

NOTE to prospective students: This syllabus is intended to provide students who are considering taking this course an idea of what they will be learning. A more detailed syllabus will be available on the course site for enrolled students and may be more current than this sample syllabus. Summer term courses may be accelerated – please check the Ecampus [Schedule of Classes](#) for more information.

CH 232 General Chemistry – 4 credits

COURSE CREDIT:

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

PREREQUISITES, CO-REQUISITES AND ENFORCED PREREQUISITES:

((CH 231 [D-] or CH 231H [D-] or CH 221 [D-]) and (CH 262* [D-] or CH 272* [D-])) and 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.

COURSE DESCRIPTION:

CH 232. GENERAL CHEMISTRY (4).

A general chemistry sequence for students majoring in most sciences, pharmacy, and chemical engineering. CH 232 is a lecture course; CH 262 is the laboratory component. Lec/rec. (Bacc Core Course if taken with CH 262)

Baccalaureate Core Course Attributes: Core Pers, PhySci Attached Lec

CONTACT INFORMATION:

For more information, contact: Greta Kvinnesland, 153 GILB, 541-737-6707

Sample syllabi may not have the most up-to-date information. For accuracy, please check the [ECampus Schedule of Classes](#) to see the most current instructor information. You can search for contact information by name from the OSU Home Page.

LEARNING RESOURCES:

The Course textbook and Mastering Chemistry Access Code are required. The Solutions Manual for the textbook is optional.

NOTE: For textbook accuracy, please always check the textbook list at the [OSU Bookstore website](#). Sample syllabi may not have the most up-to-date information.

Students can also click the '[OSU Beaver Store](#)' link associated with the course information in the [Ecampus schedule of classes](#) for course textbook information and ordering.

COURSE SPECIFIC MEASURABLE STUDENT LEARNING OUTCOMES:

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

General Student Learning Outcomes:

The successful student will:

- 1) Demonstrate the ability to think scientifically and critically as measured by performance on exam questions requiring written explanations.
- 2) Demonstrate mastery of basic chemical concepts and principles covered in this course as measured by performance on exams and homework assignments.
- 3) 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 and homework assignments.
- 4) Begin to build 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, as measured by performance on exam questions requiring written explanations.
- 5) 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.

Specific Student Learning Outcomes:

The successful student will:

Demonstrate mastery of basic chemical concepts and principles covered in this course as measured by performance on exams.

- a) Thermochemistry
 - Be able to state and explain the meaning and significance of the 1st Law of Thermodynamics
 - Be able to determine the energy change in a chemical reaction from experimental data or tables of thermodynamic data.
 - Be able to use thermodynamics to discuss foods and fuels
- b) Gases
 - Be able to use Kinetic Molecular Theory to describe the behavior of gases
 - Be able to use the Ideal Gas Law and its derivatives (e.g. Boyle's Law, Charles' Law) to predict the behavior of gases
 - Be able to explain the assumptions made in defining the term "Ideal Gas" and the consequences of these assumptions when using the Ideal Gas Law to predict the behavior of gases
- c) Intermolecular Forces and Solutions
 - Be able to use your knowledge of bonding and molecular shapes to determine the types of intermolecular forces exhibited molecules
 - Be able to explain how intermolecular forces affect properties such as boiling point and vapor pressure
 - Be able to define the term "colligative properties" and explain the effect solutes have on solution properties such as boiling points and freezing points
- d) Kinetics
 - Be able to determine the rate law for a reaction from experimental data
 - Be able to explain how the rate of a reaction will be affected by changing the initial concentration a reactant
 - Be able to state the necessary and sufficient conditions for a reaction to occur
 - Be able to explain what a reaction mechanism is and the relationship between the rate law of a reaction and the mechanism of a reaction
- e) Equilibria

- Be able to explain what a dynamic equilibrium is and give examples of chemical systems that do, and do not, illustrate dynamic equilibrium.
- Be able to explain LeChatelier's Principle and use it to predict the effects of changes made to a system at equilibrium.
- Be able to apply the principles of equilibrium to a variety of quantitative and qualitative problems, including weak acids & bases, buffers, slightly soluble salts, and complex ion formation.

COURSE CONTENT AND POLICIES:

Chapter 5: Gases

Chapter 6: Thermochemistry

Chapter 11: Liquids, Solids and Intermolecular Forces

Chapter 12: Solutions

Chapter 13: Chemical Kinetics

Chapter 14: Chemical Equilibrium

Chapter 15: Acid and Bases

EVALUATION OF STUDENT PERFORMANCE:

Students will take a midterm exam (in week 6) and a comprehensive final exam (in week 11), both under the supervision of an approved proctor. Because these exams are taken on paper, **ProctorU is NOT an option for proctoring exams in this course.** There is a three day window for taking the exams. Be sure you are aware of the dates and times the exam is available (all times are local Oregon times). Proctoring guidelines and registration for proctored exams are available online through the Ecampus Exams and Proctoring website: <http://ecampus.oregonstate.edu/services/proctoring>

It is important to submit your proctoring request as early as possible to avoid delays.

There will be quizzes, available on Canvas, for each chapter covered this term. The quizzes covering the material on the midterm exam must be completed no later than the day the midterm exam is first available. The quizzes on the material after the midterm exam must be completed no later than the day the final exam is first available. The best 6 of the 7 scores will count toward your final course grade. The quizzes do NOT require a proctor.

Grading:

Midterm Exam*	100 pts	Week 6
Final Exam *	200 pts	Finals Week (Week 11)
Mastering Chemistry	50 pts	Chapters 5,6,11,12 due Week 5 Chapters 13,14,15 due Week 10
Quizzes (best 6 of 7)	60 pts	Quizzes for chapters 5,6,11,12 due Week 5 Quizzes for chapters 13,14,15 due Week 10

*If the percentage on the final exam is higher than the percentage on the midterm exam the midterm score will be dropped and the final exam score will be used for the entire exam component of the course grade.

<u>Course grade</u>	<u>% of total pts</u>
A	92.0 - 100 %
A-	90.0 - 91.9%
B+	88.0 - 89.9%
B	82.0 - 87.9%
B-	80.0 - 81.9%
C+	78.0 - 79.9%
C	72.0 - 77.9%
C-	70.0 - 71.9%
D+	68.0 - 69.9%
D	62.0 - 67.9%
D-	60.0 - 61.9%
F	<60.0%

COURSE SITE LOGIN INFORMATION

Information on how to login to your course site can be found [HERE](#).

STATEMENT REGARDING STUDENTS WITH DISABILITIES

Oregon State University is committed to student success; however, we do not require students to use accommodations nor will we provide them unless they are requested by the student. The student, as a legal adult, is responsible to request appropriate accommodations. The student must take the lead in applying to Disability Access Services (DAS) and submit requests for accommodations each term through DAS Online. OSU students apply to DAS and request accommodations at our [Getting Started with DAS](#) page.

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). 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.

Additionally, 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.

ACADEMIC INTEGRITY AND STUDENT CONDUCT (OSU POLICY)

Students are expected to be honest and ethical in their academic work. Intentional acts of academic dishonesty such as cheating or plagiarism may be penalized by imposing an “F” grade in the course.

Student conduct is governed by the university's policies, as explained in the Office of the Dean of Student Life: Student Conduct and Community Standards. 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.

Students are expected to conduct themselves in the course (e.g. on discussion boards, email postings, etc.) in compliance with the university's regulations regarding civility. Students will be expected to treat all others with the same respect as they would want afforded to themselves. Disrespectful behavior (such as harassing behavior, personal insults, inappropriate language) or disruptive behaviors are unacceptable and can result in sanctions as defined by Student Conduct and Community Standards.

For more info on these topics please see:

- [Statement of Expectations for Student Conduct](#)
- [Student Conduct and Community Standards - Offenses](#)
- [Policy On Disruptive Behavior](#)

PLAGIARISM

You are expected to submit your own work in all your assignments, postings to the discussion board, and other communications, and to clearly give credit to the work of others when you use it. Academic dishonesty will result in a grade of “F.”

- [Statement of Expectations for Student Conduct](#)
- [Avoiding Academic Dishonesty](#)

TECHNICAL ASSISTANCE

If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email osuhelpdesk@oregonstate.edu or visit the [OSU Computer Helpdesk](#) online.

- [COURSE DEMO](#)
- [GETTING STARTED](#)

TUTORING

For information about possible tutoring for this course, please visit our Ecampus [NetTutor](#) page. Other resources include:

- [Writing Center](#)
- [Online Writing Lab](#)

STUDENT EVALUATION OF TEACHING

The online Student Evaluation of Teaching form will be available in week 9 and close at the end of finals week. Students will be sent instructions via ONID by the Office of Academic Programs, Assessment, and Accreditation. Students will log in to “Student Online Services” to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted. Course evaluation results are very important and are used to help improve courses and the learning experience of future students. Results from questions are tabulated anonymously and go directly to instructors and unit heads/supervisors. Unless a comment is “signed,” which will associate a name with a comment, student comments on the open-ended questions are anonymous and forwarded to each instructor. “Signed” comments are forwarded to the unit head/supervisor.

REFUND POLICY INFORMATION

Please see the [Ecampus website](#) for policy information on refunds and late fees.