Chemistry (PhD)

Research at the University of Oregon is designed to keep student researchers at the forefront of chemical science. Our programs in the traditional areas of biochemistry, inorganic, organic, and physical chemistry lay the foundation for new discoveries in materials science, molecular biology, optics, and theoretical chemistry. Though our department is medium in size, we are a leading innovator in chemistry.

At the University of Oregon, we recognize the importance of diversity and breadth in graduate education and continue to respond to the shifts and changes in career opportunities available to our graduates. In pursuit of this goal, we take a cross-disciplinary, interdepartmental approach to research and graduate training. Institutes and centers facilitate scientific investigation at the boundaries of traditional fields and foster collaboration and cooperation between researchers in different departments. Faculty members and students are actively involved in collaborative research efforts in the department and in the interdepartmental research institutes, providing unique opportunities for defining and solving scientific problems. Students pursuing a Ph.D. in chemistry may choose to complete thesis projects under the guidance of faculty in other departments, such as biology or physics.

While we de-emphasize the boundaries of traditional disciplines, the classic areas of chemistry do provide a convenient and familiar way to describe the department’s educational activities and research. They include: biochemistry, molecular biology and biophysical chemistry; organic-inorganic chemistry; and physical chemistry.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Acquire in-depth knowledge in a main subfield of chemistry. Students will acquire this knowledge by doing advanced course work in the field, reading scientific papers, performing original research in the lab, and passing an advancement exam in the student's research area.
- Acquire a breadth of knowledge in other subfields of chemistry. Students will acquire this knowledge by doing course work and taking cumulative exams.
- Learn how to carry out independent chemistry research. Students will learn literature comprehension skills, will properly cite and reference techniques and methods, will be able to place oneâ€™s research in context of the field, and will be able to communicate research results through scientific publications and presentations. Students will be able to formulate scientific hypotheses, understand the scientific method and apply it to research design, will become proficient at data gathering and interpretation, and will be able to write a research proposal. Students will pursue a research problem culminating in a written thesis that makes a significant and original contribution to the understanding of chemistry.
- Acquire professional development skills and knowledge. Students will attend professional meetings and make oral or poster presentations. Students will learn how to obtain internships in governmental labs, in industry, or in teaching. Students will learn soft skills, such as leadership, problem-solving, teamwork, communication.
- Understand and apply ethics and values to all professional activities. Students will demonstrate an awareness of the benefits and impacts of chemistry related to the environment, society, and other disciplines outside the scientific community. Students will learn and put into practice the expectations of responsible conduct in the professional field. Students will learn about laboratory safety and best safety practices. Students will be prepared to contribute solutions to society's challenges at the intersection of science and society.

Chemistry Major Requirements

Requirements for all students

- Participate in the undergraduate teaching program for at least 3 terms
- Rotate through 3 different labs during the first year
- Identify and join a research group by the end of the first year
- 4th term review is usually in the fall of 2nd year with a written and an oral report
- Annual review each year after advancement to candidacy with a written and an oral report

Biochemistry Requirements

- Advancement to Candidacy
- Satisfactory completion of BI 620, CH 662
- Seminars and Journal Club

Organic/Inorganic/Material Requirements

- Advancement to Candidacy Exam
- Six graded graduate-level courses of 3 or 4 credits each
- Seminars and Journal Club (CH 607, CH 623)

Physical Chemistry Requirements

- Advancement to Candidacy Exam; 3rd-year research presentation
- Six graded graduate-level courses of 3 or 4 credits each
- Seminars and Journal Club (CH 607, CH 624)