

CHEM 132 SCON: General Chemistry II with Lab with Sustainability Connections

**Professor Kathryn Barker
Spring 2023 Syllabus**

Lecture:

Tuesdays and Thursdays from 9:00 – 10:15 a.m. in Stuart 1104 (Stafford Auditorium in the Rector Science Complex)

Laboratory:

See this separate Lab Moodle Site for information about all lab sections: [COMB: SP23-CHEM-132-All Labs](#)

Office Hours:

Office hours are when students can find me in my office without needing an appointment. My office hours this semester will be **Tuesdays, Wednesdays, and Thursdays from 10:30 a.m. to noon, and by appointment**. My office is **James 2223** on the second floor of the James wing of the Rector Science Complex. I'm always happy to meet with students. If you would like to meet at another time, please email me for an appointment. Zoom meetings are also available on request. Zoom link for student meetings: <https://zoom.us/j/93950278756>.

Prof. Barker's Email: barkerk@dickinson.edu

Required Textbook:

Good news: your textbook for this class is available for free online! Find [Chemistry 2e](https://openstax.org/details/books/chemistry-2e) at <https://openstax.org/details/books/chemistry-2e>. The text is available in various formats under "Get the Book" on that page. View the web version online for the greatest functionality on any device. A physical copy of the textbook is not needed but is available for those who prefer it. We will cover chapters 12 through 17 and chapter 19.

Required Electronic Resource: *Aktiv Chemistry Learning Platform*

Use the link on our Moodle site to purchase access to **Aktiv Chemistry**, a learning platform with dynamic problems designed to help students learn and visualize abstract concepts in chemistry. We will use it for the required homework. There is a 14-day grace period before payment is due. For questions or tech support for **Aktiv Chemistry**, email support@aktiv.com.

Calculator:

A basic scientific calculator is required for every class and lab session. It should have buttons for logs and scientific notation. A graphing feature is not needed. The TI-30Xa is a good choice and is available at the bookstore and elsewhere. Bring the calculator to every class and lab session.

Laboratory Materials:

You will need UVEX Stealth Anti-Fog Safety Google or Odyssey II Anti-Fog Chemical Splash Goggle, a Bulwark flame-resistant laboratory coat and the required lab notebook, all available at the College Store. You can use your notebook from CHEM 131 if there is room.

About the Course:

This course, along with CHEM 131, is intended to provide a solid grounding in the fundamental concepts of chemistry and preparation for more advanced courses in the sciences. It will also illustrate the many ways that chemistry impacts your life, regardless of your intended major. To do well, you need to be actively engaged in learning. You are expected to attend every class and laboratory session, ask questions, and do the reading and homework sets. To succeed, you will need to spend 2-3 hours or more outside of class studying for every hour in the classroom.

This section of CHEM 132 is designated SCON (sustainability connections) because it satisfies Dickinson College's sustainability graduation requirement. A working definition of sustainability adopted at Dickinson is "the ability to improve human well-being equitably in this generation while protecting the environment and creating the conditions necessary for future generations to sustain a world that is environmentally healthy, socially just and economically robust." In this course, we will incorporate Sustainability Learning with an emphasis on **historic iron production in Central Pennsylvania**, including its environmental, social and economic effects. Examples and demonstrations of relevant iron and charcoal chemistry will be used to illustrate many of the concepts covered this semester. A required place-based learning trip to Pine Grove Furnace State Park is planned for Saturday, April 29th.

Exams will run for 50 minutes; quizzes for about 10 minutes. Requests for make-up exams must be approved and made in advance. In lieu of make-up quizzes, the lowest quiz score for each student will be dropped.

Electronic polling with Plicker cards will be used to enhance student engagement in the learning process and allow real-time feedback on comprehension for both students and the instructor. Students who answer at least one poll question will receive a participation point for that day. If you attend but do not bring or use your card, you will not receive a point for that day. Students may miss three days without penalty to account for misplaced cards and equipment problems. There is also no penalty for absences due to illness if you have communicated with me in advance. Up to 6 additional points may be awarded for additional assignments and activities.

Learning Objectives:

- Be able to identify and solve chemical problems (including organizing a math problem).
- Become skilled in problem solving, critical thinking, and data collection.
- Be able to understand how to present data in graphic form.
- Be able to identify trends in data.
- Be able to understand how to apply concepts and integrate how they relate to each other.
- Be able to communicate results.
- Be able to design, carry out, record and analyze the results of a scientific experiment.
- Consider the sustainability of historic iron production in Central Pennsylvania while studying the relevant chemistry and metallurgy.
- Develop a sense of place by exploring a local iron and charcoal production site.
- Think and write critically about the effects of historic iron production on the environment and the human condition in past, present, and future generations.

Grading:

- Three exams 30% (10% each)
- Quizzes 14% (lowest score dropped)
- Final Exam 15%
- Participation/Attendance via Plickers 4%
- Homework Sets 7% (lowest score dropped)
- Sustainability field trip and writing assignment 5%
- Laboratory Component 25% (see lab Moodle site)

Final grades in this course will not be curved. However, the class average for each exam will be scaled so that it does not fall below 75%. If the class mean is *above* 75%, no scaling factor will be used. Details can be found in *J. Chem. Educ.* **1990**, *67*, 414. Chemistry department policy requires your scaled exam average (3 exams and the final) to be $\geq 60\%$ to receive a passing grade in the course.

Grade Scale:

Numerical average	Letter grade	Numerical average	Letter grade
93-100%	A	73-76%	C
90-92%	A-	70-72%	C-
87-89%	B+	67-69%	D+
83-86%	B	63-66%	D
80-82%	B-	60-62%	D-
77-79%	C+	<60%	F

Attendance:

For minor illnesses, please contact me if you will be unable to attend class. Remember you are responsible for completing course work on time. Whenever possible, work ahead. If you are unable to attend class due to a longer duration illness or extenuating circumstances, please contact me so we can create a plan. I will alert the CARE team and your advisor of multiple or extended absences at my discretion.

Class Recordings:

Classes may be recorded by the instructor or by those students who have an accommodation to do so, as granted by Access and Disability Services. In order that we may speak freely during class, students may not share, send, post, publish, make public, or duplicate any recordings without the written authorization of those recorded. Failure to abide by these rules is a breach of privacy and a violation of copyright laws. It is furthermore considered a serious violation of the Dickinson College [Community Standards](#) and subject to disciplinary action. Unless informed otherwise, students are to destroy any class recordings at the end of the semester.

Accommodating Students with Disabilities:

Dickinson values diverse types of learners and is committed to ensuring that each student is afforded equitable access to participate in all learning experiences. If you have (or think you may have) a learning difference or a disability – including a mental health, medical, or physical condition– that would hinder your access to learning or demonstrating knowledge in this class, please contact Access and Disability Services (ADS). They will confidentially explain the accommodation request process and the type of documentation

that Dean and Director Marni Jones will need to determine your eligibility for reasonable accommodations. To learn more about available supports, go to www.dickinson.edu/ADS, email access@dickinson.edu, call (717)245-1734, or go to the ADS office in Room 005 of Old West, Lower Level (aka "the OWLL"). If you've already been granted accommodations at Dickinson, please follow the guidance at www.dickinson.edu/AccessPlan for disclosing the accommodations for which you are eligible and scheduling a meeting with me as soon as possible so that we can discuss your accommodations and finalize your Access Plan. If you will be using any test-taking accommodations in this class, be sure to enter all test dates into your Access Plan in advance of our meeting.

Academic Honesty:

For our purposes, the definitions of cheating and plagiarism are those found in the most recent *Dickinson College Community Standards* (http://www.dickinson.edu/info/20273/dean_of_students/867/community_standards).

Quizzes and exams must be completed individually and without access to the internet or to any person or other resource not specifically allowed. Homework may be completed using the course materials. The concepts and general strategies for solving homework problems may be discussed with other students, but the answers and work may not be shared with or copied from another person or any online or written source. The work must be your own, and you must perform all calculations yourself. Use of ChatGPT and other AI-generated content is prohibited in this class at this time. Unless specifically allowed by the lab instructor, written lab work and calculations must be completed individually, even if this work is based on data collected with other students.

Learning Support:

- **Faculty office hours** – See above or on Moodle or on the Lab Moodle for times and locations. Meetings with faculty are also available by appointment.
- **SOAR: Academic Success Support and More.** Students can find a wealth of strategic guidance by going to www.dickinson.edu/SOAR. This website for SOAR: Strategies, Organization, and Achievement Resources, includes apps, tips, and other resources related to time management, study skills, memory strategies, note-taking, test-taking, and more. You'll also find guidance aimed to help students "SOAR Through Remote Learning," as well as a schedule of academic success workshops offered through Academic Advising. If you'd like to request one-on-one assistance with developing a strategy for a manageable and academically successful semester, email SOAR@dickinson.edu.
- **The Quantitative Reasoning (QR) Center** offers General Chemistry tutoring and general quantitative support. [Click here](#) to make an appointment on WCONLINE. Then, access the drop-down menu under "limit to" at the top of the scheduler and **select CHEM 132**. This will restrict the tutor list and schedule to only those tutors approved for this course. Students can schedule to meet with these tutors one-on-one for 30 minutes at a time. When you make your appointment, you can paste or upload your assignment with any work that you have done and indicate if this will be an in-person or online appointment. The QR Center also provides in-person, drop-in tutoring, but students should check the weekly schedule and list of tutors to ensure a tutor can help with their course.

- **Peer tutors** are available through the Office of Academic Advising for students who are having the most difficulty. Requests for individual student tutors can be considered for students with low quiz or exam scores who present evidence of using faculty office hours and any group study sessions. Find more about peer tutoring here:
http://www.dickinson.edu/info/20190/academic_advising/1772/peer_tutoring_program
- **Optional helpful book** – Calculations in Chemistry, 1st or 2nd Edition by D.J. Dahm: <https://wnorton.com/books/9780393614367>, available both as an eBook and hard copy. Also available from Amazon.

See also the Course Calendar for important due dates.

Syllabus and schedule are subject to change.