Chemistry (MS)

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.

A unique strength of our program is its interdisciplinary approach to research and teaching. Chemical scientists may be interested in the Institute of Molecular Biology, the Institute for Fundamental Science, the Materials Science Institute, the Oregon Center for Optical, Molecular, and Quantum Science (OMQ), and the programs in cell biology and molecular synthesis, structure, and dynamics.

We offer a traditional Master's as well as several internship-based Master's programs. Internship salaries can help offset the cost of tuition for students in an internship program; the traditional Master's program does not include financial support.

Program Learning Outcomes

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

- Have 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, and optionally performing original research in the lab.
- Students pursuing a research master's degree will 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 one'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.
- Have professional development skills and knowledge. Students will attend professional meetings and make oral or poster presentations. Students will learn how to get internships in governmental labs, in industry, or in teaching. Students will learn soft skills, such as leadership, problem-solving, teamwork, communication.
- Understand and have awareness of professional, ethical and safety applications of their knowledge. Students will develop and understand the ethical and social dimension of science and the role and responsibility of chemistry for the advancement of the society. 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.

Chemistry Major Requirements

Code	Title	Credits
Department Requirements [1, 2]		30
Internship Program in Electrochemistry		28
CH 554	Advanced Electrochemistry	
CH 689	Chemistry Professional Development [3]	
CH 690	Numerical Simulation in Electrochemistry	
CH 691	Analytical Electrochemistry Laboratory	
CH 692	Electrochemical Device Engineering	
CH 693	Electrochemical Device Laboratory	
CH 694	Applied Electrochemistry Projects Laboratory [3]	
CH 695	External Graduate Internship [3]	
Total Credits		**58**

[1] Six graded graduate-level courses with a minimum 24 credits.
[2] Nine credit hours in 600-level courses.
[3] May substitute for an approved alternative course.

Chemistry - Electrochemical Technology Concentration

Code	Title	Credits
Electrochemistry AMP Courses		
CH 554	Advanced Electrochemistry	4
CH 531	Inorganic Chemistry	4
CH 689	Chemistry Professional Development	1
CH 690	Numerical Simulation in Electrochemistry	2
CH 691	Analytical Electrochemistry Laboratory	2
CH 692	Electrochemical Device Engineering	4
CH 693	Electrochemical Device Laboratory	4
CH 694	Applied Electrochemistry Projects Laboratory	4
CH 695	External Graduate Internship	30
Core Undergraduate Chemistry Courses		
CH 221Z	General Chemistry I	4
or CH 224H	Advanced General Chemistry I	
CH 222Z	General Chemistry II	4
or CH 225H	Advanced General Chemistry II	
CH 223Z	General Chemistry III	4
or CH 226H	Advanced General Chemistry III	
CH 227Z & CH 217	General Chemistry I Laboratory and Chemistry Tools I [1]	2
CH 228Z & CH 218	General Chemistry II Laboratory and Chemistry Tools II [1]	2
CH 229Z & CH 219	General Chemistry III Laboratory and Chemistry Tools III [1]	2
CH 341	Majors Track Organic Chemistry I	4
or CH 331	Organic Chemistry I	
CH 342	Majors Track Organic Chemistry II	4
or CH 335	Organic Chemistry II	
CH 343	Majors Track Organic Chemistry III	4
or CH 337	Organic Chemistry Laboratory	
CH 337	Organic Chemistry Laboratory	3
CH 338	Organic Chemistry Laboratory	3
CH 348	Organic Chemistry Laboratory for Majors	4
CH 349	Organic Chemistry Lab for Majors	4
CH 411	Physical Chemistry	4
CH 412	Physical Chemistry	4
CH 413	Physical Chemistry	4

CH 417	Physical Chemistry Laboratory	4
CH 418	Physical Chemistry Laboratory	4
CH 419	Physical Chemistry Laboratory	4
CH 429	Instrumental Analysis	5
Required Math Courses		
MATH 251Z	Differential Calculus	4
MATH 252Z	Integral Calculus	4
MATH 253Z	Calculus: Sequences and Series	4
MATH 256	Introduction to Differential Equations	4
MATH 281	Several-Variable Calculus I	4
Required Physics Courses		
PHYS 251	Foundations of Physics I	4
or PHYS 201	General Physics	
PHYS 252	Foundations of Physics I	4
or PHYS 202	General Physics	
PHYS 253	Foundations of Physics I	4
or PHYS 203	General Physics	
PHYS 204	Introductory Physics Laboratory	2
or PHYS 290	Foundations of Physics Laboratory	
PHYS 205	Introductory Physics Laboratory	2
or PHYS 290	Foundations of Physics Laboratory	
PHYS 206	Introductory Physics Laboratory	2
or PHYS 290	Foundations of Physics Laboratory	
University Requirements	**The Student will need complete the UO requirements in Writing, Arts and Letters, Social Science, and Cultural Literacy**	**53**
Total Credits		**219**

[1] Students who transfer CH 227Z/228Z/229Z credits from other schools may have the corresponding CH 217/218/219 course and credit requirements waived.

Admission Process

Students apply to program during their junior year.

(1) GPA and course of study to date
(2) resume including volunteer and paid work, and previous experiences
(3) personal statement including experiences, career goals and discussion of contributions to diversity, equity, and inclusion
(5) interview including technical, experience, and behavioral components