# General Chemistry II, CHEM F106X

*4 Credits, CRN 36077*

Spring 2022

## General Information

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|---|---|---|---|
| *Instructor:* | Dr. Tom Green | *Office Location:* | Reichardt 174 or Home |
| *Email:* | tkgreen@alaska.edu | *Office Hours:* | TBA, by Zoom. |
| *Telephone:* | (907) 474-1559 office<br>(907) 452-6370 Home<br>907-744-2726 Cell | **Course Type:* | Lecture: In-person<br>Laboratory: In Person |
| ***Course Location:* | Reichardt 201<br>Laboratory – see separate syllabus | *Meeting Time:* | MWF 1:00-2:00 |

## 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 F106X and CHEM F106L 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. American Chemical Society (ACS) General Chemistry Study Guide

## 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. Please use your UA email in correspondence with the instructor.

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. **The Course ID is 572378**. **All students need to purchase the access code and promptly register through Blackboard. 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 *ex*, LN and *xy* functions.

## 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.

## 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 ~32 pts each x 8 HW for a total 250 pts. Smartwork will be due typically Sunday, 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. Four exams and a cumulative Standardized Final

(American Chemical Society) will be given as per the course schedule. **All students are required to take the Final Exam in order to pass the course.** Practice exam problems will be made available by Blackboard.

## 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 Sunday nights, 11:59 pm AST.

| Date | Chapter | Topic | Due Dates |
|---|---|---|---|
| Jan 10<br>Jan 12<br>Jan 14 | 11<br>11<br>11 | Solutions | Register Smartwork (SW) |
| Jan 17<br>Jan 19<br>Jan 21 | No Class<br>12<br>12 | Alaska Civil Rights<br>Thermodynamics | <br><br>SW 11 Jan 23 |
| Jan 24<br>Jan 26<br>Jan 28 | 12<br>Review/Problems<br>Review/Problems | | <br><br>SW 12 Jan 30 |
| Jan 31<br>Feb 2<br>Feb 4 | Exam 1 Ch 11,12<br>13<br>13 | Kinetics | |
| Feb 7<br>Feb 9<br>Feb 11 | 13<br>14<br>14 | Equilibria | <br><br>SW 13 Feb 13 |
| Feb 14<br>Feb 16<br>Feb 18 | 14<br>Review/Problems<br>Review/Problems | | <br><br>SW 14 Feb 20 |
| Feb 21<br>Feb 23<br>Feb 25 | Exam 2 Ch 13,14<br>15<br>15 | Acid and Bases | |
| Feb 28<br>Mar 2<br>Mar 4 | 15<br>16<br>16 | More Equilibria | |

| | | | |
|---|---|---|---|
| Mar 7<br>Mar 9<br>Mar 11 | No Class<br>No Class<br>No Class | Spring Break!!! | <br><br>SW 15 Mar 13 |
| Mar 14<br>Mar 16<br>Mar 18 | 16<br>Review/Problems<br>Review/Problems | | <br><br>SW 16 Mar 20 |
| Mar 21<br>Mar 23<br>Mar 25 | Exam 3 Ch 15,16<br>17<br>17 | Electrochemistry | |
| Mar 28<br>Mar 30<br>Apr 1 | 17<br>21<br>21 | Nuclear Chem | <br><br>SW 17 Apr 3 |
| Apr 4<br>Apr 6<br>Apr 8 | 21<br>Review/Problems<br>Review/Problems | | <br><br>SW 21 Apr 10 |
| Apr 11<br>Apr 13<br>Apr 15 | Exam 4, Ch 17,21<br>Special Topics<br>Special Topics | | |
| Apr 18<br>Apr 20<br>Apr 22 | Review ACS Guide<br>Review ACS Guide<br>Review ACS Guide | | |
| Apr 25<br>Apr 27 | Review ACS Guide<br>ACS Final 1-3 pm. | 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 |
|---|---|
| Exam 1 | 100 |
| Exam 2 | 100 |
| Exam 3 | 100 |
| Exam 4 | 100 |
| Final Examination | 100 |
| Lab and Groupwork | 250 |
| Smartwork | 250 |
| 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.