MAJOR/MINOR ASSESSMENT INSTRUCTIONS

Each academic department (major and stand-alone minor) will submit annual reports on student learning. The Division Chair is responsible for assigning responsibilities for reporting. **Submit reports to the Director of Academic Assessment no later than May 15 each year.**

The report should include the following sections:

1. Profile

2. Program Objectives matrix

3. Assessment of Major/Minor—a template is included for you to complete the assessment in chart form. The five categories listed in the chart are required. You may add additional categories as needed to assist with decision making.

4. Program Changes Based on Assessment—This section should be used to "close the loop" in your assessment processes. **You will need to compare the previous year(s) with the current year to determine whether changes in the program improved student learning.**

5. Assessment Days Data Collection

6. Budget Support Needs

7. Additional information as determined by the division (optional)

Biology Major
Annual Assessment Report
May 2013

PROFILE

Number of majors: 55

Number of EDU majors: 3

Number of faculty: 3 full-time 3 adjuncts

After a period of rapid growth, we have had a constant number of majors for 3 years, with a projected large increase in incoming biology majors for the 2013-2014 academic year. To accommodate for this growth we have added an additional lab (BIO 115), and will have to have BIO 114 in the Library Auditorium with a single lecture class of ~50 students. We don't have data for previous years retention, as all students who completed the first year sequence are enrolled in Genetics as a third course in the rotation. If retention and new enrollment remains high, we may have a challenge meeting the demands of a larger student body of biology majors.

All Introduction to Biology (BIO 105/106) classes, a non-majors course, need to be covered by adjuncts. This issue will likely carry over to Spring 2014.

We currently have a vacant Physics faculty position and lost our certified faculty member for the Biology Education major. This position teaches the 2-semester Physics sequence required for all biology majors, as well as 2 non-majors science courses, including one of two 4-credit non-major science courses.

One of the top comments on our annual assessment survey was that the building needs upgrading. The question was "what would you list as priorities for changes that you believe would improve the program: e.g requirements, courses, scheduling, facilities." 15 of 28 sophomores, juniors, and seniors thought the building needed improvement, and 8 of 23 freshmen shared the same concern. We would be happy to provide information on the building needs upon request.

To meet the demands of our current biology students we have added a new B.S. for pre-med students, as well as revised the curriculum for the B.S. pre-vet and the B.A. We have diversified our course offerings, have begun to offer Biochemistry annually, placed Genetics as the third course in the introductory sequence, and updated the prerequisites for all our courses for a more streamlined student process. All of these changes were based on research in how to best promote and support our students in succeeding in their future professional and graduate pursuits.

PROGRAM OBJECTIVES

Upon completion of the Biology program, the student will

1. Demonstrate knowledge of cell ultra structure and basic cellular processes and develop an understanding of the requisites of life.

2. Converse with the basic tenets of transmission, molecular, developmental and population genetics.

3. Give an overview of the major organ system of the human body OR a comparative overview of these systems in the vertebrates. Either option will include the normal and pathological functioning of those organ systems.

4. Demonstrate knowledge of the diversity and taxonomy of organisms and the significance of variation in morphology, behavior and life history.

5. Explain the role that natural selection, genetic drift and other phenomena have had on the production of biological diversity and the role evolution has in integrating explanations of both the unity and diversity of life.

6. Demonstrate knowledge of scientific methodologies and usage of current scientific equipment and technologies.

COURSE MATRIX

Objectives met Required for Major: X = Major Role in Objective c = Smaller Contribution

Course	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6
BIO114	X	X				c
BIO115	X	X				c
BIO124	c	c		X	X	
BIO125	c	c		X	X	X
BIO301	X	X			X	X
BIO302	X	X			X	X
BIO313	X		X	c		c
BIO314	X		X	c		c
BIO317	X		X	X	X	c
BIO318	X		X	X	X	c
BIO323	X		X	c		c
BIO324	X		X	c		c
BIO401	X	X		X	X	
BIO405	X	X			c	X
BIO406	X	X			x	X
BIO450						
BIO303	X		c	X	c	X
BIO304	X		c	X	c	X
BIO302		c		X	X	X
BIO310				X	c	c
BIO322				X	c	c
BIO330				X	c	X
BIO331				X	c	X
BIO400*	X	X	X	X	X	X
BIO400L*	X	X	X	X	X	X

*This is a placeholder for around 4 courses until they are given real numbers. All of these courses meet a subset of the obejectives with all objectives being met by at least 1 of the courses

Biology MAJOR/MINOR ASSESSMENT
May 2013

*We made sure that all objectives were covered in appropriate courses though we did not collect assessable data for all objectives. This will be remedied starting Fall 2013. Below we include the data for the subset of objectives for which we do have assessable data.

Program Objective	**Method of Measurement**	**Criteria for and Threshold Level of Success**	**Data/Results Collected**	**Program Changes Based on Assessment Data (Empirical & Non-Empirical) (DO NOT fill in for EVERY objective---please provide an overview).**	**Assessment Days Data Collection**	**Budget/Support**
a. Cellular Level	ETS major field test	Our criterion is that our graduating seniors average a score of 53 or higher on this section of the ETS field test. 53 is the national average for this section.	The average score of our graduating seniors on the ETS Biology Field test for this section was 54.	We would like to improve the scores and have our seniors performing in the top third nationally for each subject. Currently many of our students perform at this desired level. As retention has increased, we have a wide range of performance and subsequently a large standard deviation. We want to focus on students who aren't meeting current standards, identifying where they lack on some of these foundational topics, and support them in achieving proficiency in emergent biological concepts.	ETS field test conducted March 6th, 2013.	We need to pay for the test which is approximately $28/student. These help us assess our students by comparing them to students at other universities with a standardized test which covers fundamental topics for undergraduate biology. We identified this as it is what our department has been doing and is a common method of assessment in similar institutions nationally.
b. Genetics	ETS major field test	Our criterion is that our graduating seniors average a score of 53 or higher on this section of the ETS field test. 53 is the national average for this section.	The average score of our graduating seniors on the ETS Biology Field test for this section was 56.	We would like to improve the scores and have our seniors performing in the top third nationally for each subject. Currently many of our students perform at this desired level. As retention has increased, we have a wide range of performance and subsequently a large	ETS field test conducted March 6th, 2013	We need to pay for the test which is approximately $28/student. These help us assess our students by comparing them to students at other universities with a standardized test which covers fundamental topics for undergraduate biology.

				standard deviation. We want to focus on students who aren't meeting current standards, identifying where they lack on some of these foundational topics, and support them in achieving proficiency in emergent biological concepts.		We identified this as it is what our department has been doing and is a common method of assessment in similar institutions nationally
c. Organ Systems	Not assessed this year.	Not assessed this year.	Not assessed this year.	Not assessed this year.	Not assessed this year.	Not assessed this year.
d. Diversity	ETS major field test	Our criterion is that our graduating seniors average a score of 53 or higher on this section of the ETS field test. 53 is the national average for this section.	The average score of our graduating seniors on the ETS Biology Field test for this section was 53.	We would like to improve the scores and have our seniors performing in the top third nationally for each subject. Currently many of our students perform at this desired level. As retention has increased, we have a wide range of performance and subsequently a large standard deviation. We want to focus on students who aren't meeting current standards, identifying where they lack on some of these foundational topics, and support them in achieving proficiency in emergent biological concepts.	ETS field test conducted March 6th, 2013	We need to pay for the test which is approximately $28/student. These help us assess our students by comparing them to students at other universities with a standardized test which covers fundamental topics for undergraduate biology. We identified this as it is what our department has been doing and is a common method of assessment in similar institutions nationally
e. Evolution	ETS major field test	Our criterion is that our graduating seniors average a score of 53 or higher on this section of the ETS field test. 53 is the national average for this section.	The average score of our graduating seniors on the ETS Biology Field test for this section was 55.	We would like to improve the scores and have our seniors performing in the top third nationally for each subject. Currently many of our students perform at this desired level. As retention has increased, we have a wide range of performance and subsequently a large standard deviation.	ETS field test conducted March 6th, 2013	We need to pay for the test which is approximately $28/student. These help us assess our students by comparing them to students at other universities with a standardized test which covers fundamental topics for undergraduate biology. We identified this as

				We want to focus on students who aren't meeting current standards, identifying where they lack on some of these foundational topics, and support them in achieving proficiency in emergent biological concepts.		it is what our department has been doing and is a common method of assessment in similar institutions nationally
f. Methods	Not assessed this year.	Not assessed this year.	Not assessed this year.	Not assessed this year.	Not assessed this year.	Not assessed this year.

Program Changes Based on Assessment (Closing the Loop)

Improvements in the Assessment Process

The Biology faculty had complete turnover and therefore an annual report was not generated for the previous year. We outlined some of the changes we implemented this year in section #1 (Profile). These were primarily changes to the curriculum that we believe are essential to the future and current success of our students. As we now have a stable unit of full-time biology faculty, we can continue to build on and improve the process, both from student learning and student assessment as we continue to move forward.

We recommend tracking student retention within the department by year including reasons for leaving.

We recommend tracking student success post-graduation.

Program Changes Based on Assessment Data (Empirical & Non-Empirical)

An annual report was not created the last 2 years, therefore there was nothing to respond to in the previous year(s).

Assessment Days Data Collection

Objectives 1, 2, 4, and 5 were assessed by the ETS biology major field report taken during assessment days. The other objectives were not directly assessed. This will be remedied for the next academic year.

We also collected data on student opinion about the program as a whole, their level of satisfaction with the program, and whether they personally felt prepared for their future beyond William Woods.

Budget/Support

We need an additional full-time faculty to cover BIO 105/106. The demand is 15 teaching hours and this cannot be covered by a single adjunct. Continually finding quality adjuncts has been a challenge, and we have had some recent adjuncts that do not perform to the expectations of our department or our University. Having a full-time faculty member in charge of these classes will insure that the quality of the instruction is at the level our students and institution expects.

We need a larger variety in upper division chemistry courses. Chemistry is a major component of any pre-professional preparation, and a wider range of courses would directly benefit our students' ability to succeed in their post graduate pursuits. This was requested by 4 of the 9

responding seniors. Our chemistry professor is consistently maxed out with teaching units and does not have the ability to offer additional courses. Currently one of the Chemistry classes is covered by a biology faculty.

We need to maintain our current budget. We use our current budget on required supplies to teach our classes and labs. A decrease in budget would compromise our ability to teach hands on instruction, maintain our equipment, and develop professionally.

Assessment Rubric
Annual Assessment Report

Assessment Component	Assessment Reflects Best Practices	Assessment meets the expectations of the University	Assessment needs Development	Assessment is Inadequate
Learning outcomes	☐ Posted measurable program learning outcomes (objectives) are routinely shared with students and faculty	☐ Measurable program learning outcomes (objectives). ☐ Learning outcomes are posted on the program website.	☐ Program learning outcomes (objectives) have been identified and are generally measurable	☐ Program learning outcomes (objectives) are not clear or measurable
Assessment Measures	☐ Multiple measures are used to assess a student-learning outcome (objectives). ☐ Emphasis on specific direct measures. ☐ Rubrics or guides are used for the measures. ☐ Measures are created to assess the impact on student performance. ☐ All measurements are clearly described.	☐ Specific measures are clearly identified ☐ Measures relate to the program learning outcomes (objectives). ☐ Measures can provide useful information about student learning.	☐ General measures are identified (e.g. student written assignment) ☐ Some measurements are described, but need further description.	☐ Assessment measures do not connect to learning outcomes (objectives). ☐ Assessment measures are not clear. ☐ No assessment measures are established.
Assessment Results	☐ If not all learning outcomes (objectives) are assessed annually; a rotation schedule is established to assess all learning outcomes within a reasonable timeframe. ☐ Data are aggregated and analyzed in a systematic manner	☐ A majority of learning outcomes (objectives) assessed annually. ☐ Data collected and aggregated are linked to specific learning outcome(s). ☐ Data are aggregated in a meaningful way that the average reader can understand.	☐ Data collected and aggregated for at least one learning outcome (objectives). ☐ Data collection is incomplete ☐ Standards for student performance and gaps in student learning are not identified.	☐ Learning outcomes (objectives) are not routinely assessed. ☐ Routine data is not collected. ☐ N/A Program is too new to have collected assessment data.

	☐ Data are collected and analyzed to evaluate prior actions to improve student learning. ☐ Standards for performance and gaps in student learning are clearly identified.			
Assessment Component	**Assessment Reflects Best Practices**	**Assessment meets the expectations of the University**	**Assessment needs Development**	**Assessment is Inadequate**
Faculty Analysis and Conclusions	☐ All faculty within the program synthesize the results from various assessment measures to form specific conclusions about each performance indicator for a learning outcome (objectives). ☐ Includes input from adjunct faculty. ☐ Includes input from outside consultant.	☐ All program faculty receive annual assessment results and designate program or department faculty to meet to discuss assessment results in depth. ☐ Specific conclusions about student learning are made based on the available assessment results.	☐ Some program faculty receive annual assessment results ☐ Faculty input about results is sought	☐ Annual assessment results are viewed only by the faculty who authored the report. ☐ Faculty input is not sought. ☐ Conclusions about student learning are not identified. ☐ N/A Program recently started or too few graduates to suggest any changes.
Actions to Improve Learning and Assessment	☐ All assessment methods, timetable for assessing, and evaluating the effectiveness of action plans are included. ☐ A comprehensive understanding of the program's assessment plan and suggestions, if needed, for	☐ Description of the action to improve learning or assessment is specific and relates directly to faculty conclusions about areas for improvement. ☐ Description of action includes a timetable for implementation and identifies who is responsible for action ☐ Actions are realistic, with a good probability	☐ At least one action to improve learning or improve assessment is identified. ☐ The proposed action(s) relates to faculty conclusions about areas for improvement. ☐ Adjustments to the assessment plan are proposed but not clearly connected to	☐ No actions are taken to improve student learning. ☐ Actions discussed are not connected to data results or analysis. ☐ N/A Program recently started or too few graduates to suggest any changes.

	altering assessment practices is articulated.	of improving learning or assessment.	data ☐ Minimal discussion of the effectiveness of the assessment plan; minimal discussion of changes, if needed.	

Additional Comments:

The template should have also asked for the number of minors as well as the other concentrations offered. We need to include the numbers of students who are declared in the concentrations: Pre-Med and Pre-Vet. Leads to a discussion on how to assess the concentration areas offered within this program as they cross programs (eqs, chm, phy).

On the template, BIO 450 contributes to no objectives?

The four courses that are taught with BIO 400 as the course number need to go through the curriculum process of obtaining a true course number. This can be done through the registrar's office.

It is OK to assess the program objectives on a rotation basis (objectives C and F were not assessed last year). Please include the rotation for when these objectives will be assessed and how it will be achieved. The report states that these will be assessed, but please articulate how the program intends to assess these objectives.

Looking at the data in the assessment chart, how is the data connected to the program objectives as stated in the courses? Are there course assignments/projects that also correlate to the data? Did the program look at data dependent upon the courses students had taken? The disconnect is in the chart stating all the assessment happening in courses but then the assessment data is all from assessment day and not at all connected to courses.

The assessment chart discusses the desire to raise student scores on the national ETS exam, but there is no discussion on how to do that?