

University of New Hampshire, Department of Chemistry

Ph.D. Chemistry

Option in Chemistry Education

Research, coursework, and other activities will concentrate on chemistry pedagogic theory and practice, and human subject research methodologies. Improvement in chemistry instruction across the K-graduate school continuum requires continuing development of a sound theoretical base for teaching and learning. This base grows out of research in the cognitive sciences and is re-interpreted in terms of the unique models which chemists use to describe the world. Research questions about fundamental cognition and about curriculum interventions may be pursued, but intellectual preparation is needed in both chemistry and cognitive science.



Program Requirements that differ (see Graduate Handbook for regular requirements):

- Student enters with Masters or other advanced standing (see admissions criteria below), or candidate can obtain MS at UNH on the way to the PhD with Option in Chemistry Education
- Cumulative exams are split between education and chemistry cores
- Professional presentation allowed in place of departmental seminar
- Documentation of competency in classroom technology (presentation and communication)

Career Directions

Students will be recognized as having advanced knowledge and experience in chemistry, advanced knowledge and experience in the study of student learning, and college level teaching experience beyond the traditional laboratory teaching assistantship. Chemistry departments have been seeking faculty interested in pursuing research in chemistry education or prepared to take on college curriculum reform and oversight. Other career paths are possible, such as Secondary School Department Chair, K-12 Curriculum Coordinator, University Teaching Excellence Program Coordinator, and Industrial Outreach Coordinator. The Option complements the College Teaching (Preparing Future Faculty) programs. The latter focus on pragmatic and philosophical preparation for teaching at the college level. Students pursuing the Option can also matriculate in the College Teaching programs.

Course Requirements

CHEM 971 Teaching and Learning in Chemistry
GRAD 990 College Teaching Praxis (2 cr only)
Chemistry core Three courses at 900 level in chemistry subdiscipline
Quant Stats Two courses from (for example) PSYC 702, 705, 905, 906, 907; EDUC 981; MATH 835, 839, 842
Qual Stats One course from (for example) PSYC 704; SOC 794/894; EDUC 982
Cognition One course from (for example) PSYC 783, 710, 711, 712, 731, 914, 917

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Criteria for acceptance into the program

These are considerations that occur at the department level. The application process is through the UNH Graduate School. Prospective students may inquire at the Chemistry Department if they have questions about their particular situation before applying.

Criterion	Acceptable means for fulfilling criterion	Purpose of criterion	Means of documentation
Research proficiency	<ul style="list-style-type: none"> MS research thesis in a chemistry discipline (chemistry/biochemistry) Industrial laboratory research experience 	<ul style="list-style-type: none"> Credible and visible record of advanced research experience in the discipline. Higher level laboratory sense and skills 	<ul style="list-style-type: none"> Copy of thesis Letters of reference Copies of publications Resume
Advanced content understanding	<ul style="list-style-type: none"> MS coursework or degree in a chemistry discipline MST that includes advanced coursework in chemistry BS degree with additional professional experience (graduate coursework/professional workshops in science/job experience) 	<ul style="list-style-type: none"> Credible and visible record of advanced study in the discipline. Advanced conceptual grounding for study of student learning. Prepared for comprehensive exams. 	<ul style="list-style-type: none"> Transcript Resume Letters of reference
Pedagogic experience	<ul style="list-style-type: none"> TA at graduate or undergraduate level School teaching experience Coursework in education 	<ul style="list-style-type: none"> Sufficient classroom contact to provide motivation and source of questions about teaching and learning. 	<ul style="list-style-type: none"> Resume Letters of reference
Commitment to program goals	<ul style="list-style-type: none"> Personal statement of goals consistent with the goals of the program 	<ul style="list-style-type: none"> Insight into motivation Evidence of intellectual maturity 	<ul style="list-style-type: none"> Personal statement in application Letters of reference

