

CH 233 - General Chemistry (4 credits)

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CH 231, 232, 233: A general chemistry sequence for students majoring in most sciences, pharmacy, and chemical, biological, and environmental engineering. CH 233 is a lecture course; CH 263 is the laboratory component. CH 263 must be taken concurrently with CH 233.

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

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

Time Requirements:

CH 233 offered on the OSU campus: will meet 4 hours per week, three hours of lecture and 1 hour of recitation.

CH 233 offered through the OSU Ecampus office: It is expected that students will spend approximately 3 hours /week reading the materials posted on Blackboard (lecture notes, worked examples, video clips, etc.) and an additional 9-12 hours/week reading the textbook, studying the material covered in the lecture notes, and working on the Mastering Chemistry assignments.

Prerequisites: One year of high school chemistry and acceptable aptitude test scores. CH 121 is accepted in lieu of high school chemistry as a prerequisite for this sequence.
CH 231, CH 232, CH 233 must be taken in order.

Textbook and Related Items:

Tro, *Chemistry A Molecular Approach*, 2 ed., Pearson Education, 2011. ISBN: 0-321-65178-2
(Required)

Mastering Chemistry, Pearson Education. Available for purchase online at:
www.masteringchemistry.com (Required)

Solutions Manual to accompany *Chemistry A Molecular Approach* (Optional)

Course Content:

Chapter 16: Aqueous Ionic Equilibrium (sec 5-8)
Chapter 24: Transition Metals and Coordination Compounds
Chapter 19: Radioactivity and Nuclear Chemistry
Chapter 17: Free Energy and Thermodynamics
Chapter 18: Electrochemistry
Chapter 20: Organic Chemistry
Chapter 21: Biochemistry

Student Learning Outcomes:

The successful student will:

- 1) Demonstrate the ability to apply scientific methodology, and the ability to draw conclusions based on observation, analysis, and synthesis, when presented with problems drawn from the topics covered in this course, as measured by performance on exam questions requiring written explanations.
- 2) Recognize and apply the concepts and theories of chemistry, as measured by performance on short answer exam questions.
- 3) Demonstrate connections with other subject areas by applying the concepts and principles covered in this course to problems drawn from other areas, as measured by performance on homework assignments and exam questions.
- 4) Demonstrate the ability to think scientifically and critically as measured by performance on exam questions requiring written explanations.
- 5) Demonstrate mastery of basic chemical concepts and principles covered in this course as measured by performance on exams.
- 6) 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.
- 7) 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.

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 have led 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.

Examinations:

Students will take two midterm exams and a comprehensive final exam. Eight quizzes will be taken via Blackboard.

Mastering Chemistry (online homework):

Mastering Chemistry assignments will be posted on the Mastering Chemistry website (www.masteringchemistry.com). Assignments are typically due each Sunday at 11:59 pm.

Students who earn at least 80% of the total assigned points on Mastering Chemistry will receive full credit for Mastering Chemistry (50/50 points). Students earning less than 80% of the assigned points will receive that percentage of the 50 points possible (e.g. a student who earns 75% of the assigned points will receive 38/50). The score on any particular assignment does not need to be 80% 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 by doing very well on another assignment.

Grading:

Midterm Exams	200 pts
Final Exam	150 pts
Mastering Chemistry	50 pts
Quizzes (best 7 of 8; 10 pts each)	70 pts

Course grade % of total pts

A	93.0 - 100 %
A-	90.0 - 92.9%
B+	87.0 - 89.9%
B	83.0 - 86.9%
B-	80.0 - 82.9%
C+	77.0 - 79.9%
C	73.0 - 76.9%
C-	70.0 - 72.9%
D+	67.0 - 69.9%
D	63.0 - 66.9%
D-	60.0 - 62.9%
F	<60.0%

Services for Students with Disabilities:

Accommodations are a collaborative effort between students, faculty, and the Disability Access Services (DAS) office. Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to, or during, the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations, but who have not yet obtained approval through DAS, should contact DAS immediately at 541-737-4098.

Expectations for Student Conduct:

Student conduct is governed by the universities policies, as explained in the Office of Student Conduct: Information and Regulations. In an academic community, students and faculty, and staff each have responsibility for maintaining an appropriate learning environment, whether online or in the classroom. Students, faculty, and staff have the responsibility to treat each other with understanding, dignity, and respect. Further information may be found at: <http://oregonstate.edu/admin/stucon/achon.htm>

Academic Integrity - Students are expected to comply with all regulations pertaining to academic dishonesty, defined as: *An intentional act of deception in which the student seeks to claim credit for the work or effort of another person or uses unauthorized materials or fabricated information in any academic work.* For further information, visit [Avoiding Academic Dishonest](#), or contact the office of Student Conduct and Mediation at 541-737-3656