



## Biology Program Review 2022-23

Closing MOU

Date: September 13, 2023

---

### Overview

---

**Degree/Certificate Programs Reviewed:** Bachelor of Science Biology  
Master of Science in Biology

**Department Chair & Dean:** Alexander van der Linden, Chair; Louisa Hope-Weeks, Dean

**External Reviewers & Affiliation:** Dr. Andrew Chisholm, Professor and Associate  
Dean, School of Biological Sciences, University of California San Diego  
Dr. Lori Kayes, Associate Department Head, Department of Integrative Biology,  
Oregon State University  
Dr. Al Savitzky, Professor of Biology, Utah State University

**Date of External Visit:** March 6-7, 2023

---

### Review Process Summary

---

The Biology program was scheduled for regular program review as mandated by the Board of Regents and University policy. A self-study document for the department and its programs was developed by the department faculty and completed in the Fall of 2022 for Biology programs. These respective reports were provided to the reviewers before they conducted a visit on March 6-7, 2023. The external reviewers reviewed the program and met with relevant faculty, staff, students and administrators to determine the department's accomplishments, examine strengths and weaknesses, and identify opportunities as it plans for the future. A final report was issued by the review team shortly after the review visit. In accordance with institution practice, responses to the review were solicited from the department and the dean. A final meeting took place on August 22, 2023. This document represents the final MOU of recommendations and findings from the review.

---

**Signatures**


---

Executive Vice President &  
Provost:


Date: 9/26/2023

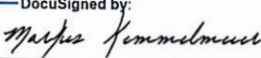
Jeffrey S. Thompson

Vice Provost, Undergraduate  
Education:


Date: 9/18/23

David Shintani

Vice Provost, Graduate Education  
& Dean, Graduate School

DocuSigned by:  


Date: 14-Sep-2023 | 11:43 AM PDT

Markus Kemmelmeier

Dean, College of Science

DocuSigned by:  


Date: 14-Sep-2023 | 9:51 AM PDT

Louisa Hope-Weeks

Chair, Department of Biology

Alexander van der Linden

Digitally signed by  
 Alexander van der Linden  
 Date: 2023.09.13 16:43:25  
 -07'00'

---

**Major Findings and Conclusions**


---

Established in the early 1960s, the Department of Biology is one of the premier teaching, research, and outreach life sciences units within the College of Science (COS) and the University of Nevada, Reno (UNR) campus. UNR has been recognized as an R1 (Doctoral Universities - Very High Research activity) in the Carnegie Classification of Institutions of Higher Education. Over the last 15 years, the Department of Biology has experienced a tremendous growth in undergraduate enrollment numbers within the University. With 37 continuing instructional faculty, the Department serves as one of the largest departments on campus with >1,200 Biology and Neuroscience undergraduate majors and >80 graduate students generating more FTE than several other departments. It has a vigorous, high quality research program that, in the last 5 years, brought in an average of \$6.1 million per year in grant funding.

The Department of Biology engages in considerable regional, national, and global research efforts that are funded by numerous federal and state agencies, including the National Institute of Health (NIH), the National Science Foundation (NSF), the US Department of Agriculture (USDA), the Department of Defense (DOD), the National Oceanic and Atmospheric Administration (NOAA/USGS) and the US Fish and Wildlife Service (USFWS). The Department provides a strong Biology curriculum and foundation for careers in biological sciences upon graduation or for further professional training in fields such as medicine, dentistry, nursing, conservation biology, wildlife biology, and biotechnology. Many undergraduate majors carry out original research projects and earn post-graduate degrees in biological sciences and related health fields. The Department includes faculty members whose primary responsibilities are to teach and advise undergraduate students. They are at the forefront of new and innovative pedagogies for preparing undergraduates for successful career paths, including an outstanding and large peer-driven learning program.

The Department also offers its own Master's degree program, and actively participates in several large interdisciplinary graduate programs on campus, including the Ecology, Evolution and Conservation Biology (EECB), the Molecular Biosciences (MB) and the Integrative Neuroscience (INS) programs. The Department is highly engaged in university and professional services with faculty members serving as editors of international

journals and as panelists and/or reviewers for major granting agencies, including USDA, NIH, and NSF. The Department actively participates in outreach to the community, including Broader Impacts efforts funded by NSF awards and also informally via faculty and student-driven presentations at local and regional elementary, middle, and high schools. Other outreach programs include the Brain Awareness Week, and annual visits by K-12 students (>2,000) and teachers to the UNR Natural History Museum

The committee was favorably impressed with the Department of Biology, faculty, students (undergraduate and graduate). They evaluated the Department overall as highly functional and a strong team player across the UNR campus. The Department provides facilities and support for research across a wide range of biological disciplines. Overall the review committee was impressed by the quality of the Department's research portfolio which appears to be primarily maintained by the enthusiasm and entrepreneurial spirit of the faculty, with modest levels of support from the campus both at administrative levels and in physical facilities.

Though the committee had an overall favorable view of the program there were still areas for improvement identified.

- Create a more forward-looking strategy regarding inclusion and diversity.
- The committee views programmatic assessment as the main area for improvement in the undergraduate (and graduate) programs. The impacts of the pandemic are likely part of the reason for lack of such programmatic assessment.
- Most of Biology curriculum is largely discussion and group work based, following best practices, but there are challenges supporting this type of teaching due to class sizes and lack of graduate support.
- Maintain current funding for Peer Teaching program requiring resources.
- The student to advisor ratio is incredibly high, in addition after three terms the students move to a faculty advisor which seems unattainable with the amount of duties the faculty have.
- Inequities in graduate student support between the three major interdisciplinary graduate programs, noting that stipend amounts have declined and the MS program in Biology is in a steep decline. In addition, different stipend amount for MS student's vs PhD students doing the same work.
- Lack of institutional fellowships for the very best applicants to the graduate program
- Lack of funding for a sufficient number of graduate teaching assistantships to allow for lab size reduction, by increasing number of labs.
- Establish structured forums/faculty meetings, or structured career development processes, allowing new faculty to meet with senior faculty and administrators to understand campus procedures and to lower institutional barriers.
- Lack of staffing in the department that impacts graduate students and faculty. Acquire additional staff dedicated to graduate training programs and post-award fund management. And support for faculty when they apply for private awards or approaching private donors.
- Better security for parking of departmental and faculty-owned vehicles for teaching and research.
- Prioritize construction of a new life sciences building with significant space for Biology faculty research programs.

---

**Next Steps for this Program/Department (topics will vary)**

---

- The department will form a new DEI advisory committee consisting of faculty and students to assess the current state and review existing policies and practices to identify gaps and areas of improvements in DEI.
- The department will move forward with programmatic assessments. The department plans to develop and conduct satisfaction surveys of students in Biology BS and MS degree programs similar to evaluations currently done for individual courses. They will establish a post-survey to be given to students at the end of program completion delivered through the online WebCampus portal (an exit interview of sorts). This student satisfaction survey would collect student opinions on the program and its goals, as well as collect information on students' future plans, such as job placement, graduate school, etc. Second, the department plans to implement appropriate tools identified by our teaching faculty to track student learning and attitudes over time. The student learning objectives (SLO) of the Biology BS and MS programs will be assessed by establishing a post-test at the end of program completion. This post-test would consist of questions from pre-tests or exams given in required Biology courses to track student performance over time.
- The department will enhance and improve the Biology curriculum, including new course offerings and lab sections. For example, they plan to develop a Molecular Genetics course (Biol 304) to provide more in-depth genetic principles. For the neuroscience curriculum, they now offer a new computational course, and plan to expand lab sections of the Techniques in Neuroscience lab course (NS 479, formally Biol 479) taught by Biology faculty. This fall they offered new Anatomy & Physiology lecture and lab courses (Biol 323/324 A/L) and lectures for majors with particular emphasis on research-based careers. However, doing so and to sustain increasing student demand, it will require additional graduate teaching assistantships to teach these lab sections.
- The department strongly agrees with the reviewers' recommendation to continue support of the Peer Teaching program as a priority.
- To increase undergraduate advising capacity, the department will make changes such that there will be 4 biology major advisors (compared to the current 3 advisors), and 2 neuroscience major advisors (compared to one advisor). This would bring the department advising capacity at ~200:1 for the combined biology and neuroscience curriculum (~1,200 total majors), and well below the national benchmark.
- The department supports a market-competitive strategy and institutional fellowships to attract graduate students in their respective fields, as top students may be inclined to attend elsewhere. To improve equity in graduate support between graduate programs, the department will explore options and seek input and feedback from the three interdisciplinary graduate programs (EECB, MB and INS) and its faculty.
- The department is in the process to work together with senior faculty, biology staff and administrators, to start monthly or semi-monthly faculty meetings focused solely on specific business issues by sharing knowledge and providing mentoring opportunities.
- Ideally, because of the size of the department, biology should have at least 5 administrative staff in the office, including staff for direct support of graduate training programs and post-award management.
- The department will prioritize a new Life Sciences building and seek the help from campus leadership to address issues with parking.

---

**Vital Statistics on NSHE Reports**

---

**Number of students with declared major in the program area:**

2022-23	BS Biology	827
	MS Biology	12
	PhD Biology	n/a

**Number of graduates from the program for the following years:**

2020-21	BS Biology	178
	MS Biology	3
	PhD Biology	n/a

2021-22	BS Biology	177
	MS Biology	1
	PhD Biology	n/a

2022-23	BS Biology	166
	MS Biology	2
	PhD Biology	n/a

**Program-level graduation rate using first-time, full-time,  
degree-seeking cohort at 150 percent completion time:**

2020-21	BS Biology	36%,	n=298
	MS Biology	0%,	n=3
	PhD Biology	n/a ,	n/a

2021-22	BS Biology	36%,	n=205
	MS Biology	0%,	n=2
	PhD Biology	n/a,	n/a

2022-23	BS Biology	34%,	n=281
	MS Biology	50%,	n=2
	PhD Biology	n/a,	n/a

**Headcount of students enrolled in any course related to the program (duplicated):**

2022-2023	BS Biology	9,928
	MS Biology	177
	PhD Biology	0