

CH 233 General Chemistry

Section 400, Spring 2022

Instructor

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Communication

Please post all course-related questions in the Discussion Board so that the whole class may benefit from our conversation. If you do not wish to post to the class, please send your question directly to the Instructor/TA email list at the email addresses above. If you have a question about something other than course content, please email Dr. Kyriakos C. Stylianou directly. We will reply to course-related questions and email messages within three days. We will strive to return your assignments and grades for course activities to you within seven days of the due date.

Course Description

A general chemistry sequence for students majoring in most sciences, pharmacy, and chemical engineering. CH 233 is a lecture course; CH 263 is the laboratory component. (Bacc Core Course if taken with CH 263)

Successful completion of both CH 233 and CH 263 are required to fulfill OSU's Baccalaureate Core course requirement in the Perspectives category under Physical Science (Lab).

Physical Science Baccalaureate Core Rational: Science seeks to develop a fundamental description and understanding of the natural world, from elementary particles to the cosmos, including the realm of living systems. Students should have the opportunity to explore the insights of science, to view science as a human achievement, and to participate in scientific inquiry. This experience includes the challenge of drawing conclusions based on observation, analysis, and synthesis.

This course is dedicated to helping you achieve the following general education learning outcomes, which include development of generalizable critical thinking skills.

- Recognize and apply concepts and theories of basic physical sciences
- Apply scientific methodology and demonstrate the ability to draw conclusions based on observation, analysis, and synthesis
- Demonstrate connections with other subject areas

CH 231, 232, 233 has adopted the "atoms first" approach to teaching general chemistry. This means that early on we will discuss quantum mechanics and the seminal experiments that can lead to our current conception of atomic structure and function. One advantage to this approach is that

it emphasizes the tentative nature of science. Science, and by extension chemistry, will be viewed as a process rather than a static set of facts. The process of 'doing science' will be further explored in the companion laboratory sequence CH 261, 262, 263.

Prerequisites

(CH 232 or 232H) or CH 222. A minimum grade of C- is required in CH 232, CH 232H and CH 222.

Course Credits

This course combines approximately 120 hours of instruction, online activities, and assignments for 4 credits.

Technical Assistance

Technical issues are not considered a valid reason for missing due dates/times. If you do have technical issues, please report the issue to both the relevant site's technical support and to the instructor as soon as possible. Please be as specific as possible when describing the issue, including the text of any error messages and screen captures when appropriate.

If you experience any errors or problems while in your online course on Canvas, contact 24-7 Canvas Support through the Help link within Canvas. If you experience computer difficulties or need help downloading a browser or plug-in contact the **IS Service Desk** for assistance.

If you have any technical issues with the homework site for the course, please contact **Pearson**.

Course Learning Outcomes

- Demonstrate the ability to think scientifically and critically as measured by performance on exam questions requiring written explanations.
- Demonstrate mastery of basic chemical concepts and principles covered in this course as measured by performance on exams.
- Demonstrate problem-solving skills applicable to a wide variety of problems drawn from the topics covered in this course, as measured by performance on exams.
- Continue to build and refine an understanding of how molecular structure, thermodynamics, kinetics, and equilibrium are interrelated and are all factors that affect the feasibility and outcome of chemical processes, including those involving organic and biological systems, as measured by performance on exam questions requiring written explanations.
- Be able to collect, analyze, and draw defensible conclusions from experimental data, including appropriate estimates of the uncertainty associated with experimentally determined quantities, as measured by performance on exam questions requiring written responses.

Course Materials

- Tro, Chemistry Structure and Properties, 2 ed., Pearson Education, 2018. ISBN: 0-134-29393-2
- Modified Mastering Chemistry Access Code, Pearson Education
- Solutions Manual to accompany Chemistry Structure and Properties (Optional)
- Scientific Calculator
- Computer with working webcam and microphone
- Small whiteboard with markers

Course Topics

Chapter 16: Acids and Bases

Chapter 17: Aqueous Ionic Equilibrium

Chapter 22: Transition Metals and Coordination Compounds

Chapter 18: Free Energy and Thermodynamics

Chapter 19: Electrochemistry

Chapter 21: Organic Chemistry

CH 233 Course Schedule (Tentative)

Week	Topics *Tro readings are listed in parentheses. More details on the readings are posted in the weekly modules on Canvas.	Assignments *due 11:59 pm (Pacific) on Sunday unless indicated otherwise
1	Intro to CH233 Acids and Bases (16.1 – 16.8, 16.10, 16.11)	Introductory Quiz Week 1 HW Week 1 Discussion Board
2	Acids and Bases (16.9)	Week 2 HW Week 2 Quiz Week 2 Discussion Board
3	Buffers (17.1 – 17.3) Titrations (17.4) Solubility Equilibria (17.5)	Week 3 HW Week 3 Quiz Week 3 Discussion Board
4	Thermodynamics (18.1 – 18.7)	Week 4 HW Week 4 Quiz Week 4 Discussion Board
5	Thermodynamics (18.8 – 18.10) Transition Metals and Coordination Compounds (22.1 – 22.3)	Week 5 HW Week 5 Quiz Week 5 Discussion Board
Midterm Exam (Sunday 12.01 am – 11:59 pm Tuesday)		
6	Transition Metals and Coordination Compounds (22.4 – 22.6)	Week 6 HW Week 6 Quiz Week 6 Discussion Board

7	Electrochemistry (19.3 – 19.6)	Week 7 HW Week 7 Quiz Week 7 Discussion Board
8	Electrolysis (19.8) Organic Chemistry (20.1 – 21.5)	Week 8 HW Week 8 Quiz Week 8 Discussion Board
9	Organic Chemistry (21.6 – 21.13)	Week 9 HW Week 9 Quiz Week 9 Discussion Board
10	Review	Week 10 HW Week 10 Quiz Week 10 Discussion Board
Final Exam (Sunday 12.01 am – 11:59 pm Tuesday)		

Schedule is subject to change, and will be updated on Canvas if necessary.

Course Expectations

Grading

Success in this course often depends on the amount of time devoted to studying the material. This is a 4-credit course, and each credit is meant to reflect about 30 hours of effort over the course of the term (this works out to ~12 hours per week in a 10-week term). We recommend that you prepare to devote ample time to the study of the course while it is in progress

Your point total is obtained by adding points from the exams, online homework, quizzes, and discussion boards. These component point totals are indicated below:

Midterm Exam:	100 points
Final Exam:	150 points
Homework:	70 points
Quizzes:	130 points
Discussion Board Posts:	50 points
Total:	500 points

Grading Scale

A/A-	92%/89%
B+/B/B-	86%/82%/79%
C+/C/C-	76%/72%/69%
D+/D/D-	66%/62%/59%
F	<59%

Completion of Work

- Students are expected to be aware of all due dates as published in this syllabus, and complete work in a timely fashion. Late quizzes and exam are not accepted; late homework and discussion board posts may be completed for partial credit as outlined in the sections below.
- Students are expected to complete their own work as described in each portion of the 'Course Components' section of this syllabus.
- Students must not attempt to mask their location in completion of coursework. As such, students may not access the course website(s) through a VPN when completing any assessed course work without express instructor permission. Accessing any assessed course work using a VPN may result in a score of zero on that coursework and a report to Student Conduct and Community Standards as an incidence of academic dishonesty.

Communications

- Students are encouraged to communicate with the instructors and teaching assistants as often as questions on the material arise. Please review the Email Guidelines posted on Canvas for this course.
- Students are expected to regularly check email for communications from their instructors. Students should check their OSU email account daily, or configure their account to forward to an email account that will be regularly checked.
- Course announcements will be posted at least daily. Students should either configure Canvas to receive ASAP (or daily) notification of new announcements, or should plan on checking the announcements for the course early each week.

Technical Aspects

- As an online course, it is the student's responsibility to have access to adequate computing resources to utilize course materials and complete course work.
- Multiple websites are used in completion of course materials. These sites may require students to download (free) plug-ins or otherwise configure their computer in order to function. Students should plan on accessing and configuring these sites as early as possible to allow time to seek technical support if necessary.
- Technical issues are not considered a valid reason for missing due dates/times. If you do have technical issues, please report the issue to both the relevant site's technical support and to the instructor as soon as possible. Please be as specific as possible when describing the issue, including the text of any error messages and screen captures when appropriate.

Incompletes

Incomplete (I) grades will be granted only in emergency cases. Incompletes can only be granted to students who are passing the course at the time the incomplete is granted, so if you have a circumstance that has arisen that might prevent you from completing the coursework, please don't wait; let us know right away so that we can discuss the options available to you.

Course Components

Homework

- Homework will be completed via Mastering Chemistry. Access to the homework site is through the course Canvas site. Instructions for registration and details about how homework grades appear in Canvas are provided in the Start Here module on the 'Start Here - Homework Information' page.
- At the end of the term, all students who earn at least 85% of the total assigned points on Mastering Chemistry will receive full credit for Mastering Chemistry. Students earning less than 85% of the assigned points will receive that percentage of the 70 points possible (e.g. a student who earns 80% of the assigned points will receive 56/70). The score on any particular assignment does not need to be 85% or better, only the final total at the end of the term. So, this means that you can "make up" for a low score on one assignment (or missing assignment!) by doing very well on another assignment.
- Late homework questions can be completed for 50% credit.
- Adaptive Follow-ups are additional questions chosen to give you more practice in the areas where you struggled in the main assignment. These assignments are practice only and have no points associated with them.
- Students are expected to do their own work on homework assignments. Students are allowed and encouraged to seek assistance in understanding how to approach and/or calculate the answers to homework problems. Students may not, however, obtain answers for the homework problems from other sources. Students who complete homework assignments using answers obtained from other sources will be reported to Student Conduct and face penalties on their assignments, as will any student who provided them with answers.

Discussion Boards

- For participation in this course, you are required to make at least one discussion post every week. That can be a question on a weekly discussion board (not the general FAQ board), answering another student's question on a discussion board, or participating in the discussion of the week board.
- Late Discussion Posts will be worth 50% of the possible points.
- Note that your score in Canvas will not be immediate, it will be posted the following week.

Quizzes

- The Introductory Quiz is located in the Start Here module. The Introductory Quiz is based on information in this syllabus and in the Start Here module. Please review the feedback after each attempt for important information.
- Chapter Quizzes can be located in the weekly modules. Quizzes for each chapter are graded based on correctness. You have one attempt at each weekly quiz, so please be sure that you're prepared to take each quiz before you open it.
- Chapter Quizzes are timed. You will have 40 minutes to complete each chapter quiz.
- Quizzes will become unavailable after the due date.

- Your introductory quiz score and eight highest chapter quiz scores will be used to calculate your final grade.
- It is strongly recommended that you record your calculations for the quiz questions, and be sure that you understand how to arrive at the correct answer for each quiz question.
- Students are expected to do their own work on quizzes. Students may not obtain answers for the quiz questions from other sources. Students who complete quizzes using answer obtained from other sources will be reported to Student Conduct and face penalties on their quizzes, as will any student who provides another student with answers.

Exams

- There will be comprehensive Midterm and Final exams in the course.
- Each exam will be taken via Canvas and must be proctored. The proctoring for this course will be via Proctorio, a service that is free for students.
- To take the exams, students will need to use a computer with a webcam, microphone, whiteboard with dry erase markers, and reliable internet access.
- Each exam must be taken during the time period specified previously on the Grade Sheet page of the syllabus.
- Each exam cannot be retaken and cannot be stopped once started.
- The Midterm Exam must be completed with 100 minutes and the Final Exam must be completed with 120 minutes. The exams will auto submit at the end of these time periods.
- If a student has a conflict with the time window for any of the exams, they need to contact the instructor as early as possible (in most cases, before the assessment window) to discuss.
- Provided materials: the following materials will be available for each assessment as a link within the assessment:
 - A periodic table
 - The equation sheet for that exam – this will be published in advance of the exam so that students can familiarize themselves with it.
- Allowed materials:
 - A scientific calculator (programmable calculators, graphing calculators, and cellphone-based calculators will not be allowed)
 - A white board and dry erase markers
 - Any use of materials not on this list (including accessing of outside websites or other online resources) will result in a non-replaceable score of 0 on the exam, and will be reported to Student Conduct as an incident of academic dishonesty.
- For the duration of the exam window, students may not communicate contents of the exam or exam answers to any other individual in any format. Students also may not receive such information prior to taking their exam. Any violations of this will be reported to Student Conduct and result in exam penalties.
- If the percentage earned on the Final Exam is higher than the Midterm Exam percentage, the Final Exam score will be used for the entire Exam category score of the course.

Using Proctorio automated proctoring for exams

This course will use an automated online proctoring system called Proctorio, where your session is recorded for instructor review. You will **not** need to schedule proctoring appointments, and there is **no cost to you** to use Proctorio.

Please note that a functioning webcam and microphone are required for using Proctorio. If you do not have these, you will need to locate and submit an alternative proctor through the **exams and proctoring form** and pay for any associated proctoring fees.

Your security and privacy are important. You can read more about Proctorio's **privacy and data security** policies on their website, and more information about using this tool can be found in the course site.

Expectations for Student Conduct

Student conduct is governed by the university's policies, as explained in the Student Conduct Code (<https://beav.es/codeofconduct>). Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the university's regulations regarding civility.

Guidelines for a Productive and Effective Online Classroom

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility. Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please review the discussion board guidelines posted in Canvas, and bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Accommodations for Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Academic Integrity

Integrity is a character-driven commitment to honesty, doing what is right, and guiding others to do what is right. Oregon State University Ecampus students and faculty have a responsibility to act with integrity in all of our educational work, and that integrity enables this community of learners to interact in the spirit of trust, honesty, and fairness across the globe.

Academic misconduct, or violations of academic integrity, can fall into seven broad areas, including but not limited to: cheating; plagiarism; falsification; assisting; tampering; multiple submissions of work; and unauthorized recording and use.

It is important that you understand what student actions are defined as academic misconduct at Oregon State University. The OSU Libraries offer a tutorial on academic misconduct (<https://guides.library.oregonstate.edu/c.php?g=286121&p=3896378>), and you can also refer to the **OSU Student Code of Conduct** (<https://beav.es/codeofconduct/>) and the **Office of Student Conduct and Community Standard's website** (<https://studentlife.oregonstate.edu/studentconduct/student-info/>) for more information. More importantly, if you are unsure if something will violate our academic integrity policy, ask your professors, GTAs, academic advisors, or academic integrity officers.

Technical Assistance

If you experience any errors or problems while in your online course, contact 24-7 Canvas Support through the Help link within Canvas. If you experience computer difficulties, need help downloading a browser or plug-in, or need assistance logging into a course, contact the IS Service Desk for assistance. You can call (541) 737-8787 or visit the IS Service Desk (<https://oregonstate.teamdynamix.com/TDClient/1935/Portal/Requests/ServiceDet?ID=22911/>) online.

Inclusivity

In an ideal world, science would be objective. However, science is a human endeavor and is historically built on a small subset of privileged voices.

We acknowledge that it is possible that there may be both overt and covert biases in the material due to the lens with which it was written, even though the material is primarily of a scientific nature. Integrating a diverse set of experiences is important for a more comprehensive understanding of science. Please contact us if you have any suggestions to improve the quality of the course materials.

We (like many people) are still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to us about it. As a participant in course discussions, you should also strive to honor the diversity of your classmates. Furthermore, we would like to create a learning environment for our students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) To help accomplish this:

- **Pronouns:** If you have a name and/or set of pronouns that differ from those that appear in your official records, please let us know! You can also edit/set your pronouns in Canvas.
- **Religious Observances:** Please let your instructor know if the timing of an assignment interferes with any of your religious and/or spiritual practices so that we can make necessary arrangements.

- **Statement of Accessibility:** All students have the right to learn from and participate in the classroom. We designed this course with accessibility in mind, and are always open to hearing ways to make it more inclusive and accessible. Please contact your instructor if you have accessibility concerns.

Statement Regarding Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval, please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Accessibility of course materials

All materials used in this course strive to be fully accessible. Since some materials and resources are provided by external vendors, the accessibility statements from those vendors is also provided. If you require accommodations, please contact Disability Access Services (DAS). Canvas, the learning management system through which this course is offered, provides a vendor statement certifying how the platform is accessible to students with disabilities. Please also review the accessibility statements from **OpenStax** (<https://openstax.org/accessibility-statement/>), **Knewton Alta** (<https://www.knewton.com/accessibility/>), and **SmartSparrow** (<https://www.smartsparrow.com/solutions/highered/>).

Ecampus Reach Out for Success

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success.

Ecampus students are always encouraged to discuss issues that impact your academic success with the Ecampus Success Team. Email ecampus.success@oregonstate.edu to identify strategies and resources that can support you in your educational goals.

If you feel comfortable sharing how a hardship may impact your performance in this course, please reach out to me as your instructor.

For mental health

Learn about counseling and psychological resources for Ecampus students. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

For financial hardship

Any student whose academic performance is impacted due to financial stress or the inability to afford groceries, housing, and other necessities for any reason is urged to contact the Director of Care for support (studentassistance@oregonstate.edu or 541-737-8748).

Life Outside the Classroom

We have tried to account for the fact that your life outside the classroom may impact your participation at times in course design. Regardless of these built-in safety guards, if you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to communicate with your instructor. We want to be a resource for you. If you prefer to peak with someone outside of the course, the Dean of Student Life is an excellent resource.

Basic Needs

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Director of Care in the office of the Dean of Students for support (studentassistance@oregonstate.edu, 541-737-8748). There might also be a food pantry in your community to help. You can search by zipcode at **Feeding America** (<http://www.feedingamerica.org>). You can find information about enrolling in SNAP (food stamps) in your state at the **USDA Food and Nutrition Service website** (<https://www.fns.usda.gov/snap/recipient/how-do-i-apply-for-benefits/>).

Your local librarian might be able to help you find a copy of some textbooks through interlibrary loan.

Furthermore, please notify the professor about your concerns if you are comfortable in doing so. This will enable them to provide any resources that they may possess.

Please Note

This syllabus is subject to change with notice from the instructor.