

# ACADEMIC PROGRAM REVIEW

## Fairmont State Board of Governors

Program with Special Accreditation  Program without Special Accreditation

Date Submitted 12-08-2022

Degree Program: Bachelor of Science in Biology

### INSTITUTIONAL RECOMMENDATION Approved by the Board of Governors (§ 5.2.8)

The institution is obligated to recommend continuance or discontinuance of a program and to provide a brief rationale for its recommendation:

- 1. Continuation of the program at the current level of activity;
- 2. Continuation of program with corrective action (for example, reducing the range of optional tracks or merging programs);
- 3. Identification of the program for further development (for example, providing additional institutional commitment);
- 4. Development of a cooperative program with another institution, or sharing courses, facilities, faculty, and the like;
- 5. Discontinuation of the Program

*Rachel Cook*

Signature of person preparing report:

12/03/2022

Date

*Steven Paul*

12/8/22

Date

Signature of Dean

*Anthony R. O'Neil*

12/08/2022

Date

Signature of Provost and Vice President for Academic Affairs:

*William B. Phillipin*

04/20/23

Date

Signature of President:

*Thy*

04-24-2023

Date

Signature of Chair, Board of Governors:

## Executive Summary for Program Review

(not to be more than 2-3 pages)

Degree Program:	Bachelor of Science in Biology
College or School/Department:	College of Science and Technology/Dept of Biology
Chair/Program Coordinator	Dr. Deb Hemler / Dr. Rachel Cook
External Reviewer:	Dr. James Walters, Bluefield State College
Reviewer Email:	jwalters@bluefieldstate.edu

A. Synopses of significant findings, including findings of external review (include the external reviewer(s) information).

Dr. Walters provided a very thorough and positive review of the Biology program. The following is a summary of his findings.

Strengths:

- Program faculty are committed to providing high quality classroom instruction, performing original research with students, and promoting lifelong learning. The faculty are the consistent strength of FSU's Biology Program.
- The curriculum is comprehensive and provides good preparation for a variety of careers, including advanced degrees.
- Biological concepts are taught with a focus on understanding and applying concepts and synthesis of ideas. Initiative and independence are fostered through writing and research.
- The Biology program exceeds the WV-HEPC annual productivity standards, and the five-year enrollment pattern shows a growing and healthy program.
- The program is progressively challenging and implements higher-order thinking courses as it proceeds.
- The success rate of graduated students is above the national average.

Areas for Improvement:

- The program does not currently have the adequate number of full-time faculty needed to meet the mission of the program. Hiring two new full-time faculty members to replace those that have left or retired should be a priority of the administration.
- The Biology Department is housed in a building that is poorly maintained. Recent water leaks have led to the damage of valuable equipment.
- More internship opportunities for students would help them make job network connections and expand their view of skills beyond the classroom.
- The current budget for the Biology department is insufficient for a program of this size. The Board of Governors should increase the budget of the Biology program to align with the excellence of the faculty.
- FSU faculty should be encouraged by the use of release time and institutional financial incentives to engage in more research.
- The faculty needs additional financial support from the Board of Governors to make an excellent team into an excellent program.

- B. Plans for program improvement, including timeline
- **Hire two full-time faculty members to replace those that have left or retired.** First position posted August 2022. The second will be posted in Jan 2023
  - **Create a Biomedical minor.** To be submitted to Curriculum Committee in 2023.
  - **Create the following courses:**
    - An entry level biology course for new students with low test scores and/or for nonmajors as a general education elective. 2025
    - An online BIOL 1105/1106 series for the Winter and Summer semesters to allow low performing students to catch up. 2023
    - A majors course in biostatistics. 2024-25
    - A junior/sophomore seminar course to help students prepare for moving onwards once they complete their Biology degree. Fall 2023
    - A section of GIS cross-listed as a biology elective. Spring 2024
  - **Change our Writing Intensive course from BIOL 3390 to BIOL 3368/3370 or BIOL 4485.** Prepare submission to Curriculum Committee for 2023
  - **Resurrect BIOL 3330 - Aquatic Ecology and BIOL 3331 - Terrestrial Ecology.** Run one of these as an elective in the Fall 2023 semester
  - **Add an activity to the Senior Seminar course (BIOL 4485) that includes the creation of LinkedIn profiles for students to facilitate tracking of graduates.** Implemented in Fall 2022
  - **Apply for grants to purchase a new microplate reader, balances, and probes and sensors for the logger pros.** Ongoing
- C. Identify weaknesses or deficiencies from the previous review and describe how these have been addressed.
- **Improved methodology for tracking graduates.** We updated our survey and now send it out early in the school year to gather as much data as possible. A centralized data table on the Fairmont State OneDrive allows faculty to enter information about graduates as it comes to their attention through other, more informal pathways.
  - **Improved collection and analysis of BIOL 1105/1106 pre- and post-quiz data.** Collection of this data has been facilitated by the linking of all lab sections.
  - **Increased student participation in research:** All Biology majors now participate in student research.
  - **Development and implementation of a rigorous, two-semester Human Anatomy and Physiology course.** This course was successfully developed and implemented and is now listed in the course catalog as BIOL 3301 – Advanced Human Anatomy & Physiology I, and BIOL 3302 - Advanced Human Anatomy & Physiology II.
  - **Pilot Cell Biology course.** This course was successfully developed and implemented and is now listed in the course catalog as BIOL 3395 – Cell Biology

- D. Five-year trend data on graduates and majors enrolled (Data will be provided by the Director of Institutional Research and Effectiveness).

			<b>HEPC Series 10</b>		
AY	Enrollment	Degree Awarded	<b>Productivity Standards Programs are required to meet at least one of the indicators listed below.</b>		
2021-22	95	17			
2020-21	128	35			
2019-20	105	9			
2018-19	107	11			
			<b>Average of Five Most Recent Years</b>		
2017-18	91	5	Degree Level	Enrollment	Degree Awarded
5-YR AVG	105.2	15.4	Masters	N/A	N/A

- E. Summary of assessment model and how results are used for program improvement (A full Assessment Report is in TaskStream and can be downloaded or viewed by academic year for summation).

Over the past five years we have identified and quantified our expectations for students in the Biology program as a series of outcomes, direct measures, and satisfactory performance standards in TaskStream. Most of our assessments are conducted in four upper-level classes (BIOL 3306 – Ecology, BIOL 3368 or 3370 – Animal or Plant Physiology, BIOL 3390 – Molecular Biotechnology, and BIOL 4485 -- Senior Seminar). Our Biology program currently has three outcomes:

- Student Learning Outcome 1: Biological Knowledge - Demonstrate a broad range of fundamental biological facts and theories
- Student Learning Outcome 2: Written Communication - Organize and critically evaluate biological information and present it clearly in written form.
- Student Learning Outcome 3: Oral Communication - Organize and critically evaluate biological information and present it clearly in oral form.

Over the review period, 80% to 100% of our students met the satisfactory performance standard for the total score and 70% to 100% of our students met the standard for SLO1. This is a slight increase of the findings from the previous 5-year review. All data show that students are meeting or exceeding the satisfactory performance standards set for SLOs 2 and 3.

- F. Data on student placement (e.g., number of students employed in positions related to the field of study or pursuing advanced degrees).

A total of 76 students graduated with a Bachelor of Science degree in Biology during the assessment period (2017-2022). Of these, no information is available for 42% (n=32) of students. However, of those whose post degree awarding pathway is known, 97% of the students are placed in either graduate/professional school or have secured employment in a degree-related field or internship.