BIOLOGY ASSESSMENT PLAN 2009-2012

April 1, 2009

I. MISSION

The Biology program's mission is to prepare students for professional careers in areas such as medicine, veterinary medicine, dentistry, optometry and biology, and for acceptance into advanced graduate degree programs. The mission is consistent with the IU Kokomo Mission Statement.

II. PROGRAM GOALS AND STUDENT LEARNING OUTCOMES

A. The goals for attaining these objectives and the relationship of these goals pertaining to the overall campus mission are indicated below. The goals prepare students for professional careers in areas such as medicine, veterinary medicine, dentistry, optometry and biology, and for acceptance into advanced graduate degree programs.

B. Student Learning Outcomes and Components.

Goal 1: Content

Outcome 1: Students will describe the phylogenetic interrelationships between living organisms.
Components: observation, comparison, data collection, interpretation, evaluation.

Outcome 2: Students will describe chemical and molecular processes fundamental to living organisms.
Components: experimentation, measurement, data collection, interpretation, evaluation.

Outcome 3: Students will describe the biological world and its relationship to basic human needs and activities.
Components: measurement, data collection, observation, evaluation, calculation.

Outcome 4: Students will describe the interaction of plants, animals, microorganisms and their environment.

Components: measurement, data collection, observation, evaluation, calculation.

Outcome 5: Students will describe the cellular and molecular basis of genetics.

Components: measurement, data collection, observation, evaluation, calculation.

Goal 2: Methodology

Outcome 1: Students will apply the methods biologists use to explore living organisms.

Components: observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, employment of mathematical analysis.

Outcome 2: Students will evaluate the outcomes of scientific experiments.

Components: observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, employment of mathematical analysis.

Goal 3: Impact on Biodiversity

Outcome 1: The students will discuss the effect of the natural environment on humans.

Components: measurement, data collection, observation, evaluation, calculation.

Outcome 2: The students will evaluate the implications of human modification of the environment.

Components: measurement, data collection, observation, evaluation, calculation.

Outcome 3: The students will assess the consequences of the modifications.

Components: measurement, data collection, observation, evaluation, calculation.

Goal 4: Unifying Principles within Biodiversity

Outcome 1: The students will explain similar/identical features of living systems.
Components: observation, comparison, data collection, interpretation, evaluation.

Outcome 2: The students will explain biodiversity.
Components: observation, comparison, data collection, interpretation, evaluation.

III. Curriculum Map (updated March 2008)

[Outcomes] Students will :	BIOL L105	BIOL L321	BIOL L 364	BIOL L345	BIOL L367	BIOL L473	PLSC B203	MICR M310	MICR M315	PHSL P416	ZOOL Z315
describe the phylogenetic interrelationships between living organisms.				X	X		X	X		X	X
describe chemical and molecular processes fundamental to living organisms.	X		X		X			X		X	
describe the biological world and its relationship to basic human needs and activities.		X	X			X		X			
describe the interaction of plants, animals, microorganisms and their environment.				X	X	X		X	X	X	
describe the cellular and molecular basis of genetics.	X		X					X			
apply the methods biologists use to explore living organisms.	X	X	X			X	X	X	X		X
evaluate the outcomes of scientific experiments.					X	X			X	X	
discuss the effect of the natural environment on humans.						X					
evaluate the implications of human modification of the environment.						X		X			
assess the consequences of the modifications.			X	X		X					
explain similar/identical features of living systems.	X			X	X			X		X	X
explain biodiversity.	X		X			X	X	X	X		X

IV. Assessment of student learning planned for 2009-2012

A. Learning Outcomes: We plan to assess goal 3 (impact on biodiversity) in 2009-2010, goal 2 (methodology) in 2010-2011, and goal 1 (content) in 2011-2012.

B. - D. Assessment in 2009-2010.

Impact on Biodiversity

	MICR-M 310	BIOL-L 105 (Dr. Vincent's section)	BIOL-L345	BIOL-L 473
Outcomes	The students will discuss the effect of the natural environment on humans.	The students will evaluate the implications of human modification of the environment	The students will evaluate the implications of human modification of the environment on vertebrate taxa	Students will evaluate the impact of logging on owl populations in the Pacific Northwest (human modification of the environment).
Component(s)	Observation, evaluation	Evaluation	Evaluation	Data collection, graphical analysis, evaluation.
Activity(ies)	Assignment: Role of soil microbiota on crop yields.	Lecture exam question: Explain the role(s) of human activities in extinction vortices	Lecture exam question	Assess how the role of logging limits the viable habitat available to owls and explain the observations.
Performance Characteristics	Correct/incorrect	Correct/incorrect	Correct/incorrect	Correct/Incorrect
Benchmark	70%	70%	70%	70%

Assessment in 2010-2011.

Methodology

	BIOL L 364	BIO L367	ZOOL-Z 315
Outcomes	The students will apply the methods biologists use to explore living organisms.	The students will evaluate the outcomes of scientific experiments.	The students will apply the methods biologists use to explore living organisms.
Component(s)	Comparison, evaluation	Evaluation of evidence	Evaluation
Activity(ies)	Assignment: Comparison and analysis of different DNA sequences (prokaryotes & eukaryotes) and genes through the online GENBANK database.	Exam question	Assignment: Comparison and analysis of different vertebrate morphologies
Performance Characteristics	Correct/incorrect	Correct/incorrect	Correct/incorrect
Benchmark	70%	60%	70%

Assessment in 2011-2012.

Content

	BIOL-L 105	BIOL-L 321	BIOL-L 345	PHSL-P 416
Outcomes	The students will describe chemical and molecular processes fundamental to living organisms.	The students will describe chemical and molecular processes fundamental to living organisms.	The students will describe the phylogenetic interrelationships between living organisms.	The students will describe the interaction between organisms and their environment.
Component(s)	Evaluation	Interpretation	Evaluation	Evaluation
Activity(ies)	Lecture exam question	Assignment problem on the genetic basis of antibody diversity	Exam question	Exam question
Performance Characteristics	Correct/incorrect	Correct/incorrect	Correct/incorrect	Correct/incorrect
Benchmark	70%	70%	60%	60%

V. Ongoing Assessment

A. Describe status of your larger program assessment (II and III).

Our biology program assessment is complete. Assessment has been conducted in the biology program since 2005-2006.