

Department of Microbiology, Weber State University Program Review

Review Date: March 26-27, 2019

is, to revise course material based on evidence of learning. Some faculty were doing it

Recommendations

in the class or lab. Faculty need opportunities to talk about how they approach each course. The department could pick one particular outcome (e.g., laboratory or data analysis skills) and focus on assessing that for a year across the curriculum. As a department, brainstorm new measures of

process would help show everyone how to do it, and sends the message to faculty that the process is important and can be used to improve what is being done in the classroom or lab.

Also encourage training and professional development; create one a culture where it is expected, particularly as new faculty come in.

Standard B Curriculum:

- A. Is there evidence of thoughtful curriculum planning and review?
- B. Is the curriculum consistent with mission?
- C. Are there resources to support the program?
- D. Are courses offered in a timely manner?

Strengths: Gen Ed courses went through a formal renewal and review and there is improved collaboration with these courses and among instructors. Also, faculty are compliant with Gen Ed Revitalization efforts on campus inasmuch as Microbiology Gen Ed courses are designed around a Big Question and include a Signature Assignment to assess general education and program-level learning outcomes. A common text has been adopted by most faculty in MICR 1153, Elementary Public Health, and that has facilitated coherence across faculty in course content. The new Associates degree in Biology (BIO one-AS) is a definite strength for the department that may answer the weakness below of curriculum bottlenecks due to current Associates degrees. We hope it helps to increase efficiency to help students get through in 2 + 2 years as designed.

The Micro curriculum has a very strong set of core courses. The curriculum is filled with a variety of excellent elective course options across all areas of micry and a major strength is the presence of numerous laboratory experiences. The department offers multiple sections of same class each semester, instead of fewer large classes, which also aids student scheduling. In the case of Immunology, the lecture class was separated from the lab to give students more scheduling flexibility. The 3 MICR concentrations (public environmental health; medical microbiology; biotech & industry) should help students choose electives tailored to their interests in the field. Students appreciate the flexibility of the program and feel cared for by the faculty, most of whom seem to have open door policies. The thoughtful and purposeful curriculum planning make the program distinctive in the University and the nation.

and assessment. The WSU courses are an excellent opportunity to expose more students to the field of microbiology and we appreciate department support of these innovative general education courses.

We recommend that students be allowed to take more than 3 credits of independent research such that students can get their research going in their junior year and have adequate time to get a product for a conference presentation. This will benefit both the student and the faculty mentor to have trained students working in the lab for at least two years. As more research-intensive hires in the department occur, the department may need to consider replacing upper-division laboratories with more directed undergraduate research experiences. We also recommend that current workload policies be revisited in the department and College of Science to provide faculty more support for lab and research efforts. Students should be given the opportunity to tutor and mentor other students as teaching assistants and SIs for credit. This would help support the labs, many of which have 32 students per room.

Standard C. Student Learning Outcomes & Assessments

- a. Learning outcomes should reflect expected skills and behaviors achieved by graduation
- b. Learning outcomes support goals of program
- c. Learning outcomes linked to curriculum (with matrix)

Assessment

- a. Programs has clearly defined assessment plan
- b. Each learning outcome has a direct measure that is public
- c. Evidence of learning is collected and reported regularly
- d. Program faculty meet regularly to discuss results
- e. Assessment results are being used to improve teaching & learning (i.e., close the loop)

Strengths: The curriculum learning outcomes for the program are based on national recommendations, and reflect core concepts in microbiology. These have been mapped to all courses in the curriculum, ensuring that all learning outcomes are addressed. There is good assessment at the curricular level, and the Chair is commended for much of this work.

Areas for Improvement: While much thought has gone into mapping the program learning outcomes to courses, the Review Team believes that many faculty members are not aware of the learning outcome matrix. While we did not see any course-based learning outcomes, most faculty members said they had them. With the exception of a few faculty, it was not evident from our conversations that faculty were using the learning outcomes to direct or improve teaching. Faculty also do not seem to be sharing learning outcomes when they are teaching the same courses within the same or different semesters (e.g. MICR 1153 and MICR 1113).

For many faculty members, assessment meant the forms they fill out for reporting, and they are unclear on how that data is used. Faculty are concerned that they work hard to generate useless data. There seems to be disconnect among some faculty regarding how to use learning outcomes and assessments to improve teaching and learning. We suspect many faculty members

are doing this informally, re

-based and standardized methods of

assessment.

It was not clear that the faculty meet to discuss course learning outcomes and how they relate to overall program learning outcomes and goals, and they do not share assessment methods to determine how these learning outcomes are being assessed.

Recommendations: We highly recommend that the faculty as a whole take time, either at an annual retreat or on a quarterly/monthly basis, to share course learning outcomes and how faculty strive to assess them. Faculty teaching the same courses should be using most of the same learning outcomes. Assessment of these learning outcomes does not have to be identical, but it should address all the learning outcomes.

Faculty should divorce the assessment process in their classroom from the reporting that they do for the College and University. The kind of assessment information that is useful in the classroom is often not what is required for reporting.

Faculty should receive training and professional development on how to connect learning closed to improve student learning. There is clearly some deep knowledge of this process within the department, but it is not universal. One recommended approach is to pick a priority assessment outcome (e.g. Are students achieving our learning outcomes for quantitative skills? Or data analysis? Or certain lab skills?), and

If students are interested in Microbiology, they are directed to Chair Domek or Dr. Culumber for advising. Such centralized advising is a strength since it ensures that students are receiving consistent information about the department and curriculum. The 3 concentrations should help students choose electives by giving them even more structure within the major.

Students are encouraged to meet once a year with an advisor. The centralized advising within the department seems to be working. Students appreciate the flexibility of the program and feel cared for by the faculty, most of who seem to have open door policies. The faculty are overwhelmingly available to students, which takes a fair amount of their time. Informally, students said they hear about which courses to take from other students, including the students in the Microbiology Club.

Build Dairy is the closest thing to a formalized pipeline that works for internship and career placements. [BUILD Dairy is a network of colleges and dairy food companies and organizations in the western region. Its goal is to build university and industry linkages and they provide funding of stipends to increase the number of students conducting dairy food research.] The departmental advisory board and Dr. Keswick are also deemed significant strengths for career advising and placement.

Areas for Improvement: Students who are interested in science need to know which courses problematic with high school students who are taking college-level courses via concurrent enrollment or early college. Students may make mistakes in course selection that delay their graduation.

When asked about career decisions, students said their conversations with faculty

asking for workload changes and more support. We hope the department and administration support their efforts.

Only a few faculty members have taken advantage of professional development opportunities, and most have only been to one or two events during their careers. One barrier seems to be time since many faculty teach labs all afternoon.

Teaching is periodically evaluated by the Chair and senior faculty, but classroom teaching is rarely observed. Student evaluations appear to be one major source of information, as are assessment reports. However, studies have shown that student course evaluations provide little insight into teaching effectiveness.

The message surrounding the goals of faculty research programs is not clear and not well supported. Faculty are provided a start-up package for research with undergraduates but often not provided a laboratory or bench space in which to perform research.

Standard F. Program Support

- a. Number and capabilities of staff adequate to support mission and objective
- b. Administrative support available to assist staff
- c. Facilities, equipment and library capable of supporting program mission

Strengths: The current Administrative Assistant, Katie Nelson, is clearly an asset to the

Areas for Improvement: While these are impressive changes to almost all goals since the last review, the Review Team did not see much evidence of increased collaboration with other Departments, with the exception of the development of the Biology AS degree and the development of successful WSU courses. In addition, there was not enough change to reduce faculty SCH loads, and credit load for lab contact hours remains below the national standard.

Recommendations: A faculty workload model with lower SCH loads should be developed to support both teaching and research. This model will likely require the hiring of a new faculty line to ease scheduling and research constraints. Changes to credit load policies are needed to support the faculty in laboratory course development and teaching.