CH 273 - General Chemistry Laboratory for Chemistry Majors
(1 credit)

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CH 271, 272, 273: A general chemistry laboratory sequence for students majoring in chemistry. CH 273 is the laboratory course for chemistry majors that accompanies the CH 2313 lecture course

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 273 are required to fulfill OSU's Baccalaureate Core course requirement in the Perspectives category under Physical Science (Lab).

Time requirement: this course meets for three hours of lab each week.

Prerequisites: CH 233 must be taken concurrently with CH 273.

Textbook and Related Items:
CH 273 Laboratory Manual (Required)
Laboratory Notebook with duplicate-copy pages (Required)

Course Content:

- Experiment 1. Reaction Entropy and Gibbs Free Energy
- Experiment 2. Synthesis and Analysis of a Coordination Compound
- Experiment 3. Electrochemical Cells
- Experiment 4. Identification of an Organic Unknown
- Experiment 5. Nuclear Magnetic Resonance
- Experiment 6. Special Projects
Student Learning Outcomes:

The successful student will:

1) Be able to successfully perform basic laboratory procedures such as titrations and organic and inorganic synthetic techniques, as measured by performance in the laboratory and on laboratory reports.
2) Apply scientific methodology and demonstrate the ability to draw conclusions based on observation, analysis, and synthesis as assessed by performance on laboratory reports.
3) Demonstrate critical thinking skills by collecting and analyzing data, and drawing defensible conclusions from experimental results, including appropriate estimates of the uncertainty associated with experimentally determined quantities, as measured by performance on laboratory reports.
4) Recognize and apply the concepts and theories of chemistry as assessed by performance on laboratory reports.
5) Demonstrate the ability to think scientifically and critically as measured by performance on laboratory reports.

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 lead to our current conception of atomic structure and function. The process of 'doing science' is explored in the laboratory component of these courses taught in CH 271, 272, 273. Students will perform experiments, collect, analyze, and draw conclusions from the data, and write formal laboratory reports to communicate the results of the experiments.

Examinations:

There are no examinations in CH 273.

Grading:

Each experiment will award approximately 50% of the points for experimental work and 50% for the laboratory report. Detailed requirements and grading criteria for the laboratory reports will be provided in class.

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**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 at least two weeks prior to the first day of the on-campus part of this class 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. Complete policies can be found at: [http://oregonstate.edu/admin/stucon/achon.htm](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 Dishonesty, or contact the office of Student Conduct and Mediation at 541-737-3656

**Conduct in the classroom and laboratory**-- 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. 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 Oregon Administrative Rules Division 015 Student Conduct Regulations. Laboratory safety regulations must be read and understood before experimental work begins. Safety regulations must be strictly followed during experimental work.