

SYLLABUS

CHEM 1100 (22027)

Chemistry and Society

Spring 2023 January 9th – April 24th

3 credit hours

Online Lecture Course

COURSE OVERVIEW

Instructors

Instructor: Rebecca Ricciardo, Ph.D.

January 9th – February 28th 2023

Email address: ricciardo.10@osu.edu – Or through CarmenCanvas Messenger

Chemistry office phone number: 614-292-6009 (Not preferred contact method)

Office hours: Drop-in Tuesdays (1/9 through 2/28) 3 – 4 pm

zoom ([link here and on Carmen](#)) or in 110 Celeste Lab

Or by appointment (zoom or 110 Celeste Lab) for another day/time

Instructor: Jennifer Ottesen, Ph.D.

March 1st – April 24th 2023

Email address: ottesen.1@osu.edu – preferred through CarmenCanvas Messenger for better notifications

Chemistry office phone number: 614-292-4525 (Not preferred contact method)

Office hours: TBD, will be determined by survey to identify best times for student schedules prior to March 1

Prerequisites

Math 1050 (075 or 076) or an ACT math subscore of 22 or higher that is less than two years old, or satisfactory score on Ohio State Math Placement Test. Not open to students with credit for 1110 (101), 1210 (121), 1910H (201H), or 100, or any Chemistry course that uses these courses as prerequisites. GE nat sci phys course (BA in ASC only).

Legacy GE (GEL) Category: Natural Science, physical

Course description

Terminology, methods, and principles of chemistry; examination of the roles of chemistry in our modern technological society. Chemistry is often referred to as the central science and this course is designed to introduce students to the way in which chemical concepts can be used to interpret the physical world. Students are introduced to chemistry in their daily lives as well as significant social, political, economic, and ethical issues facing science and society today. The main objective is to cultivate students who are more scientifically literate and able to make informed and reasonable decisions about chemistry-based issues. This course will examine the dilemma that we face in our modern world of attempting to balance the great benefits of modern chemical sciences and technology with the risks that inevitably accompany those benefits.

Course learning outcomes

Goals

Students understand the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

Expected Learning Outcomes

1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

How this course satisfies these Learning Outcomes

1. **Students understand the basic facts, principles, theories, and methods of modern science.** Students will be assessed via Homework and Quiz function times during the semester. Quiz content will cover the basic facts, principles, theories, and methods of modern science from module content outlined below. Examples presented in each module.
2. **Students understand key events in the development of science and recognize that science is an evolving body of knowledge.** Example: Module 3 students learn about the progression in the discovery of the atom. This content will also be assessed on Quiz1.

3. **Students describe the inter-dependence of scientific and technological developments.** Example in Module 12 students will learn about chemical industrialization and the impact on humans. Students will complete a class discussion.
4. **Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.** Example in Module 9 students will be presented with content related to road de-icers, and a corresponding homework will be completed.

HOW THIS ONLINE COURSE WORKS

Mode of delivery: This course is 100% online and asynchronous. There are no required sessions when you must be logged in to Carmen at a scheduled time, including assessments. You should plan to interact with the Carmen Course 2 – 4 times per week.

Pace of online activities: This course is divided into **weekly modules** that are released one week ahead of time. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame. To accommodate weekend-workers, a weekly deadline is generally Tuesday of the following week. There are several instances where a due date is not on a Tuesday, please see detailed schedule below.

Credit hours and work expectations: This is a **3-credit-hour course**. According to Ohio State policy 3335-8-24 (go.osu.edu/credithours), students should expect an average of ~3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to ~6 hours of work outside direct instruction (homework, studying, assignment preparation, for example) to earn a grade of (C) average. These times are guides, may be deviated from and may vary between students.

Attendance and participation requirements: Because this is an online course, your attendance is based on your online activity and participation. The following is a summary of students' expected participation:

- **Participating in online activities for attendance: AT LEAST ONCE PER WEEK**
You are expected to log in to the course in Carmen every week. (During most weeks you will probably log in several times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible*. Each weekly module will provide you with a list of required activities for that week, including videos and reading links.
- **Lecture videos: POSTED WITH MODULES**
Due to the nature of this asynchronous course, and to accommodate anyone working ahead, zoom lectures will be recorded and posted to be viewed throughout the module. While all lecture videos will be posted, Dr. Ottesen may experiment (in the 2nd half of the course) with recording live lecture streams on the opening day of the module to allow either synchronous or asynchronous participation. If this does not add value, we will revert to posting the videos with the modules as a fully asynchronous experience.

- **Office hours and live sessions: Scheduled, and BY APPOINTMENT AS NEEDED**
Office hours will be by zoom Tuesdays 3-4pm (1/9 through 2/28 with Dr. Ricciardo) and (TBD, to be scheduled via survey, 3/1-4/24 with Dr. Ottesen), or by appointment.
- **Completing graded work: EACH WEEK**
As part of your participation, each week you can expect to either contribute to a class discussion or turn in a graded assignment, in addition to completing short reading/content quizzes.

COURSE MATERIALS AND TECHNOLOGIES

Textbook

We will use a required textbook for this course: Hill's Chemistry for Changing Times, 15th Edition (Pearson). It will be distributed through a pilot program at no cost to you, and it will be accessed through your web browser on the Carmen website or using the Pearson app on your mobile device. You will be given instructions on Carmen on how to access the e-text for free this semester.

Course technology

Technology support

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)
- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

Technology skills needed for this course

- Basic computer and web-browsing skills
- Navigating Carmen (go.osu.edu/canvasstudent)
- CarmenZoom virtual meetings (go.osu.edu/zoom-meetings)

Required equipment

- Computer: current Mac (MacOs) or PC (Windows 10) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication
- Calculator: Any device that can add, subtract, multiply, and divide may be helpful at times in this course.

Required software

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Full instructions for downloading and installation can be found at go.osu.edu/office365help.
- We will sometimes use web-enabled apps on Carmen or on external sites; a web browser will be needed to access these resources

Carmen access

You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions (go.osu.edu/add-device).
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application (go.osu.edu/install-duo) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

GRADING AND FACULTY RESPONSE

How your grade is calculated

ASSIGNMENT CATEGORY	PERCENTAGE WEIGHTING
Weekly Reading Quizzes	10%
Homework (4 of them total)	15%
Discussions (4 of them)	20%
Assignments (3 of them)	20%
Quizzes (Quiz 1, Quiz 2)	20%
Cumulative Final Exam	15%
Total	100

See course schedule below for due dates.

Descriptions of major course assignments

Academic Misconduct (COAM) Quiz & Syllabus Quiz 0: The mandatory Syllabus, course policies, COAM quiz on Carmen (Quiz 0) must be completed by **Friday Jan 13th at 11:59 pm**. Unless you receive 100% on this quiz, ***you will not receive a passing grade in this course*** (instead, an E will be submitted as your final grade). You may take the quiz as many times as you need to receive the requisite score. This quiz will not be factored into your overall quiz grade.

Reading Quizzes: Reading Quizzes are weekly and in place to help you find focus and engagement with the class readings and lectures. Reading quizzes have no time limit and multiple attempts available. No late reading quizzes will be accepted.

Homework: Homework is meant to support you through content engagement. You are welcome to work with each other on homework but must turn in your own work. -25% per day late*

Discussions: These are in place to help you engage with peers. Civil discourse is expected and monitored. For each discussion you will make a post and then interact with peer-posts and leave comments for your peers. No late work accepted*

Assignments: This is the place to think more carefully about class content and how it intersects in your life. Assignments are a great place to highlight your specific interests and talents. -25% per day late*

Quizzes: There are two content knowledge quizzes, Quiz 1 and Quiz 2 during the semester. Each quiz will draw from all content in the modules covered prior to the quiz. See schedule for dates. The duration for each Quiz will be 55 minutes. No late work accepted*

Cumulative Final Exam OR FINAL PROJECT: There will be a cumulative final labeled “Quiz 3” in Carmen. It will cover all content from the semester. It is recommended that you keep and use a notebook (digital or hard copy) to access for the final. The Final will be available April 17th – April 24th 11:59 pm. The duration will be 105 minutes. No late work accepted*

*In extenuating circumstances, a late penalty may be waived. Approval must be requested from the instructor, and agreed upon, before the due date.

Schedule of course modules and graded work

Please note: schedule is subject to change if needed. Any changes will be posted on Carmen.

UNIT MODULE	CHEMISTRY & SOCIETY TOPICS	TEXTBOOK READINGS	GRADED WORK (DUE)
Module 1 Introduction	What is chemistry? Meet your peers	Chapter 1	Quiz 0 – Jan 13 th Discussion #1 – Jan 12 th / 13 th Reading Quiz 1 – Jan 17 th
Module 2 Ammonia	Atoms/Molecules/Formulas Common uses and fertilizers	Chapter 2.1-2.3, 2.6, 4.5, 4.6	Reading Quiz 2 – Jan 23 rd Homework #1 – Jan 24 th
Module 3 Radium + Radon	Atomic structure, nuclear reactions, and radiation Marie Curie, Radium paint, EPA resources	Chapter 3.3 – 3.5, 11.1, 11.5-11.6	Reading Quiz 3 – Jan 30 th Discussion #2 – Jan 31 st
Module 4 Ozone	Chemical reactions, equations, balancing, Ozone at good v. bad	Chapter 5.1-5.3, Chapter 8.5, 13.8	Reading Quiz 4 – Feb 6 th Assignment #1 – Feb 7 th
Module 5 Ozone continued	Balancing equations continued, greenhouse gases, intro to molecular interactions in different lights	Chapter 6.1, 6.5 – 6.7, 13.9-13.10	Reading Quiz 5 – Feb 13 th Homework #2 – Feb 14 th
Module 6 Lead History	Solution formation Early uses, KKI experiments, health effects	Chapter 6.2-6.4, 14.1	Reading Quiz 6 – Feb 20 th Assignment #2 – Feb 21 st
Module 7 Lead in US today	Solids, ions, precipitation Flint, Benton Harbor MI	Chapter 14.2-14.7, 4.4	Reading Quiz 7 – Feb 27 th Quiz #1 – Feb 28 th
Module 8 Lead elsewhere today	Concentrations, grams, moles, volume measurements and calculations.	Chapter 5	Reading Quiz 8 – Mar 6 th Discussion #3 – Mar 7 th
March 13-17	Spring Break	No work Expected during break	Enjoy Break
Module 9 Community Chemicals – road salt	Colligative properties, freezing point depression, phase changes. Community topic: environmental impacts of road salt and de-icing chemicals	Revisiting: Ch 14.1-14.3, Ch 1.3-1.4.	Reading Quiz 9 – Mar 20 th Homework #3 – Mar 21 st

Module 10 Household Chemicals	Household care products: Detergents, soaps, and cleaners; surfactants, lipids, and intermolecular forces	Chapter 20.1-20.5	Reading Quiz 10 – Mar 27 th Homework #4 – Mar 28 th
Module 11 Household Chemicals	Personal care products: The proteins in hair and skin, and the chemicals we treat them with.	Chapter 16.6-16.7; chapter 20.6	Reading Quiz 11 – Apr 3 rd Assignment #3 – Apr 4 th
Module 12 Sugar and Carbohydrat es	Intro to Ochem and Carbohydrates; simple sugars, sucrose, starch Society component: Chemistry industrialization, and the history of sugar: chemistry and human impact in the isolation of sucrose from sugar cane, sugar beets, and corn.	Chapter 16.1-16.3 https://www.nytimes.com/interact ive/2019/08/14/magazine/sugar- slave-trade-slavery.html (from the 1619 Project)	Reading Quiz 12 – Apr 10 th Discussion #4 – Apr 11 th
Module 13	Glucose as energy: biological metabolism and alternative fuel sources	CH 15.1-15.5, 15.10	Reading Quiz 13 – Apr 17 th Quiz #2 – Apr 18 th
			Final Exam April 24 th

Grading scale

The grades in this 1000-level chemistry courses are assigned by your instructor in consultation with the Vice Chair of Undergraduate Studies. The following grading scale will be used to determine your final grade. No extra credit and no grade rounding is offered in this course.

Grade	Range
A	100% to 93.0%
A–	< 93.0% to 90.0%
B+	< 90.0% to 87.0%
B	< 87.0% to 83.0%
B–	< 83.0% to 80.0%
C+	< 80.0% to 77.0%
C	< 77.0% to 73.0%
C–	< 73.0% to 70.0%
D+	< 70.0% to 67.0%
D	< 67.0% to 60.0%
E	< 60.0% to 0.0%

Instructor feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-4357(HELP)** at any time if you have a technical problem.)

- **Grading and feedback:** For weekly graded work, you can generally expect feedback within **7 days**.
- **Email:** I will reply to emails within **24 hours on days when class is in session at the university**.

OTHER COURSE POLICIES

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

Academic integrity policy

See **Descriptions of major course assignments**, above, for my specific guidelines about collaboration and academic integrity in the context of this online class.

It is the responsibility of the Committee on Academic Misconduct (COAM) to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Student Responsibilities: *Any graded material submitted must represent your own work.* This includes exams, quizzes, homework, and notes, which are to be an individual effort. Unauthorized group efforts by students, use of another student's course materials, or assistance from individuals who already have taken the course, could place you in jeopardy of violation of the standards. In some courses, group work is acceptable on certain activities (as explicitly stated by your instructor). In these cases, it is important that you know and understand where authorized collaboration (working in a group) ends and collusion (working together in an unauthorized manner) begins. Identical answers indicate copying or unacceptable group efforts - always answer questions in your own unique words. It is important that you consult with your instructor for clarification on whether or not collaboration is appropriate on an activity. *You should not assist others in violating academic standards.* Students supplying materials for others to "look at" may be charged with academic misconduct. Never allow another student access to your assignments – even after completion of the course. "I didn't know they were going to copy my work" is not an acceptable excuse.

Quizzes: Quizzes are a part of this Chemistry course, and the integrity of these assessments is taken seriously. Any violation, or appearance of a violation, on Carmen quizzes is required to be reported to COAM for further investigation. Additionally, Carmen quizzes must be completed online ON YOUR OWN, with no help from others. Below is a non-exhaustive list of examples of Academic Misconduct on exams and quizzes:

- Viewing or copying others' answers, including from websites like Chegg, is strictly prohibited.
- Copying, photographing, or screenshot collecting of Carmen quiz/exam/final content and images is not permitted. Doing so is considered academic misconduct. Collecting, possessing, and/or sharing of Carmen assessment content is strictly prohibited. Any content found online posted by students will be investigated to identify the student(s) responsible for submitting or posting prohibited material.

If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the university's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page (go.osu.edu/coam)
- Ten Suggestions for Preserving Academic Integrity (go.osu.edu/ten-suggestions)

Student Services and Advising

University Student Services can be accessed through BuckeyeLink. More information is available here: <https://contactbuckeyelink.osu.edu/>

FOR UNDERGRAD COURSES: Advising resources for students are available here:
<http://advising.osu.edu>

Copyright for instructional materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu

Commitment to a diverse and inclusive learning environment

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Land Acknowledgement

We would like to acknowledge the land that The Ohio State University occupies is the ancestral and contemporary territory of the Shawnee, Potawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, Ojibwe and Cherokee peoples. Specifically, the university resides on land ceded in the 1795 Treaty of Greenville and the forced removal of tribes through the Indian Removal Act of 1830. I/We want to honor the resiliency of these tribal nations and recognize the historical contexts that has and continues to affect the Indigenous peoples of this land.

More information on OSU's land acknowledgement can be found here:

<https://mcc.osu.edu/about-us/land-acknowledgement>

Your mental health

As a student you may experience a range of issues that can cause barriers to learn, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, on-demand resources are available at go.osu.edu/ccsondemand. You can reach an on-call counselor when CCS is closed at 614-292-5766, and 24-hour emergency help is also available through the 24/7 National Prevention Hotline at 1-800-273-TALK or 988 or at suicidepreventionlifeline.org. The Ohio State Wellness app is also a great resource available at go.osu.edu/wellnessapp.

Commitment to religious expression

Our inclusive environment allows for religious expression. Students requesting accommodations based on faith, religious or a spiritual belief system in regard to examinations, other academic requirements or absences, are required to provide the instructor with written notice of specific dates for which the student requests alternative accommodations at the earliest possible date. For more information about religious accommodations at Ohio State, visit odi.osu.edu/religious-accommodations.

Weather or other short-term closing

Unless otherwise announced by the university, online or distance-learning classes will occur as scheduled.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Canvas accessibility (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- CarmenZoom accessibility (go.osu.edu/zoom-accessibility)
- Collaborative course tools