



NORTHERN ILLINOIS UNIVERSITY

College of Liberal Arts and Sciences

Department of Biological Sciences

Assessment Plan 2012-2013

Program: Ph.D. in Biological Sciences

A Ph.D. in the Biological Sciences allows graduates to pursue professional careers in the public or private sector. Training focuses on the process, skills and critical thinking necessary to design and execute scientific research. Training through research and study of the primary literature endows graduates of the program with enhanced content

knowledge, applied skills and a fundamental understanding of the process of science and the scientific method. The overall goal of the program is to develop effective scientists capable of designing and conducting significant independent research.

1. Learning Objectives

Graduates of the Biological Sciences Ph.D. program will demonstrate:

1. Fundamental understanding of the principles, major research findings and current unresolved problems in their area of emphasis
2. Effective scientific communication skills
3. Effective laboratory and field research skills
4. Proficiency in critical thinking,
5. Appropriate use of the scientific method.
6. Technical writing proficiency
7. Original scholarship and the ability to conduct independent research



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2. Methods

Method	Description/Target	Timeline	Person/People Responsible	Objectives Assessed
Ph.D. Qualifying Examination	Students must pass a candidacy exam for the Ph.D. that consists of both written and oral portions. The candidacy exam tests the depth and breadth of the student's knowledge in their area of research, and assesses the student's ability to design and present a coherent, logical and appropriate research plan. Students are also expected to be able to present a coherent, logical and appropriate research plan	Sometime in years 2 to 3 in the Ph.D. program (after accrual of ≥ 28 and ≤ 60 credit hours)	Dissertation Research Committee (Graduate faculty members)	1,2,4,5,6
	describing specific experimental approaches that will be carried out to investigate current problems in biological sciences in their area of concentration. Target: over 90% of Ph.D. students initially admitted to the program are expected to successfully pass this qualifying exam.			



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Written Research Dissertation	Students must write a Ph.D. dissertation that exhibits original research. Students will defend the Ph.D. dissertation in a public seminar and in a comprehensive examination conducted by the student's advisory committee. Target: 100% of students receiving the Ph.D. degree are expected to meet this requirement.	Final Semester of the students' Ph.D. program	Dissertation Research Committee (Graduate faculty members)	1,2,3,4,5,6,7
Committee Meetings	This is a tool of <i>formative</i> assessment. Ph.D. students establish and meet with their advisory committees during their second year, and every 6-12 months thereafter. Students present their project data, progress and proposed plan of research. The committee asks questions, provides feedback and constructive criticism and frames the expectations for the student's final dissertation content.	Every 6-9 months	Dissertation Research Committee (Graduate faculty members)	1,2,3,4,5,6,7
	Target: 100% of the students passing into candidacy will go on to produce a successful dissertation research project.			



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Doctoral Dissertation Research (BIOS 799)	All post-candidacy Ph.D. students must take at least 12 hours of BIOS 799. During their execution of their research projects, students typically meet with and present their research to the principal investigator/ dissertation research advisor in lab meetings or individual meetings. The advisor provides advice and direction, and assesses progress by the student. Target: 100% of post-candidacy Ph.D. students will successfully complete 12 hours of BIOS 799.	Every semester after successful completion of the qualifying examination.	Dissertation Research Advisor	1,2,3,4,5,6,7
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Outcome-by-Methods

	Summative Assessment		Formative Assessment	
	Qualifying Exam	Ph.D. Dissertation	Research Committee Meetings	Dissertation Research (BIOS 799)
1. Principles/Problems	X	X	X	X
2. Communication	X	X	X	X
3. Lab/Field Skills		X	X	X
4. Critical Thinking	X	X	X	X
5. Scientific Method	X	X	X	X
6. Technical Writing	X	X	X	
7. Original Independent Research		X	X	X