

DOCTOR OF PHILOSOPHY (PHD) DEGREE IN THE FIELD OF CHEMISTRY

Program Learning Outcomes for the MA and PhD Degrees in the field of Chemistry

Upon completing MA and PhD degrees in the field of Chemistry, students will be able to:

1. Design and conduct independent and novel experimental and/or theoretical/computational chemical-based research that contributes to the existing body of knowledge in the field.
2. Locate, retrieve, read, and interpret current chemical literature using modern literature search methods.
3. Demonstrate an awareness of the ethical, societal, and environmental impact of chemistry.
4. Effectively communicate to both the scientific community and the general public the results of their work both orally and in writing.

Requirements for the MA and PhD Degrees in the field of Chemistry

MA Degree Program

The MA degree is a thesis master's degree. For general university requirements, please see [Thesis Master's Degrees](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-thesis-masters-degrees/) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-thesis-masters-degrees/>). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/>). Although students are not normally admitted to study for the MA degree, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. The MA degree may also be earned by students who do not achieve PhD candidacy by:

- Completing the six one-semester courses required for PhD candidacy
- Producing a master's thesis that presents the results of a program of research approved by the department
- Passing a final master's thesis defense and submitting the thesis to the Office of Graduate and Postdoctoral Studies.

The requirements listed in the General Announcements (GA) satisfy the minimum requirements for this degree program. In certain instances, courses (or requirements) not officially listed here may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate Studies. Course substitutions or any exceptions to the stated official curricular requirements must be approved by the [Office of Graduate and Postdoctoral Studies](https://graduate.rice.edu/) (<https://graduate.rice.edu/>). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Code	Title	Credit Hours
Total Credit Hours Required for the MA Degree in the field of Chemistry		30

Requirements for the PhD Degree in the field of Chemistry

PhD Degree Program

For general university requirements, please see [Doctoral Degrees](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/>). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/>). Students who have completed coursework equivalent to that required for a BA or BS in chemistry may apply for admission to the PhD degree program. For more information, see [Admission to Graduate Study](https://ga.rice.edu/graduate-students/academic-policies-procedures/admission/) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/admission/>). Students are not normally admitted to study for an MA degree.

The requirements listed in the General Announcements (GA) satisfy the minimum requirements for this degree program. In certain instances, courses (or requirements) not officially listed here may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate Studies. Course substitutions or any exceptions to the stated official curricular requirements must be approved by the [Office of Graduate and Postdoctoral Studies](https://graduate.rice.edu/) (<https://graduate.rice.edu/>). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Code	Title	Credit Hours
Total Credit Hours Required for the PhD Degree in the field of Chemistry		90

Research

The PhD in chemistry is awarded for original research in chemistry. During the first semester of residence, students select a research advisor from among the members of the faculty. In some cases, students may choose research advisors outside of the department. Approval of the department chair is required to formalize these advising relationships. The research advisor will guide the student in the choice of an appropriate research topic and in the detailed training required to complete that project. Students must successfully complete CHEM 800 and CHEM 600 every semester of residence. Candidates earn a PhD after successfully completing at least 90 semester hours of advanced study in chemistry and related fields, culminating in a thesis that describes an original and significant investigation in chemistry. The thesis must be satisfactorily defended in a public oral examination. The student must pass the thesis defense before the end of the 16th semester of residency.

Coursework

Within the first two years, the student must complete six 3-semester-hour graduate-level lecture courses at Rice University, or their approved

equivalent. In order to satisfy this requirement, each of these courses must satisfy the following criteria:

- They must be approved by the department's graduate advising committee.
- Chemistry graduate courses must be at the 500 level or higher. Certain 300-level and 400-level courses in other departments may be acceptable with prior approval by the department's graduate advising committee, but a maximum of three lower-level courses in other departments can count towards the six-class requirement, and these do not count towards the university-wide requirement of 90 credits at the 500-level. Courses must be in technical subjects in science or engineering. Courses in teaching, presentation, or management will not be counted toward the six-class requirement.
- Each course must be passed with a grade of B- or higher. It is possible to repeat or replace a course, upon approval of the department's graduate advising committee. A maximum of two courses can be repeated/replaced.
- Students who pursue both the BS and the PhD at Rice need not duplicate coursework for the two degrees. However, teaching as an undergraduate does not substitute for the teaching requirements in the PhD program.

Responsible Conduct of Research

Each graduate student must successfully complete the ethics course UNIV 594.

Teaching

- Each graduate student must participate in teaching (CHEM 700) for the equivalent of three semesters. Assignments are determined by departmental needs.
- An average of a B- in all three courses is required. Assignments are determined by departmental needs.

Qualifying Examination

The qualifying exam has written and oral components, and the expectations for these are available in the department office. The examination committee will be composed of three faculty members, excluding the research advisor. The written document must be submitted to the committee at least one week before the date of the oral examination. The examination must be taken by the last day of class at the end of the student's fourth semester in residency. Any follow-up work required by the committee must be completed by the assigned date, and the exam must be passed by the end of the sixth semester.

Advancement to Candidacy for the PhD

After completing the required coursework, teaching, and qualifying examination, a student must petition to be Advanced to Candidacy for the PhD degree. Upon Advancement to Candidacy, a student chooses a thesis committee of at least three faculty members with the guidance and approval of the research advisor and department chair. The thesis committee must be a minimum of three faculty members including the student's PhD advisor, two faculty members from the qualifying exam committee, and one faculty member whose primary appointment is outside of the Chemistry department. (If one of the members of a student's qualifying exam committee is outside the Chemistry department, they will qualify as an outside committee member).

Policies for the PhD Degree in the field of Chemistry

Department of Chemistry Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Chemistry publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2024_25/Chemistry_Graduate_Handbook.pdf.

Appeals

Students may petition the Chemistry Graduate Studies Committee for variances on these academic regulations.

Satisfactory Performance

To remain in good academic standing, a student must maintain a GPA of 3.00 (B) or higher in all lecture courses, a GPA of 3.00 (B) or higher in all semesters of CHEM 700, and a grade of B or higher in every semester of CHEM 600 and CHEM 800. Failure to maintain satisfactory grades and sufficient progress in research will result in probation and possible dismissal. The student must be enrolled full-time in a departmentally approved research group beginning the second semester, and every semester thereafter. All graduate students are evaluated annually to ensure that they are making appropriate progress towards the degree. The student, advisor, or department may request a meeting between the student and a faculty committee at any time to evaluate progress or to determine a course of action. If progress is unsatisfactory, the committee may recommend a semester of probation, which could result in dismissal from the program if progress remains unsatisfactory in the probationary semester.

Transfer Credit

For Rice University's policy regarding transfer credit, see [Transfer Credit \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer). Some departments and programs have additional restrictions on transfer credit. Requests for transfer credit must be approved for Rice equivalency by the appropriate academic department offering the Rice equivalent course (corresponding to the subject code of the course content) and by the Office of Graduate and Postdoctoral Studies (GPS). Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Chemistry website: <https://chemistry.rice.edu/>.

Opportunities for the PhD Degree in the field of Chemistry

Additional Information

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