Services

UAF eCampus Student Services helps online students with registration and course schedules, provides information about lessons and student records, assists with the examination process, and answers general questions. Their Academic Advisor can help students communicate with instructors, locate helpful resources, and maximize their learning experience. Contact the UAF eCampus Student Services staff at 907-479-3444 (toll free 1-800-277-8060) or contact staff directly – for directory listing see: https://ecampus.uaf.edu/contact

Effective Communication Resources

- UAF Speaking Center (907-474-5470, speak@uaf.edu, Gruening 507)
- Writing Center (907-474-5314, uaf-writingcenter@alaska.edu, Gruening 8th floor)
- UAF Math Services, uafmathstatlab@gmail.com, Chapman 305 (for math fee paying students only)
- Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120).
- Developmental Math Lab, Gruening Building, Rm 406

For more information and resources, please see the academic advising resource list:
https://www.uaf.edu/advising/lr/SKM_364e19011717281.pdf

Veteran and Military Support Services

UAF is committed to all veterans and military students—active duty, reserve, guard, separated and retired—as well as their dependents who are exploring UAF's academic opportunities. Staff members in Financial Aid, Admissions, Career Services, Veterans' Services and the Veterans' Resource Center are here to help you with any challenges you encounter while working while in or transitioning from a military to an academic environment. Please contact the Veterans Resources Center, 907-474-2475, https://uaf.edu/veterans/ in room 111 in the Eielson Building.

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.

Amending this Syllabus

Amendments and changes to the syllabus, including evaluation and grading mechanisms, are possible. The instructor must initiate any changes. Changes to the grading and evaluation scheme can be made before the add/drop date without a vote, but after that date must be voted on by the entire class and approved only with unanimous vote of all students present in class on the day the issue is decided. The lecture schedule and reading assignments (Daily Schedule) will not require a vote and may be altered at the instructor's discretion. This Daily Schedule can be found on Blackboard. Grading changes that unilaterally and equitably improve all students' grades will not require a vote. Once approved, amendments will be distributed in writing to all students via Blackboard.

COVID-19

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/uaf-students?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.