NORTHERN ILLINOIS UNIVERSITY

College of Liberal Arts and Sciences

Department of Chemistry and Biochemistry

Major: Chemistry

Degree: Ph.D.

Date Revised: 2016

Program Student Learning Outcomes and Assessment Methods

Student Learning Outcomes	Assessment Methods (Outcomes)
2. **Effectively engage undergraduate students as Teaching Assistants and consistently practice laboratory safety**. In particular: a. All students will demonstrate comprehensive knowledge of the NIU Chemical Hygiene Plan, participate in lab safety training, and consistently practice and promote all safety policies in their assigned teaching and research laboratories. (Same as M.S. candidate) b. 90% of students will apply sound pedagogical practices as laboratory or recitation instructors and will be considered effective instructors by at least 70% of their assigned undergraduate students. (Same as M.S. candidate) c. All Ph.D. students will be able to implement an effective safety plan for the academic, industrial, or government research laboratory and exhibit behaviors that identify and instill a safety culture. 3. **Communicate published research using clear and effective language**. In particular: a. All students will be able to give a seminar in the primary field of study that organizes, accurately presents, and explains the significance of the published works of others. (Same as M.S. candidate) 5. **Demonstrate advanced proficiency within the field of study and conduct research that culminates in a dissertation**. In particular: a. All Ph.D. students will demonstrate knowledge proficiency at the 60th percentile composite norm level in general chemistry and two undergraduate	• CHEM 690 (2c) • Standardized ACS Exams (5a) • Qualifying Exam (5b) • Candidacy Exam (5c-e) • Oral Defense of Dissertation (5c-d) • Written Dissertation (5c-e) • Professional Activities and Mentoring (6a-b, 7a) • External Reviews (5b-e)

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chemical subject areas, with at least one subject area in the field of study. b. All Ph.D. students will demonstrate an advanced understanding of the primary field of study. c. All Ph.D. students will articulate a research problem, discuss its potential and limits with respect to theory, knowledge, or practice within a field of study, and formulate hypotheses, concepts, experimental designs, and/or techniques beyond the current boundaries of knowledge within the field of study. d. All Ph.D. students will communicate complex ideas in a clear and understandable manner. e. All Ph.D. students will conduct research that makes a substantive contribution to society and advances the field of study (e.g. grant writing, poster/oral presentations at local/regional/national meetings, manuscript writing/publication). 6. **Demonstrate breadth of learning experiences**. In particular: a. All Ph.D. students will engage in collaborative/interdisciplinary research experiences and/or provide evidence of broad professional development through diverse activities (workshops, professional networking (e.g. LinkedIn), professional committees, symposia, seminars, internships, RCR training). b. All Ph.D. students will effectively mentor undergraduate research students. 7. **Demonstrate professional conduct and ethics.** In particular: a. All Ph.D. students will practice, encourage and promote ethical, professional, and responsible research conduct.	