EXECUTIVE SUMMARY
Department of Microbiology
Weber State University
Self-Study Document, Fall 2018

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The following is a summary of the self-study document, highlighting important points. For complete information, please refer to the full self-study document.

Department of Microbiology Mission Statement

The Department of Microbiology seeks to provide a quality undergraduate education to students of Weber State University in both general education and discipline-specific courses. We strive to provide our graduates with a solid academic foundation in microbiology for further educational opportunities, and the knowledge and skills for career opportunities upon graduation. We seek to integrate into student's program of study the development of essential skills including critical thinking, problem solving, teamwork, written and oral communication, and laboratory research techniques. The Department provides opportunities for research and other scholarly activities for both faculty and students. The Department and its graduates serve as an important resource for the campus and the state of Utah in the area of microbiology. We attempt to inspire life-long learning and teach students the broad range of disciplines in microbiology. We also believe that a more knowledgeable public will be able to make more informed decisions with regard to scientific issues that impact their lives.

Curriculum

The Microbiology Department has a strong, comprehensive curriculum that balances teaching basic microbiological concepts with training in the most rapidly expanding areas of the discipline. The Department's curriculum, including courses in medical microbiology, cell culture, microbial ecology, environmental microbiology, immunology, global public health, industrial microbiology and tropical diseases, are assessed thoroughly to ensure courses prepare graduates for employment, graduate school, and professional programs. Evidence of student success is provided in the Self-study document. The curriculum aligns closely with the curriculum guidelines of the American Society for Microbiology.

New and upcoming initiatives are occurring throughout the curriculum. In general education, the faculty are implementing the new General Education Learning Outcomes (GELO's) with the "Big Questions" and Signature Assignments. We are also offering one of the first

interdisciplinary WSU courses *Microbes Rule! Microbiology in History.* Our general education courses serve as support courses for several other Departments, especially within the College of Science and Dumke College of Health Professions.

We are currently in the process of updating our major emphases to meet student demand and interest. These will include emphases in Public and Environmental Health, Medical Microbiology, and Applied and Industrial Microbiology. A new Biology Associates degree was also recently proposed to the Curriculum committee. This degree will help new students find a more efficient path to a major within the College of Science.

Faculty teaching our major's courses use a variety of innovative teaching practices and have sought out professional development opportunities for learning new methods and gaining new teaching skills. Some of these include group projects, classroom response technology, research-based labs, and presentations.

Assessment of Student Learning Outcomes

Our past 5-year assessment plan has ended, and developing a new plan is our goal for 2019. Several of our upper division courses demonstrated attainment of the learning outcomes during the last five years. We will be working on developing new Departmental assessment tools for each of our upper division courses. Faculty have been experimenting with alternative assessment techniques, but may need additional training to develop and use the tools that are currently available for assessment.

The general education designation was renewed for all three courses in 2016. Each course meets the Natural and Life Science learning outcomes set by the University and the Life Science General Education. The general education courses need to have a standardized assessment to use between sections to make reporting our outcomes more efficient.

Academic advising

Advisors in the Department are working more closely with the new staff within the College of Science advising office to provide a more streamlined process, especially for new students. The Department now has two formal advisors, and more may be needed if the number of majors increases. With the use of CatTracks and CatTracks Plans, students can more easily track their own progress, which makes advising appointments more efficient. New students are asked to meet with an advisor when they declare Microbiology as their major. We make additional efforts to monitor students' progress toward graduation and send emails encouraging them to come in for advising if needed.

Our next goal is to address retention and graduation issues by using the advising tools and data (Starfish, enrollment statistics) that are available. The advisors in the Department need more training on using these tools to identify at-risk students and intervene before they stop attending.

Program support

The new Tracy Hall Science Center is a beautiful facility in which to teach, engage with students, and conduct research. The building came with desperately needed equipment to increase laboratory course capacity. With the exception of some heavily used equipment, and maintenance of current equipment, our courses are supported better than ever.

However, during the construction of the labs, research space was sacrificed for teaching space. This has created a problem for faculty that are highly engaged in research, *but do not have dedicated research laboratories or space*. There is simply not enough space to accommodate the level of ongoing research.

Currently our biggest problem is that the "Medical Microbiology" lab *does not meet the needs of a lab where pathogens are studied*. Contaminated materials, cultures, and supplies need to travel through a main hallway to reach the autoclave room. *This is not safe for pathogen handling*. The biosafety hood was never installed, and the space is now being used for general molecular biology research applications. **We propose that room TY 466, which is in very close proximity to the autoclaves and microbiology labs, be developed into a "Pathogenic/Medical Microbiology" BSL 2 lab.**

Student research is expensive and labor intensive for faculty, but is now necessary for students to be competitive for graduate and professional school positions. Funding through the Office of Undergraduate Research for student research has brought some relief. Unfortunately, there is little incentive (research credits are only 0.25 TCH/student/credit) to support faculty who mentor students, especially during the summer. This might be addressed with a College workload model that recognizes the importance of undergraduate research.

Relations with External Communities

The Department faculty are involved with a variety of community outreach and educational activities. In addition, the Department has an active Advisory Board consisting of alumni, representatives from local industries, and microbiology professionals. The advisory board meets twice per year, and provides the Department feedback on curriculum and planning activities, and provides professional advice to students.

Student, Faculty, and Staff Statistics

The Department of Microbiology has eight tenured or tenure-track faculty members: six full professors and two assistant professors, all with Ph.D degrees. We currently have two part time adjunct faculty. Our professional staff consist of one 0.75-time administrative assistant and a lab manager with a 10-month appointment.

The Department currently has 254 majors. Within the past five years, 202 students have graduated from the Department. That is approximately 31% of all of the majors from the College of Science (Appendix F). In 2017-18, the Department had 7,116 SCHs, 35% of which

were in upper division courses. Enrollments overall have dropped somewhat in the last few years, primarily in our general education courses. This may be because other departments have stopped requiring our lower division courses, and may also be related to general enrollment trends that have been seen across the University campus. Regardless, enrollment in our upper division courses and our number of majors has remained fairly consistent.

Results from Previous Program Reviews

Our last program review was completed in 2013. The results of that review identified several issues for the Department to address. These are summarized in Standard H of the self-study. In response to the items identified in that program review, the Department took several lines of action, some of which included:

- Development of the first strategic plan in the College of Science
- Assembly of a Departmental Advisory Board
- Increased collaborations with other departments (e.g. Physics, Geosciences)
- Planning of new teaching and research spaces and equipment in the Tracy Hall Science Center
- Two new hires, including one added faculty line
- Revised and improved advising strategies
- Scheduling adjustments to increase lab capacity safely and to offer students more scheduling flexibility.
- Hiring a new laboratory manager and a new administrative assistant
- Increased attention general education courses and offerings; including the addition of "Big Questions" and "Signature Assignments" to general education courses.

We look forward to meeting with the review team and to hearing their recommendations. Of particular interest to the Department are issues related to resources, curriculum, assessment, and student recruitment, and we appreciate any feedback or advice. In addition, we hope to gather the opinions from the review team about the value of an undergraduate degree in microbiology, and how we can have a bigger impact as a resource for the University and the community.

Program Review Team:

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