

Chemistry Education Program Requirements for M.S. & Ph.D. Students

Admission

same as all chemistry graduate students, see <http://www.cas.muohio.edu/chm/gradprog.htm>

Coursework

Chemistry Courses

- *Students choose one discipline (analytical, organic, biophysical, etc.) as cognate area
- *3 courses in cognate area for Ph.D. students (2 cognate courses for M.S. students)
- *proficiency in 2 additional disciplines by passing either ACS placement exam or graduate course
- *cognate area seminar (CHM 650, 720, 725, or 780) once per year
- *chemistry education seminar (CHM 730) once per year

Chemistry Education Courses

at least 2 courses from the following, chosen in consultation with research advisor:

- CHM 623, College Chemistry Teaching
- CHM 710, Special Topics in Chemistry Education
 - Chemical Misconceptions and Conceptual Change
 - Learning Theories in Chemistry Education

Research Methodology Courses

at least 2 courses for Ph.D. students (at least 1 course for M.S. students),
chosen from the following, in consultation with research advisor:

- CHM 621, Methods in CER: Elements of Effective Teacher Enhancement Efforts
- CHM 622, Methods in CER: Materials & Curriculum Development
- quantitative methodology courses (e.g., Ed Psych 667, Statistics 671, Psych 593)
- qualitative methodology courses (e.g., Anthro 525, Gerontology 609, Psych 697)

Cognate Area Research (Ph.D. students only)

Student must carry out a research project in their cognate area, e.g., improving one laboratory experiment used in a cognate area undergraduate laboratory course at Miami. A short (e.g., one semester or summer) traditional research project in the cognate discipline may fulfill this requirement with permission of the research advisor. The expectations for the cognate area research project must be specified during the first year conference and so noted in the memo written by the committee chair after completion of the first-year conference. (This requirement can be waived for students who have earned an M.S. in chemistry or the equivalent.)

Qualifying Exams (Ph.D. students only)

Student must pass the written cumulative exams (2 out of 5 attempts) or comprehensive exam given by their cognate discipline, as well as a comprehensive written exam in chemistry education.

Original Research Proposal (Ph.D. students only)

Student must conceive, prepare, and defend an original research proposal in chemistry education.

Thesis/Dissertation Research

Student must carry out a research project designed in consultation with research advisor, write and defend a thesis (M.S. students) or dissertation (Ph.D. students).