

ESM 231: Fundamentals of Environmental Chemistry II

Winter 2021

Instructor: Dr. Natasja A. Swartz (she, her, hers)

Contact: natasja.swartz@pdx.edu

Zoom Office Hours: Tu/Thu 3:20-4:00 pm & by appt

Course time: Tue/Thu 2-3:20 PM

Classroom: Remote on D2L/Zoom

Graduate TAs:	Max Gersh	Marta Szabatin
Email:	mgersh@pdx.edu	smarta@pdx.edu
Zoom Office Hours:	TBA & by appt	TBA & by appt
Lab Sections:	Friday	Tuesday, Thursday

Communication and Availability: The best way to communicate directly with me is by attending office hours or sending me a brief, concise message to natasja.swartz@pdx.edu. I am happy to answer most questions via email but please check the course announcements and weekly reminders prior. During the term it may take multiple days for me to get back to you depending on the urgency of your message (do not expect a reply on weekends or weeknights). If you are having difficulties with the course, please talk to me and your TA early in the term.

Materials for this class:

- Subscription to McGrawHill Connect for Chemistry in Context, 10th edition (see D2L)
- Kami Account for PDF annotation of in-class activities (See D2L)
- Scientific or graphing calculator (has log, inverse log, exponential notation, etc.) – see PSU Library
- ESM231 At-Home Lab Kit (purchased at PSU bookstore)

Course Description:

The course will cover basic concepts and principles of chemistry as they apply to environmental problems. We will rely on prior content from last term that includes the nature of matter, atomic, molecular, ionic and radical structures, stoichiometry, intermolecular forces, nuclear, acid-base and combustion reactions. This quarter we will apply these understandings to explore redox chemistry, biochemistry, equilibrium, thermodynamics, polymer chemistry, soil chemistry, and toxicological chemistry. Examples will be used that illustrate the social and economic importance of environmental chemistry. Satisfactory completion of this course and ESM230 fulfills the chemistry core requirement for Environmental Science majors. **Successful completion of both ESM 230/231 are required for ESM 315 offered in the Spring.**

This course is designed to teach chemistry and physical science through the observation and explanation of many events we observe in our surrounding environment. Some broad goals and concepts we will explore:

- Chemicals that are fashioned into new materials, health care products, and agricultural products require natural resources as well as energy. We will study the interconnections between the use of natural resources and the quality of life generated through the use of everyday chemicals. We will also address their effects on the environment.
- Natural phenomena can be as diverse as foods, polymers, fossil fuels, and natural forms of radiation. We will use a systematic approach to study the formation, acquisition, use, and ultimate disposal of items such as these, which are vital to our everyday well-being. We will learn how to control our environment by manipulating the chemical reactions that all matter undergoes.

- New chemicals are used to increase crop yields, improve our health, enhance our looks, sanitize our environment, and make our lives easier. We will examine some broad categories of new materials and plastics, medicines, cosmetics, pesticides, and alternative fuels. We will see how chemical reactions can generate electricity and how electricity can generate chemical reactions.
- New, "improved" technology is constantly being applied to existing products and processes that we use every day in our homes and workplaces. We will closely scrutinize technology, analyze the science on which it is based, and try to assess the impact this technology really has on our social, economic, and cultural structures.

Flexibility statement: The instructor reserves the right to modify course content, calendar, and/or substitute assignments and learning activities in response to institutional, weather, or class situations. You can listen to a recording on the PSU switchboard (503-725-3000) to learn about college closures or alerts.

Week	Daily Reading in Chemistry in Context, 10e	Weekly Homework posted W@5pm due W _{next} @11:59pm	Activities: In-class (A) and Civic (COOL)	Lab Experiments results due day-of, analysis due next lab	End-of-Chapter Quizzes posted F@5pm due F _{next} @11:59pm
1	8. – 8.3 8.4 – 8.6	HW10	A28-A30 COOL11	-	-
2	8.7 – 8.11 9. – 9.3	HW11	A31-A33 COOL12	<i>L1: Measurements</i>	Chapter 8 Quiz
3	9.4 – 9.7 9.8 – 9.11	HW12	A34-A35 COOL13	<i>L2: Chemical and Physical Changes</i>	Chapter 9 Quiz
4	10. – 10.4 10.5 – 10.9	HW13	A36-A37 COOL14	<i>L3: Polymers</i>	-
5	10.10 – 10.13 11. – 11.5	HW14	A38-A40 COOL15	<i>L4: Air Quality</i>	Chapter 10 Quiz
6	11.6 – 11.8 11.9 – 11.13	HW15	A40-A41 COOL16	<i>L5: Ocean Acidification</i>	Chapter 11 Quiz
7	12. – 12.4 12.5 – 12.7	HW16	A42-A43 COOL17	<i>L6: Water Quality</i>	-
8	12.8 – 12.10 13. – 13.5	HW17	A44-A46 COOL18	<i>L7: Soil Quality</i>	Chapter 12 Quiz
9	13.6 – 13.8 14.1 – 14.5	HW18	A47-A48 COOL19	<i>L8: Equilibrium</i>	Chapter 13 Quiz
10	14.6 – 14.15	-	A49-A50	<i>L9: DNA & Radioactivity</i>	-
Finals week		Final Project - Monday March 15th 10:15-12:05			

Graded Work:

In-Class Activities	drop 2	20 @ 2 pts each	40 pts. (5%)
Citizen-Out-Of-Lecture Activities	drop 1	8 @ 5 pts each	40 pts. (5%)
Weekly homework assignments	drop 1	8 @ 30 pts each	240 pts. (30%)
Lab Experiments	drop 1	8 @ 25 pts each	200 pts. (25%)
End-of-Chapter Quizzes	drop 0	6 @ 40 pts each	240 pts. (30%)
Final Project		1 @ 40 pts each	40 pts. (5%)
			800 pts

Note on ALL Late Assignments: Late course-work submissions will not be penalized UP TO FOUR WEEKS AFTER THE DUE DATE, after which the assignment will no longer be accepted. If you fall behind, expect to get a caring nudge from your instructor or TA. If you have a documented extended illness or other emergency, let me know and we will discuss other arrangements or extensions.

Description of Graded Work:

In-Class Activities (A 28-50): **20 @ 2 pts each (drop 2 if all completed) = 40 pts**
Every lecture and some labs will have guided inquiry activities that are a cornerstone of our curriculum. Activities are delivered by a blank PDF this term (no forms) and you will have two options for completing them: 1) Use our approved PDF annotator Kami in any browser/computer or 2) Use a tablet/stylus to annotate the PDFs, via Kami or another app. Two In-class activities will be dropped at the end of the term.

Citizen-out-of-Lecture Activities (COOL 11-19): **8 @ 5 pts each (drop 1 if all completed) = 40 pts**
Each week we will have citizen-out-of-lecture activity (COOL) assigned that asks you to engage with the course material. Many of these activities will be the same (re: Ask for Help) or similar (re: Get to Know...) to last term. There is no COOL assigned in Week10 and one COOL will be dropped at the end of the term.

Weekly homework assignments: **8 @ 30 pts each (drop 1 if all are completed) = 240 pts**
Homework assignments are posted on Wednesdays by 5 pm and due the following Wednesday (1-week later) at 11:59 pm. Homework will be administered and completed through the Connect platform from McGrawHill. Most homework assignments will encompass already covered material and a portion looking ahead. All homework assignments have unlimited attempts, and one will be dropped at the end of the term.

Lab Experiments: **8 @ 25 pts each (drop 1 if all are completed) = 200 pts**
This term we have designed an at-home-lab to help you explore concepts across both terms, and the purchase of the lab kit via the bookstore is necessary. You are required to attend your scheduled lab and come prepared to complete the day's experiment by having read the procedure and completed the prelab quiz. Each lab will have a collection of 25 points distributed across attending the lab, posting and analyzing your results. One experiment will be dropped at the end of the term. Do not fall behind in lab.

End-of-Chapter Quizzes: **6 @ 40 pts each = 240 pts**
These quizzes will be administered through Connect to assess your understanding of the textbook reading and concepts explored in lecture/homework/lab. Quizzes will open the Friday after we finish a chapter at 5 pm and due the following Friday by 11:59pm (see course schedule). You will have three attempts and a fixed time of 45 min to complete the quiz. Quizzes are individual, open-book but not open-internet activities and may not be discussed with a peer until you have both received a grade. None dropped.

Final Project: **1@ 40 pts**
You will work individually to build your own physical or virtual Casitas representing what it means to you to be a sustainable scientist and/or engaged citizen. More information about this assignment will be provided in separate documents later in the term. **Portfolios will be viewed in a virtual gallery walk presented during our final exam block, which is currently scheduled for Monday December 7th 10:15-12:05.** This assignment cannot be made up, please plan accordingly to be present.

Expected Grading Scale:

A 94 – 100	B+ 87 – 89	C+ 77 – 79	D+ 67 – 69
A- 90 – 93	B 83 – 86	C 73 – 76	D 63 – 66
	B- 80 – 82	C- 70 – 72	D- 60 – 62

Statement on Academic Honesty: Plagiarism or academic dishonesty of any form will not be tolerated in this class and will result in a failing grade for the assignment. All disputed cases of academic dishonesty will be referred to the Office of Student Affairs for arbitration. For more information, please see the Academic Honesty Policy in Portland State University's "Bulletin".

PSU Student Resources – these resources are for the PSU community, which you are a part of.

(Links are underlined, click-to-follow)

- General PSU Policies - read the Student Conduct and Responsibility Policy
- Dean of Students - it is their job to help you when you are in need! Do not hesitate.
- Food assistance
 - Food aid is available for every student. Visit or volunteer at the PSU Food Pantry.
- Services for Students with Children
- Financial Wellness Center
- Student Legal Services
- TRIO Student Support Services and Pre-College Programs
- Student Community Engagement Center - serve in the community, both on/off campus

Academic Resources @PSU

- Library
 - including laptop or technology rental
- PSU Learning Center
 - Free Tutoring
 - Academic Coaching
- Writing center
- Advising

Cultural Resources @PSU

- DACA resources
 - PSU is a designated sanctuary campus
 - Dreamer and Undocumented Scholarships/Student Aid
- Cultural Communities
 - La Casa Latina Student Center
 - Multicultural Student Center
 - Native American Student & Community Center
 - Pacific Islander, Asian & Asian American Student Center
 - Pan-African Commons
 - Middle East, North Africa, South Asia Initiative

Mental Health and Body Health @PSU

- **PSU Community Counseling Clinic:** <https://www.pdx.edu/coun/clinic>
- SHAC -- Center for Student Health and Counseling
 - SHAC Resources for **Healing and Coping**
 - SHAC **Anti-Racism, Growth, and Learning** Resources
- Outside of SHAC hours:
 - Multnomah County Mental Health Call Center. **You do not need to be in crisis to reach out to the call center.** Dial: 503-988-4888; Toll-free: 800-716-9769; Hearing-impaired: 7-1-1

- Mental health resources in Washington County. For crisis services call 503-291-9111. The crisis line is open 24/7/365
- Clackamas County mental health resources. 24/7 crisis and support line 503-655-8585; Non-emergency 503-742-5335

Access and Equity for Students - No Bias – No Hate – No Discrimination – No Harassment

I value you, your lived experiences that you bring into this classroom as an individual, and the collective experience of your peers. We value diversity and inclusion; we are committed to fostering mutual respect and full participation for every student. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me by email.

Disability accommodations and the Disability Resource Center

The Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment. If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the Disability Resource Center to schedule an appointment and initiate a conversation about reasonable accommodations. The DRC is located in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu, <https://www.pdx.edu/drc>.

- If you already have accommodations, please contact me within the first week of class to make sure that I have received a faculty notification letter and discuss your accommodations.
- Students who need accommodations for tests and quizzes are expected to schedule their tests to overlap with the time the class is taking the test (i.e. not a time of your own choosing).
- For information about emergency preparedness, please go to the Fire and Life Safety webpage (<https://www.pdx.edu/environmental-health-safety/fire-and-life-safety>) for information.

Title IX Reporting and Getting Help for sexual assault, gender-based harassment, dating violence, domestic violence and stalking, which are all prohibited at PSU.

As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. We expect a culture of professionalism and mutual respect in our department and class. You may report any incident of discrimination or discriminatory harassment, including sexual harassment, to either the Office of Equity and Compliance or the Office of the Dean of Student Life.

Please be aware that as a faculty member, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment or sexual violence to a confidential employee who does not have this reporting responsibility, including an Interpersonal Violence Advocate at the Women’s Resource Center or the Queer Resource Center. **You may contact a confidential advocate by calling 503-725-5672.** This Sexual Misconduct Website provides a complete of those confidential employees and off campus resources. For more information about Title IX please complete the required student module Creating a Safe Campus in your D2L.