



## Course Information

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|------------------------------------|--------------------------------------|
| <b>Semester &amp; Year:</b>        | Spring 2024                          |
| <b>Course Title:</b>               | Fundamental Chemistry with Lab       |
| <b>Course Prefix &amp; Number:</b> | CHM130AA                             |
| <b>Section Number:</b>             | 16057 with Lab Section 16058         |
| <b>Credit Hours:</b>               | 4                                    |
| <b>Start Date:</b>                 | 1/16/2024                            |
| <b>End Date:</b>                   | 5/10/2024                            |
| <b>Room Number:</b>                | NS-314                               |
| <b>Meeting Days and Times:</b>     |                                      |
|                                    | meets Tuesdays from 12:00 - 2:40 pm  |
|                                    | meets Thursdays from 12:00 - 2:40 pm |

## Course Format

The course format for this course is In Person

*\*Note:* In the case of instructor illness and in-person courses cannot be held, the class may utilize a Live-Online format, utilizing Zoom to meet at the same scheduled days and times as necessitated.

## Instructor Information

|                         |  |
|-------------------------|--|
| <b>Instructor:</b>      | Mitchell Sweet, BS Chemistry, MS Wood and Fiber Science                              |
| <b>Email:</b>           | <a href="mailto:mitchell.sweet@scottsdalecc.edu">mitchell.sweet@scottsdalecc.edu</a> |
| <b>Phone:</b>           | 480-423-6372   |
| <b>Text:</b>            | 602-529-6765   |
| <b>Office Location:</b> | NS-127   |

Office Hours: I am available for individual Academic Support in person (NS-127). Any changes or updates will be posted weekly via a Canvas announcement.

**Mondays: 3:00 - 4:00 pm**

**Tuesdays: 9:30 - 11:30 am**

**Thursdays: 9:30 - 11:30 am**

**Fridays: by appointment**

*\*I may be available at other times during the week by appointment! Message me to check availability.*

## Course Description

A survey of the fundamentals of general chemistry. Emphasis on essential concepts and problem-solving techniques. Basic principles of measurement, chemical bonding, structure and reactions, nomenclature, and the chemistry of acids and bases. Preparation for students taking more advanced courses in chemistry. Designed to meet the needs of students in such diverse areas as agriculture, nursing, home economics, physical education, and water technology.

## Prerequisites

A grade of C or better in [(CHM100, or MAT090, or MAT091, or MAT092, or higher level mathematics course, or satisfactory math placement) and (RDG100, or RDG100LL, or higher, or eligibility for CRE101 as indicated by appropriate reading placement)], or permission of the Instructor, or Department or Division Chair.

## Course Competencies

1. Define chemistry and describe its main branches.
2. Describe the relationships between matter and energy.
3. Distinguish between physical and chemical properties and changes.
4. Interpret symbols and formulas in terms of numbers and kinds of atoms.
5. Describe the physical states of matter with the aid of the Kinetic Molecular theory.
6. Classify matter as elements, compounds, or mixtures.
7. Describe the properties of metallic and non-metallic elements.
8. Use the Unit-Factor Method in solving chemistry-related problems.
9. Name and write formulas for simple inorganic compounds.
10. Describe the relationship between the outer electronic structure of atoms and their chemical properties.
11. Use the Periodic Table to estimate the properties of elements and compounds.

12. Characterize the fundamental particles comprising the atom with respect to charge and mass.
13. State the number of protons, electrons, and neutrons in any given isotope, neutral or charged.
14. Use the Periodic Table in predicting the number of electrons, formula for a compound, and metallic or nonmetallic characteristics.
15. Draw a Lewis structure (electron dot) for a given ion or compound.
16. State the type of intermolecular force that exists for a given substance.
17. Describe the properties of ionic and covalent compounds.
18. Describe the shape and polarity of simple molecules.
19. Complete and balance simple chemical equations.
20. Solve elementary stoichiometry problems.
21. Classify a reaction as endothermic or exothermic.
22. List the factors affecting the rate of a reaction.
23. Describe the chemical and physical properties of water.
24. Describe the properties of solutions.
25. Identify substances as electrolytes or nonelectrolytes.
26. Classify substances as acids, bases, or salts.
27. Explain the behavior of buffer systems.
28. Define the pH scale of measuring the relative acidity of solutions.
29. Define and identify redox reaction as exemplified by single replacement and combustion reactions.
30. Identify and evaluate chemical hazards and hazard warning signs (such as the 4-bar Hazardous Material Information System, the 4-diamond National Fire Protection Association System, and Material Safety Data Sheets).
31. Record observations accurately, using appropriate chemical terminology.
32. Prepare written reports, present data in a logical format, analyze data, and report conclusions.
33. Use scientific measuring devices to obtain chemical data and report these measurements with the proper number of digits.
34. Apply principles, concepts, and procedures of chemistry to lab experiments.
35. Use the scientific method in interpreting chemical data to arrive at rational conclusions.
36. Use lab equipment properly and safely to perform a variety of chemical procedures and techniques.
37. Cite the location and operation of common laboratory safety equipment.

## Program Level Competencies

By the end of the course, you will increase your ability to:

- Distinguish between processes of change at a particle level

- ❑ Develop and use models that closely represent actual physical situations.
- ❑ Use fundamental physical laws and principles to solve problems encountered in academic and non-academic environments.
- ❑ Apply qualitative and quantitative problem-solving techniques in terms of logic, efficiency, and effectiveness.

Note: specific Learning Objectives will be provided during each Unit to help you achieve these outcomes.

## Texts and Course Materials

1. RECOMMENDED COURSE TEXTBOOK: “*Chemistry: Atoms First*” 2nd edition by Openstax. This is an Open Educational Resource (OER) textbook available **at no cost** at this link: [Chemistry: Atoms First 2e - OpenStax](#)  
  
Please see the “Our Course Textbook - Openstax Chemistry: Atoms First 2e” page in Canvas for more information on textbooks and to view or download our textbook.
2. TWO COMPOSITION BOOKS: You will need two bound composition books for this class. (you can usually find these for a dollar or two)
  - a. One for note-taking during class or lab
  - b. A second for keeping a Reflection Journal outside of class.

\*For more info on keeping a scientific lab notebook, see: <https://bit.ly/2C8HEGa>

3. THREE RING BINDER: Class Activities and Lab Investigations will be provided for you. The binder will help you keep and organize these and other materials for the course. If you like to work electronically, I also suggest keeping files & folders in an organized Google Drive (using your school-provided MEID account with Google access included).
4. SCIENTIFIC CALCULATOR: A scientific calculator is one that allows you to enter and display numbers in scientific notation. If you need to purchase one, you can find a good one for less than \$15. Graphing calculators are also permitted during class. Ask me for advice if you need it.
5. GOGGLES: We will provide you with protective eyewear for use during the class. At the end of the class, you will return the eyewear in undamaged condition. If you fail to return the eyewear or the eyewear is excessively scratched or damaged from mishandling, you will be charged a \$7.00 replacement fee.

*\*SCC is not responsible for damaged clothing or jewelry.*

6. CANVAS: We will use the Canvas Learning Management System (LMS) for a variety of purposes. Please familiarize yourself with the site and our Course in Canvas. Log in at: <https://learn.maricopa.edu/login>

## Course Technologies

View the [Accessibility Statements & Privacy Policies](#) of technologies used in this course.

### Maricopa Systems

This course uses key Maricopa systems for course management and communication.

- Canvas Learning Management System
- Student Maricopa Gmail Account
- Maricopa Open Educational Resource Learning System (MOER)

### Synchronous Communication Tools

This course may implement the use of web conferencing and/or other synchronous course tools.

- Zoom

### Streaming Media/Audio/Video Tools

This course uses webcasting, lecture capture systems, YouTube, and/or other streaming media services.

- YouTube

### Student Assignment Tools

This course may require students to participate in or submit assignments using desktop or cloud-based applications.

- Google Products
- [Logger Pro](#)

## Course Policies

The following are policies specific to this course. Students are also responsible for the college policies included on the [Student Regulations](#) page of the Maricopa Community College District website.

### Participation & Group Work Expectations:

Participation is a requirement! Students are expected to come to class prepared. If one group member comes unprepared, then the entire group will be impacted. Students are

expected to work together, assist and teach each other, and present to the class. Students should not expect a lecture style of instruction from the instructor. For more information, please consult the research article, "[Large-scale comparison of science teaching methods sends clear message.](#)"

**Cell Phone Policy:** There will be times that you will use your cell phone to research a topic in class or lab or to communicate with each other during live online group discussions. Appropriate use is understood and acceptable. However, personal or social use of cell phones in lectures is a distraction and, in the lab, is a danger. I will ask you to leave the lab or lecture hall for the personal use of cell phones, both texting and talking.

## Generative Artificial Intelligence (AI) Policy

### Opening Statement Regarding Generative Artificial Intelligence (AI)

The World Economic Forum defines generative AI as “a category of artificial intelligence (AI) algorithms that generate new outputs based on the data they have been trained on. Unlike traditional AI systems that are designed to recognize patterns and make predictions, generative AI creates new content in the form of images, text, audio, and more.”

Some examples of generative AI tools include but are not limited to: ChatGPT, Google Bard, Microsoft Copilot, Stable Diffusion, GrammarlyGo, and Adobe Firefly.

### Some Generative Artificial Intelligence (AI) Allowed in Specific Circumstances

There are situations and contexts within this course where you may be permitted to use generative AI tools. In these cases, specific guidelines will be provided in the assignment details. If you are unsure if the tool or website you are using is a generative AI tool or if it is permitted on a specific assignment, please contact the instructor for further clarification before submitting your work.

## Grading Standards & Practices

### Grading Scale\*:

| Letter Grade | Range        |
|--------------|--------------|
| A            | 89.0 – 100%  |
| B            | 78.0 – 88.9% |
| C            | 67.0 – 77.9% |
| D            | 50.0 – 66.9% |
| F            | <50.0%       |

### Assignment Categories (weighted):

| Category     | Weight      |
|--------------|-------------|
| Lab Work     | 15%         |
| Daily Work   | 25%         |
| Exams        | 60%         |
|              |             |
| <b>Total</b> | <b>100%</b> |

**\*Note:** The grading scale is not the typical “10-point scale,” so you don’t have to ask for your grade to be rounded up. For example, if you want to earn an A, shoot for an

overall 90%, that way, if you end up at 89.4, your grade is still above 89 and is an A. Anything below 89, however, will not be rounded up.

## **Explanation of Assessment Categories:**

### **Lab Work (15%):**

One of the skills for success in this course (and life) is to reflect meaningfully on your learning. To help you develop this skill, you will keep a professional lab notebook that will be typically checked at the end of each lab period. More information is provided in the Lab Packet handout you will receive.

During each lab meeting, you will be expected to engage with the investigation and actively participate with your group. Your participation in the lab, your lab notebook, and/or asynchronous work after the lab meeting may be assessed each week.

After the lab investigation, you will present your findings by completing a lab report or report form. Lab report work is completed *individually* and must be submitted electronically in Canvas by the posted due date, regardless of absences.

### **Daily Work:**

**Reflection Journal (10%):** One of the most effective ways to learn is to spend time reflecting on the subjects you have been studying. You will be writing a reflection (given specific guidance) on the topics we have been discussing each week that will go in your reflection journal, which is a separate notebook from your class notebook. You will submit the assignment by taking a picture of your reflection and submitting it in Canvas. You are allowed to use your reflection journal while you are taking each of the midterm exams.

**Worksheets / Homework (5%):** Worksheets containing conceptual questions and practice problems are assigned to help you develop and use the major concepts & models we are developing. These are 'safe' ways to learn, fail, and grow. Worksheets must be submitted electronically in Canvas by the posted due date, regardless of absences.

**Canvas Quizzes (10%):** Quizzes over each activity's material are provided in Canvas. You should complete them as promptly as possible to check your understanding. You may retake each quiz once before the deadline to improve your learning and your score.

### **Exams (60%):**

**Midterm Exams:** Three times during the semester, we will complete midterm exams. Midterm exams are cumulative. These may include multiple-choice questions, short answer, and/or free-response questions. You will be provided with a periodic table and reference sheet for each exam.

#### **Final Exam:**

During Final Exam Week, students will take the American Chemical Society (ACS) second semester General Chemistry exam. This is a 40-question multiple choice exam that is nationally normed and assesses all material from the course. The final is not an optional exam.

#### **Additional Exam information:**

- All exams must be taken to avoid being withdrawn from the course.

- If you are going to miss an exam due to an excused absence, please inform the instructor at least 2 weeks prior and include documentation.
- If you miss an exam for an unexpected reason, you must contact the instructor within 24 hours of the exam.
- \*Note: if health protocols dictate any exams must be given online, Exams may be completed during Zoom meetings and administered through Canvas. **Any navigating away from the Canvas quiz Exam to a different browser window, to your computer desktop, or to your phone (as noted by Canvas or Respondus) will result in a “0” for individual questions and/or the entire exam.**

### Late Work Policy:

- Due dates are posted in Canvas. Email the instructor immediately if you notice any issues/mistakes with a due date, as instructors are human and also make mistakes.
- Late Work Policy: You are encouraged to still complete assignments late for feedback and learning. Credit can be earned for late assignments IF you contact your instructor to discuss the issue.
- Any late work must be completed by the end of each unit.

## Response Time

I prefer that you contact me via the Canvas Conversations (Inbox Messaging) feature within Canvas whenever possible. The second choice of communication is via direct email. For Canvas Inbox and emails, you can expect a response within 24-48 hours (often faster) during work days (M-F). While I will not guarantee that I will respond to inbox messages or emails during the weekend, it is likely that I will, so please do not wait if you have a question!

In regard to grading, students can expect assignments to be graded within one week of the assignment's submission.

## Attendance Policy

Attendance is required for this course! Attendance will be recorded for all class and lab sessions. To be considered in attendance:

- Engage in breakout sessions/group work: You will often work together in breakout session groups, allowing you to converse with your group and, at times, your instructor. Converse with your group and actively use whiteboards and any other idea-sharing technology!
- Engage in whole-class discussions: Participate and share ideas, questions, and concerns with the instructor and/or the class.

Failure to follow these guidelines would result in an absence, even if you attended class.

If you physically miss any class, it is **your** responsibility to contact the instructor and make up the work. I am not inclined to give make-ups on quizzes or exams unless you have a valid excuse with written documentation and you have spoken with me beforehand.



- If you show up late to the lab, you will miss key procedural and safety information and will not be permitted to participate in that day's lab.
- If you have 3 absences in a semester that are not "official absences," I have the option to withdraw you (with a grade of W or Y, depending).
- If you miss an exam and I don't hear from you by e-mail (or phone if you can verify email is not possible) with a valid excuse within 24 hours after the exam ends, you may be given a 0% for that exam, and I may withdraw you (with a grade of W or Y, depending).

If you have any special needs or considerations related to attendance, contact your instructor immediately. I understand that life is happening all around us. So just notify me before or as soon as possible if something comes up in your life or if you have concerns that attendance will be an issue. I will work with students who will work hard to learn.

For all MCCCDC attendance policies, please consult Section 2.3.2 at:

<https://district.maricopa.edu/stewardship/maricopa-governance/common-pages/student-regulations>

## **Student or Instructor Illness Considerations and Class Access**

Students who are not feeling well **should not attend class**. Notify your instructor prior to the start of class on a given day. Your instructor will connect with you if there is an option to attend class remotely or will provide information about how to stay current with assignments and lessons online.

If your instructor is ill and cannot attend class, updates and announcements will be provided in Canvas, Maricopa email, or other class communication channels prior to class that day if possible.

### **Withdrawal Information:**

If you must withdraw from the course, see the Withdrawal Policy information located in the **College Policies & Student Services** page found in the First Steps module of your Canvas course.

*\*Notes: Deadline to withdraw without instructor approval: End of Week 7*

*Final Deadline to withdraw: End of Week 14 (requires instructor approval)*

## Instructional Contact Hours (Seat Time)

This is a four(4) credit-hour course. In addition to time spent in class and lab, plan to spend at least eight hours on learning activities **outside of class time** each week (i.e., notebook reflections, homework, practice, lab work, and reports, etc.)

## SCC Land Acknowledgement

Scottsdale Community College (SCC) credits the diverse Indigenous people still connected to the land on which we gather. Our college resides on the tribal territory of the Salt River Pima-Maricopa Indian Community (SRP-MIC). SRP-MIC is a federally recognized nation - one of 22 Arizona Indigenous nations and one of 574 across the United States. Attached to this physical space is a painful history of forced removal and the resulting intentional genocide of its Indigenous people. We remain appreciative of our ability to teach, learn and serve in a space of such importance and reverence.

SCC acknowledges the land on which we are situated today as the traditional land and home, established by Executive Order on June 14, 1879, of two distinct tribal nations: the Onk Akimel O'odham (Pima) and the Xalychidom Piipaash (Maricopa) people. We take this opportunity to thank the original caretakers of this land. We offer our respect to their Elders and to all O'odham and Piipaash people of the past, present, and future.

If students or others have questions, they are more than welcome to reach out to our American Indian Program or our SPAIC Committee.

## Online Tutoring

SCC's tutors are available online to help with your courses. You may work with an SCC tutor remotely using Google Meet, your phone, or email. Visit the [SCC Tutoring & Learning Centers](#) page for detailed information on the five learning center's hours and procedures.

As much as possible, it is highly recommended that you utilize SCC tutors since they are more familiar with SCC coursework, instructor expectations, and assignments; however, if you need to work with a tutor outside regular hours, online and hybrid students now have access to a 24/7 online tutoring service called Brainfuse. Brainfuse provides online tutoring in a variety of academic subjects. Each student may utilize up to 6 hours of online tutoring through Brainfuse per semester and has the option of requesting additional time if needed.

To access Brainfuse and begin working with a tutor:

1. Visit the [SCC Online Tutoring Services Through Brainfuse](#) page (<https://www.scottsdalecc.edu/students/tutoring/online-tutoring>)
2. Click the **Visit a tutor online** button

3. Enter your MEID and password
4. Choose your topic and subject
5. Click the **Connect** button

Please use your time effectively and be prepared with your questions before you connect to a tutor. Tutors and students communicate in real time, so whatever you type, draw, or share on the screen, the tutor sees, and vice versa. You may also want to have screenshots ready if applicable. All Brainfuse sessions are recorded for review later.

## Learning Tools and Your Privacy and Security

SCC utilizes a variety of software applications and web-based tools operated by third-party vendors to support student learning. To allow student access to the application, site, or tool, certain identifiable information may be required to establish a username or password and submit work and/or download information from these tools. Inherent with all internet-based tools, there is a risk that individuals assume when electing to use these tools, as they may place information at risk of disclosure.

To use learning tools responsibly, please observe all laws and the Maricopa Community College District [Student Conduct Code](#), such as copyright infringement, plagiarism, harassment, or interference with the underlying technical code of the software. As a student using a learning tool, you have certain rights. Any original work that you produce belongs to you as a matter of copyright law. You also have a right to the privacy of your educational records. Your contributions to learning tools constitute an educational record. By using the tool and not taking other options available to you in this course equivalent to this assignment that would not be posted publicly on the internet, you consent to the collaborative use of this material as well as to the disclosure of it in this course and potentially for the use of future courses.

Students are responsible for the information contained in this syllabus, the Syllabus page in your Canvas course, and the **College Policies & Student Services** page found in the First Steps module of your Canvas course. Students will be notified by the instructor of any changes in course requirements or policies.