CHEMISTRY (PHD)

The Department of Chemistry offers two graduate degrees: Master of Science (M.S.) and Doctor of Philosophy (Ph.D.). Students engage in coursework and conduct chemistry-related research that prepares them for careers in fields such as academia, industry, and government. Faculty and students in the Department of Chemistry participate in active research programs encompassing modern aspects of analytical, biological, environmental, inorganic, organic, physical, and polymer chemistry.

Location

- Storrs Campus

Modality

- In Person

Requirements
Doctor of Philosophy Degree

The primary requirement for the Ph.D. degree is submission of a dissertation that makes a significant contribution to the candidate's field of specialization. The requirements for the Ph.D. in Chemistry are as follows:

Required Courses

A minimum of 30 course credits of graduate work beyond the Bachelor's degree, in addition to 15 credits of GRAD 6950 Doctoral Dissertation Research, required by the Graduate School. The Graduate Faculty of Chemistry may require specific courses based on the student's proficiencies and areas of focus. The Department encourages extensive work in the major area and at least nine credits in a non-major area (usually chemistry but also areas such as biochemistry, chemical engineering, pharmacy, physics, and mathematics). It is most common for 21-27 course credits to be required beyond the Master's degree, unless a student earns a Master's degree in this Department as a step toward the Ph.D. In the latter case, all graduate credits may count toward the minimum of 30 course credits for the Ph.D., if approved by the Advisory Committee. The Ph.D. in Chemistry does not have a related area or foreign language requirement.

General Examination

After qualification, the student must pass the General Examination, consisting of a written and an oral portion as determined by his or her selected division (Analytical, Biological, Environmental, Inorganic, Organic, Physical, or Polymer). The General Examination is generally completed during the second or third year of graduate work.

Dissertation Prospectus

A Dissertation Prospectus must be filed with the Graduate School at least six months before submission of the dissertation, but preferably much earlier.

Learning Objectives

1. Knowledge: Students will demonstrate a broad foundational knowledge of chemistry.
2. Knowledge: Students will explain the relevance of their project within their subdiscipline and put it in the broader context of chemistry.
3. Knowledge: Students will demonstrate expertise in a selected area of specialization, including mastery of major methodologies, seminal literature, and emerging research directions.
4. Knowledge: Students will be able to search and analyze primary research literature, evaluate published data critically, and use existing body of work to synthesize and support new ideas in their field.
5. Research Skills: Students will show technical expertise in measuring, modeling, and constructing chemical systems.
6. Research skills: Students will defend their use of fundamental chemical principles in selecting and performing essential laboratory or computational methods and interpreting the resulting data.
7. Research skills: Students will use the scientific method to identify, design, and execute research projects to make original scientific contributions in the field. The quality and value of their research will be sufficient to merit publications in peer-reviewed journals.
8. Communication: Students will demonstrate proficiency in scientific writing by producing manuscripts, proposals, and technical documents consistent with disciplinary standards in chemistry
9. Communication: Students will communicate research findings effectively in oral form to disciplinary experts and broader academic audiences
10. Communication: Students will employ effective strategies for data representation and visualization, creating publication-quality graphical materials that accurately convey scientific results.
11. Communication: Students will describe chemical concepts and laboratory methodologies effectively in instructional contexts, providing guidance to undergraduate students or research mentees.
12. Communication: Students will articulate the significance and societal relevance of chemical research to non-specialist audiences
13. Professionalism: Students will demonstrate ethical and responsible conduct of research, including data integrity, safety practices, and responsible authorship, according to the best practices in the profession.
14. Professionalism: Students will be able to work effectively as a part of a team and contribute to collaborations as appropriate to their chosen field.