

Academic Degree Programs Assessment

Department of Biological Sciences
College of Liberal Arts and Sciences
BS in Biological Science

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Submitted to the University Assessment Panel by
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Academic Degree Programs Assessment

Part I: Assessment Plan

1. Introduction

A Bachelors' degree in Biological Sciences is most often a foundation for advancement to professional or vocational programs in biology-related disciplines. Graduates of the program will be prepared to advance to successful careers in biological sciences - related disciplines in the public or private sectors, either immediately, or through additional terminal or professional training.

2. Student Learning Outcomes (SLOs)

Graduates of the program will be prepared for successful careers in biologically-related disciplines by demonstrating:

1. Proficiency in 5 major areas of biology in line with national standards.
 - a. Evolution/Diversity/Ecology
 - b. Cell and Molecular Biology
 - c. Genetics
 - d. Biological reasoning and critical thinking
 - e. Data analysis and technology
2. Effective scientific communication skills
3. Execution of laboratory and field research skills
4. Proficiency in critical thinking,
5. Appropriate use of the scientific method.
6. Technical writing proficiency
7. An intention/commitment to pursue vocational or professional biological science-related careers upon completion of the BS program

3. Program-by-Baccalaureate Student Learning Outcomes Matrix

Program Student Learning Outcome	Baccalaureate Student Learning Outcomes							
	A. Global inter-connections and inter-dependencies	B. Intercultural competencies	C. Analyze human life and natural world inter-connections	D. Critical, creative, and independent thought	E. Communicate clearly and effectively	F. Collaborate with others	G. Quantitative and qualitative reasoning	H. Apply knowledge/skills creatively
BIOS Proficiency			S	S			S	S
Communication		M	S	S	S		S	S
Research Skills	M	S	S	S	S	S	S	S
Critical Thinking				S			S	S
Writing			S	S	S	M	S	S
Overall	M	M	S	S	S	S	S	S
<i>Note.</i> Gauge whether each program outcome strongly supports (S), moderately supports (M), or doesn't support (leave blank) each baccalaureate learning outcome								

4. Curriculum Map

Year Term	Course	Program Student Learning Outcomes					
		Proficiency in biology	Communication	Research skills	Critical thinking	Writing	Scientific methods
Year one Fall	ENGL 103		B			B	
	MATH 155				B		B
	BIOS 208	B		B	B		B
	BIOS 210	B		B	B		B
	CHEM 210	B		B			B
	CHEM 212	B		B	B		B
Year one Spring	ENGL 103		B			B	
	ENGL 203		B			B	
	MATH 211 or MATH 229				B		B
	BIOS 209	B		B	B		B
	BIOS 211	B		B	B		B
	CHEM 211	B		B			B
	CHEM 213	B		B			B
	Knowledge Domain	D		D	D		D
	Knowledge Domain	D		D	D		D

Year Term	Course	Program Student Learning Outcomes					
		Proficiency in biology	Communication	Research skills	Critical thinking	Writing	Scientific methods
Year two Fall	MATH 230 or STAT 200			D	D		D
	CHEM 330 or CHEM 336	D					D
	CHEM 332 lab for pre- professional and CHEM minor	D		D			D
	BIOS elective	D		D	D		D
Year two Spring	Human Diversity	P		P	P		P
	Knowledge Domain	P	P	P	P	P	P
	CHEM 331 or 337	D					
	CHEM 333 lab for pre- professional and CHEM minor	D		D			D
	BIOS elective	P		P	P	P	P
	BIOS elective	P		P	P	P	P
	Knowledge Domain	P	P	P	P	P	P

Year Term	Course	Program Student Learning Outcomes					
		Proficiency in biology	Communication	Research skills	Critical thinking	Writing	Scientific methods
Year three Fall	PHYS 210 or 253	D			D		
	BIOS 308	P		P	P	P	P
	COMS 100		D			D	
Year three Spring	Knowledge Domain	P	P	P	P	P	P
	PHYS 211 or 273	D			D		
	BIOS elective	P	P	P	P	P	P
	BIOS elective	P	P	P	P	P	P
Year four Fall	Knowledge Domain	P	P	P	P	P	P
	BIOS elective	P	P	P	P	P	P
	BIOS elective	P	P	P	P	P	P
	BIOS elective	P	P	P	P	P	P
Year four Spring	Knowledge Domain	P	P	P	P	P	P
	BIOS 494	P	P	P	P	P	P
	BIOS elective	P	P	P	P	P	P
	BIOS elective	P	P	P	P	P	P
	BIOS elective	P	P	P	P	P	P

Note. Course supports the outcome at the B=beginning, D=developing, or P=proficient level.

5. Assessment Methods

Method	Description	Target	Timeline	Person Responsible	SLO Covered
Capstone Course: (BIOS 494) Comprehensive Examination	Seniors in their last semester take a standardized test on topics listed in 1a-1e on an exam crafted to reflect similar questions on the MCAT and GRE biology subject tests.	At least 80% of the students will demonstrate proficiency in 5 areas of biology in line with national standards.	Fall and spring semester every year	Bios 494 Course Instructor	1, 2,4,6
Capstone Course: (BIOS 494) Writing Assessment	Writing assessment administered during the BIOS 494 capstone course. This is based on the results of 2 in-class essays	At least 80% of the graduating seniors will demonstrate technical writing proficiency and scientific communication skills.	Fall and spring semester every year	Bios 494 Course Instructor	2,6
Participation in the NIU Writing Across the Curriculum Program	Faculty members who incorporate student writing assignments as part of their course are solicited by the NIU Assessment Office to submit their student's papers to be evaluated by reviewers who in turn provide feedback to the instructors on their students' performance.	At least 80% of the students evaluated will meet or exceed standards for writing proficiency and communication skills.	Fall and spring semester every year	BIOS faculty/ Dept Chair	2,6
Mentored Laboratory and/or Field Research	Students are encouraged to engage in mentored research experiences	Given current capacity constraints, we would like to	Offered year-round; Department and	BIOS faculty/Dept Chair	1,2,3,4,5, 6

<p>(BIOS 370, 495, 499)</p>	<p>during their undergraduate careers. Faculty evaluate students based on performance and growth in these experiential courses. (BIOS 370, 495, 499); Research assessment based on faculty feedback during the Departmental Undergraduate Research Symposium and the University Research Day</p>	<p>see at least 50% of our majors engage in such experiences during their undergraduate careers. Of the students who engage in research, we would like to see >80% should demonstrate proficiency in the following: a) scientific communication skills b) laboratory and field research skills, c) critical thinking, d) appropriate use of the scientific method.</p>	<p>University Research Symposia held in April of every academic year.</p>		
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