Undergraduate Academic Assessment Plan 2012 2013

Biology

College of Liberal Arts & Sciences

and

College of Agricultural & Life Sciences

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Biology Major, College of Liberal Arts & Sciences and College of Agricultural & Life Sciences

Undergraduate Academic Assessment Plan

Mission Statement

Biology is the study of the many diverse forms, processes, and systems of life. These studies range across all levels of the biological hierarchy, from the simplest to most complex life forms, across all environments on the earth, and across recent and evolutionary time that interconnects ancestors to their descendants. To understand this vast diversity, the field of biology correspondingly relies on integrative and comparative approaches for the resolution of the general processes, principles, and unifying themes that govern living systems. The field of biology is therefore very interdisciplinary, and biologists rely on knowledge from the physical sciences and mathematics, as well as from across the disciplines and sub-disciplines of biology, for advances and breakthroughs. Students majoring in Biology are offered a degree that is flexible, yet ensures a broad coverage of the life sciences. The Biology major has six specializations that are jointly administered by the College of Agricultural & Life Sciences and the College of Liberal Arts & Sciences. The Biology major aligns with the missions and values of CALS, CLAS, and the University of Florida to provide undergraduate students with an intellectual foundation and comprehensive education that will result in gainful employment, productive citizenship and leadership, and lifelong learning.

Student Learning Outcomes (SLOs)

Existing SLOs in the 2012-13 undergraduate catalog

1. 1.Competence in the basic terminology, concepts, methodologies and theories used within the biological sciences.
2. 2.Ability to analyze biological information and develop reasoned solutions to problems using the processes and applications of scientific inquiry.
3. 3.Ability to discriminate ethical behavior from unethical behavior in scientific research.
4. Revised SLOs for the 2013-14 undergraduate catalog.
5. 4.Ability to communicate knowledge, ideas and reasoning clearly and effectively in written or oral forms appropriate to the biological sciences.

Content Knowledge

#1. Students identify, describe, and explain the basic terminology, concepts, methodologies and theories used within the biological sciences.

Critical Thinking

#2. Students analyze biological information and develop reasoned solutions to problems using the processes and applications of scientific inquiry.

#3. Students discriminate ethical behavior from unethical behavior in scientific research.

Communication

#4. Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the biological sciences.

New/Revised SLOs, 2013-14*	Link to 2012-13* SLOs
Content	
Students identify, describe, and explain the basic terminology, concepts, methodologies and theories used within the biological sciences.	Competence in the basic terminology, concepts, methodologies and theories used within the biological sciences.
Critical Thinking	
Students analyze biological information and develop reasoned solutions to problems using the processes and applications of scientific inquiry.	Ability to analyze biological information and develop reasoned solutions to problems using the processes and applications of scientific inquiry.
Students discriminate ethical behavior from unethical behavior in scientific research.	Ability to discriminate ethical behavior from unethical behavior in scientific research.
Communication	
Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the biological sciences.	Ability to communicate knowledge, ideas and reasoning clearly and effectively in written or oral forms appropriate to the biological sciences.

*undergraduate catalog date

Curriculum Map

Curriculum Map for:

Biology (BIOPRO, BIOBAS, BIOBSE, BLYPRO, BLYNS, BLYAPB) Liberal Arts & Sciences and Agricultural & Life Sciences

Key: **I**ntroduced **R**einforced **A**ssessed

Courses SLOs	BSC 1920	BSC 2010	BSC 2011	AGR 3303 or PCB 3063 or PCB 4522	MCB 3020/L or PCB 3134 or PCB 4674	ANS 3319C or BOT 3503 or HOS 4304 or PCB 3713 or PCB 4723C	BSC 4936	Additional Assessments
Content Knowledge								
#1	I	I	I	R	R	R	A Major Field Test	
Critical Thinking								
#2		I	I	R	R	R	A Analytical Skills Assessment Indicator of Major Field Test	
#3	I	I	I				A Bioethics Module	
Communication								
#4	I			R	R	R	A Scientific Literacy Paper	

Curriculum Map for:

Biology (BLYBTC) Liberal Arts & Sciences and Agricultural & Life Sciences

Key: **I**ntroduced **R**einforced **A**ssessed

Courses SLOs	BSC 1920	BSC 2010	BSC 2011	AGR 3303 or PCB 3063 or PCB 4522	MCB 3020/L or PCB 3134 or PCB 4674	BSC 4936	Additional Assessments
Content Knowledge							
#1	I	I	I	R	R	A Major Field Test	
Critical Thinking							
#2		I	I	R	R	A Analytical Skills Assessment Indicator of Major Field Test	
#3	I	I	I			A Bioethics Module	
Communication							
#4	I					A Scientific Literacy Paper	

Assessment Cycle

All SLOs will be assessed annually.

Assessment Cycle Chart

Assessment Cycle for:

Biology	CALS and CLAS
Analysis and Interpretation:	May-June
Improvement Actions:	Completed by August 15
Dissemination:	Completed by September 15

Year / SLOs	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge						
#1	X	X	X	X	X	X
Critical Thinking						
#2	X	X	X	X	X	X
#3	*	*	X	X	X	X
Communication						
#4	X	X	X	X	X	X

* Data were not collected for SLO 3 in 2010-2012 because this is a newly-added SLO for the major and no assessment was in place.

Methods and Procedures

The SLO Assessment Matrix is new for the 2012-13 Academic Assessment Plans. We have populated the matrix to the extent possible with the information we have available. Please complete the matrix.

Assessment Method - For each SLO, please enter the assessment method you are using – exam (course, internal, or external), project, paper, presentation, performance, etc.

Measurement – list the measurement procedure you use for this outcome. It can be a faculty-developed rubric with the minimum acceptable level identified, an exam score and the minimum passing score, or other measurement. **Required for 2012-13: Include at least one example of a rubric used to assess an SLO.**

SLO Assessment Matrix for 2012-13

2012-13 Student Learning Outcome	Assessment Method	Measurement Procedure
Students identify, describe, and explain the basic terminology, concepts, methodologies and theories used within the biological sciences.	Major Field Test	Test score
Students analyze biological information and develop reasoned solutions to problems using the processes and applications of scientific inquiry.	Analytical Skills Assessment Indicator of Major Field Test	Test score
Students discriminate ethical behavior from unethical behavior in scientific research.	Bioethics Module	Scoring developed and reviewed by the biology major Committee
Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the biological sciences.	Scientific Literacy Paper	Department rubric

Enrollment into the major as provided by Academic Advising will be used as an indirect assessment of the program. The report will be reviewed annually.

Direct assessments will be administered in BSC 4936 (Critical Analysis of Biological Research), which is restricted to seniors:

- **Content Knowledge** (SLO #1): Major Field Test for Biology (Educational Testing Service, or equivalent assessment). Assessment will consider all Content Subscore areas: cellular biology; molecular biology and genetics; organismal biology; evolution, ecology and population biology.

- **Critical Thinking** (SLO #2): Major Field Test for Biology (Educational Testing Service, or equivalent assessment). Assessment will consider only the Analytical Skills Assessment Indicator.
- **Critical Thinking** (SLO #3): Bioethics Module Quiz. This quiz and its scoring are developed and reviewed by the Biology Major Committee.
- **Communication** (SLO #4): Scientific Literacy Paper. This assignment is assessed using the Biology department rubric* which has been reviewed and accepted by the Biology Major Committee.

* See Appendix

Assessment Oversight

This Academic Assessment Plan for the Biology Major will be managed by the Assistant Director and overseen by the Biology Major Committee.

Name	Department Affiliation	Email Address	Phone Number
Bill Spencer	Department of Biology	wespencer@ufl.edu	273-0115
Members of the Biology Major Executive Committee:			
David Julian	Department of Biology	djulian@ufl.edu	392-5878
William Spencer (ex officio)	Department of Biology	wespencer@ufl.edu	273-0115
Ed Braun	Department of Biology	ebraun68@ufl.edu	846-1124
Mike Miyamoto	Department of Biology	miyamoto@ufl.edu	392-3275
Bala Rathinasabapathi	Department of Horticultural Sciences	brath@ufl.edu	392-1928
Gary Peter	School of Forest Resources and Conservation	gfpeter@ufl.edu	846-0896
Max Teplitski	Department of Soil and Water Science	maxtep@ufl.edu	392-1951
Ata Sarajedini (ex-officio)	College of Liberal Arts and Sciences	ata@astro.ufl.edu	392-0780
Elaine Turner (ex-officio)	College of Agricultural and Life Sciences	returner@ufl.edu	392-1963

Appendix: Grading Rubric for Scientific Literacy Paper (SLO #4)

Graded item	Unsatisfactory	Satisfactory
1. Title page contains descriptive title, student's name, student's Gatorlink ID, instructor's name, course, date.	Title page is missing, or is missing items, or is disorganized and poorly formatted.	Title page is complete and neat.
2. Introductory paragraph states the driving question and effectively introduces the three main points/claims.	Introductory paragraph is missing, or does not effectively define each of the three main points/claims, or prematurely provides a conclusion to the driving question	Introductory paragraph provides a clear overview of the driving question, effectively defines the three main points/claims of the paper, and does not prematurely provide a conclusion to the driving question.
3. Body of paper (paragraphs 2-4) explores the three points introduced in paragraph 1, each in its own paragraph. Main points/claims are supported by evidence.	Body of the paper does not address the main points/claims, or supporting arguments are not evidence-based, or supporting arguments do not directly relate to the points/claims.	Body of the paper clearly addresses all three main points/claims, supporting arguments are all evidence-based, and supporting arguments directly relate to the points/claims.
4. Conclusion (paragraph 5) synthesizes the three main points to provide an answer to the driving question.	Concluding paragraph is missing, or does not synthesize the evidence to provide a conclusion to the driving question, or provides a conclusion that is not supported by the evidence presented.	Final paragraph restates the main points/claims and effectively synthesizes the evidence to provide a conclusion to the driving question.
5. All references are peer-reviewed.	Cited references are not from peer-reviewed sources.	All references are from peer-reviewed sources.
6. Council of Science Editors (CSE) format is used for all in-text citations and reference list.	Citations are not included, or are not in CSE format.	Citations are included and are in correct CSE format.
7. Punctuation, spelling, grammar	$\geq$3 errors	< 3 errors
12. Concise writing	Writing is imprecise and rambling.	Writing is precise and concise.
13. Overall impact	Paper is uninteresting and not persuasive or compelling.	Paper is interesting, persuasive and compelling.