WSU B.S. in Biological Sciences
2019-2020 Assessment Plan

Mission Statement

The mission of the Bachelor of Science in Biological Sciences is to prepare students to follow a career in the sciences and/or to enter post-graduate professional schools.

B.S. in Biological Sciences Program Outcomes

Students successfully completing the WSU B.S. in Biological Sciences should be able to:

1. Demonstrate an understanding of the following core concepts: evolution; biological structure and function; information flow, exchange, and storage; pathways and transformations of energy and matter; and biological systems
2. Have the ability to apply the process of science;
3. Demonstrate the ability of quantitative reasoning;
4. Use modeling and simulation;
5. Tap into the interdisciplinary nature of science;
6. Communicate and collaborate with other disciplines;
7. Understand the relationship between science and society.

2019-2020 Assessment Learning Outcomes

The learning outcomes for the B.S. in Biological Sciences are currently being revised. For the 2019-20 assessment, the following learning outcomes will be utilized:

1. Students will show adequate progress through the curriculum and graduate in four to six years;
2. Students will demonstrate an understanding of the core concept of evolution.
3. Students will demonstrate mastery of science communication through writing in the biological sciences.

Assessment 1 – Adequate Progress

Learning Outcome

Students will show adequate progress through the curriculum and graduate in four to six years.

Data Sources

For all students graduating with a BS in Biological Sciences between Spring/Summer 2019 and Winter 2020, we used data gathered from the Office of Institutional Research that describes the number of semesters required students to progress from (a) first-time enrollment in Bio 2600 (Cell Biology) to first-time enrollment in Bio 3070 (Genetics); (b) first-time enrollment in Bio 3070 to first-time enrollment in Bio 4200 (Evolution); and (c) first time enrollment in Bio 4200 to graduation.

Data Gathering and Timeline
Data were gathered in May of the assessment year, including students graduating in the Spring/Summer, Fall, and Winter terms.

Data Evaluation
The number of semesters needed to progress among the three courses and graduation for each student during the assessment period will be tabulated, and the percent of students meeting the minimum criteria for each transition will be reported.

Criteria for Acceptable Performance
75% of students graduating with a BS degree in Biological Sciences will complete their degree in ten semesters or less. Moreover, students will meet the following benchmarks:

(a) 60% of students will successfully progress from BIO 2600 to BIO 3070 in four semesters or less;
(b) 75% of students will progress from BIO 3070 to BIO 4200 in three semesters or less; and
(c) 90% of students will progress from BIO 4200 to graduation in two semesters or less.

Assessment 2 – Understanding of the core concept of evolution

Learning Outcome
Students will demonstrate an understanding of the core concept of evolution.

Data Sources
Student final grades from BIO 4200 (Evolution), the current capstone course in the BS degree, will be used as an assessment tool for the 2019-20 assessment year. Future assessments will utilize specific questions from this and other courses as assessment tools to examine students' understanding of the core concept of evolution.

Data Gathering and Timeline
Final grades from Spring/Summer 2019, Fall 2019, and Winter 2020 will be utilized for this assessment.

Data Evaluation
Combining the data from the three semesters of the assessment period, the number of students earning a letter grade of "B-" or higher will be tabulated, and the percent of students meeting this minimum criteria for this learning outcome will be reported.

Criteria for Acceptable Performance
A minimum of 75% of students completing their BS degree in Biological Sciences will earn a minimum letter grade of "B –" in the capstone Evolution course.

Assessment 3 – Mastery of written science communication

Learning Outcome
Students will demonstrate mastery of science communication through writing in the biological sciences.

Data Sources

The undergraduate programs in Biological Sciences require that students successfully complete one of three writing intensive courses, in which they complete multiple writing assignments and drafts designed to encourage students to read and understand the primary literature in biology and to communicate this information in writing. The three writing intensive courses (BIO 4110: Biomedical Technology and Molecular Biology, BIO 4120: Comparative Physiology, and BIO 4130: General Ecology) each require a final term paper assignment that is graded using a common rubric (see attached file). Data for this assessment will include the grade distributions based on the points awarded to each student for each of the three courses offered during the assessment period.

Data Gathering and Timeline
Final rubric scores for the term paper assignment will be collected from the three writing intensive courses offered during the assessment period.

Data Evaluation
Combining the data from the three writing intensive courses, the number of students earning at least 80% of the rubric points (58 of 70 points) will be tabulated, and the percent of students meeting this minimum criterion for this learning outcome will be reported.

Criteria for Acceptable Performance
A minimum of 80% of students completing their BS degree in Biological Sciences will earn a minimum letter grade of “B –“ in the capstone Evolution course.

Writing Intensive CoursesTerm Paper Grading Rubric for BS in Biological Sciences

Pts.	Section	A	B	C	D or F	Article #*
____ of 10	Introduction	clear, well organized, describes significance, sets up the paper well, introduces scientific progression well, professional tone	fairly clear, okay organization, some significance, partially sets up paper, acceptable introduction to scientific progression, acceptable tone	excess reader time needed, weak organization, weak significance, weakly sets up paper, weak introduction to scientific progression, unprofessional tone	not at all clear, poor organization, poor/no significance, poor/no set-up of paper, poor/no introduction to scientific progression, unprofessional tone	
____ of 5	Articles: purpose	clear, convincing	somewhat clear, somewhat convincing	weak clarity, weakly convincing	not clear, absent or unconvincing	1 2 3 4 1 2 3 4
____ of 10	Articles: approach	clear, flow from purpose	somewhat clear, some flow from purpose	marginally clear, weak flow from purpose	not clear or absent, no link to purpose	1 2 3 4 1 2 3 4
____ of 10	Articles: results	clear, explain results well, flow from purpose & approach	somewhat clear, acceptable results, flow somewhat from purpose & approach	excess reader time needed, weak results, flow weakly from purpose & approach	not clear, poor/no results, poor flow from purpose & approach	1 2 3 4 1 2 3 4 1 2 3 4
____ of 10	Articles: conclusions	clear, strong conclusions, flow logically from results	somewhat clear, acceptable conclusions, flow somewhat logically from results	excess reader time needed, weak conclusions, flow weakly from results	not clear, poor/no conclusions, flow poorly from results	1 2 3 4 1 2 3 4 1 2 3 4
____ of 15	Transitions	clear, connect articles well, logical	somewhat clear, connect articles oaky, somewhat logical	excess reader time needed, weak article connections, weak logical flow	not clear, poor/no connections, poor logical flow	1 2 3 4 1 2 3 4 1 2 3 4
____ of 5	Paper Conclusion	clear, summarizes findings, good significance, good overview of scientific progress	somewhat clear, acceptable summary, acceptable significance, acceptable overview of scientific progress	excess reader time needed, weak summary, weak significance, weak overview of scientific progress	not clear, poor/no summary, poor/no significance, poor/no overview of scientific progress	
____ of 5	Overall	pleasure to read, well organized, correct citations, <2 spelling & grammar errors	acceptable to read, acceptable organization, acceptable citations, few spelling & grammar errors	effort to read, weak organization, weak citations, 4-5 spelling & grammar errors	hard to read, poor organization, citations incomplete excessive spelling & grammar errors	