

## **Administrative Response to Program Review Bioscience Technology May 2019**

On May 3, 2019, the Bioscience Technology SAC presented their Program Review findings to an audience of PCC administrators and others with an interest in the discipline. The presentation was informative and thought provoking. It provided an opportunity for engagement with those in attendance through an informative and interactive dialogue.

This Administrative Response will: A) note particular highlights of the Bioscience Technology Program and Program Review; B) provide observations and recommendations; and C) provide the administrative response to the SAC recommendations/resource requests.

### **Noteworthy Efforts or Achievements**

- The Bioscience Technology (BIT) SAC program review presentation was engaging and thought provoking. It was helpful to hear from the advisory committee members, program graduates, faculty, support staff and to see the current lab space.
- The close alignment of the BIT program with national and professional trends in bioscience education, including the connection to the Oregon Bioscience Association.
- Strong attention to and excellent presentation of assessment, providing two strong examples of using assessment to improve teaching and learning: self-evaluation of readiness for work experience (resulting in a new course to focus on preparation) and revising the TSA to clarify and focus students on critical skills that are directly aligned with the program outcomes and essential skills: communication, teamwork, critical thinking.
- Thoughtful approach to coordinating development of teamwork and individual technical skills
- The partnership with Hillsboro High School and Madison High School to offer BIT courses as dual credit. This includes the relationships with the high school faculty that includes the creation of an extensive library guide page as a resource for high school faculty to help facilitate alignment.
- The advisory committee is known to be extremely active with the BIT program. They continuously provide industry updates and make recommendations for curricular changes. They serve as guest speakers; attend mock interviews; and ensure BIT stays connected with the community.
- Excellent job placement for program graduates.
- Use of professional social media to stay connected with former students supports both data collection and extended networking opportunities.
- With careful advising/selection of their electives within the AAS, a BIT student can transfer to PSU and be on track to graduate in 2 years in biology (or other science fields).

## Observations and Recommendations

- None

## Administrative Response to Recommendations

### SAC Related Recommendations:

- Continue to develop robust assessment of certificate and degree outcomes: 1) Add technical assessments to laboratory courses that do not yet include an assessment of student hands-on technical performance, and continue to refine technical assessments for courses that currently include them. Ensure that each individual student has mastered critical course outcomes that relate to technical performance, even in environments in which students work with lab partners and share equipment; and 2) Review behavioral expectations for students with ongoing feedback from our advisory board to ensure that upon completion students are job-ready and demonstrate professional behavior. Add more course activities like the current mock interviews, equipment demonstrations, and project presentations in which students demonstrate and are assessed on their behavioral abilities.

***We appreciate and support your goal to continue to develop robust assessments of certificate and degree outcomes.***

- Maintain and revise our curriculum based on industry needs: 1) Continue the work of the curriculum review subcommittee of our advisory board to obtain feedback from industry members regarding the knowledge, skills, and abilities required for entry level bioscience positions and evaluate our curriculum in light of this feedback; 2) Bring more awareness of manufacturing processes into the classroom; 3) Explore the use of mechatronics electives, facilities at other PCC sites such as the Willow Creek Center, and employer apprenticeships as routes for further training, especially in equipment use and maintenance; and 4) Continue to track the progress of BIT program graduates to inform future changes to curriculum. Evaluate the effectiveness of BIT teaching and learning on student placement and advancement in diverse roles including manufacturing, quality control, and research positions, as well as transfer to universities and other higher education.

***We appreciate and support your goal to maintain and revise your curriculum based on industry needs.***

- Upgrade our equipment and facilities: 1) Maintain authentic technical training through access to a broad range of standard lab equipment. Replace aging devices in the lab, many of which are decades old and in use past anticipated lifespan and ability to be supported by the manufacturer. Provide uninterrupted instruction by avoiding equipment failure during the academic term; 2) Update procedures and upgrade equipment, when determined to be out of date, in order to provide learning outcomes relevant to current industry practices; and 3) Explore the use of facilities at Willow Creek Center and other

PCC and community resources to provide further access to technical training beyond the BIT lab.

***Since this SAC related recommendation is embedded in the Administrative Support Related Recommendations, it will be addressed in the following section.***

- Enhance our network to grow enrollment and student job placement: 1) Strengthen our connections with program graduates through LinkedIn and other social media, invitations to campus and community events, and networking with instructors and current students. Draw on these relationships to deepen connections with local companies and as opportunities for future student employment; 2) Continue and expand our outreach to local high schools in order to recruit students to PCC and the BIT program. Disseminate information about career technical education, job skills that transfer across industries, and the bioscience industry to high school students, parents, and counselors. Additionally, continue and expand our outreach within PCC to improve college retention and recruit students enrolled in introductory science courses to CTE programs. Provide thorough information and advising to prospective students to set expectations and improve outcomes for students who apply to and enroll in the BIT program; 3) Continue our efforts to connect with new employers in bioscience and related fields and prepare internship and job pathways for our students with these employers; and 4) Consider offering online and/or evening certificate (100-level) BIT courses in winter, spring, or summer terms. This would expand access to bioscience training to prospective students currently unable to attend our day-time classes or start the certificate or degree program in fall term. Offering these sections would depend on multiple factors, which include: additional staff support, additional applications to the program, and sustained growth in local industry to support increased program enrollment and job placement.

***We appreciate and support the considerations in this goal. Please work with your division dean to continue to explore how to grow enrollment and student job placement.***

#### **Administrative Support Related Recommendations:**

- Support for replacing aging laboratory equipment and scaling equipment for increased enrollment: 1) Biosafety cabinets. Two of our three biosafety cabinets are 23 years old, having served well beyond their rated lifespan of 15 years. Following the failure and required replacement of one biosafety cabinet in 2018, it will be necessary to replace the two other cabinets to avoid interruption of instruction in BIT 207, Cell Culture, in fall term. With enrollment at capacity at 18 students, it is essential to have three functioning biosafety cabinets in order to offer this course; 2) Spectrophotometer. Our Beckman spectrophotometer is decades old, has broken down in the middle of previous terms, and requires an expensive annual maintenance contract to operate. Two spectrophotometers are required in order to allow efficient access in courses with up to 22 students. It is important to replace this aging device with a more modern and reliable one, such as our newer Shimadzu; 3) Inverted microscope. We currently have three microscopes, and as our enrollment increases, student wait time for microscope use increases. Having one

additional microscope would be appropriate for our enrollment levels and allow more efficient laboratory operation.

***We understand the need for equipment that is functional and up-to-date. Please work with your division dean to ensure these items are on both the campus equipment priority list and the campus Perkins funded priority list.***

- Support for increased staff hours: 1) The BIT program has benefited greatly from the increase in FTE for Carla Moentenich, our Instructional Support Technician, and hiring of Jenny Kirchler, our Student Resource Specialist serving BIT, MT, and VT in the Science & Technology Division. These two staff members have allowed the program to recruit additional students and support learning outcomes in lab courses at higher enrollment levels; and 2) Additional recruitment and enrollment would require additional FTE for instructional support and student advising.

***We understand the need for an appropriate staffing level if the program is going to expand. As stated in the SAC Related Recommendations goals, please work with your division dean to determine how the program could grow and develop specific plans for both staff and equipment that would also be needed.***

- Support for curriculum expansion: We aim to align the proposed one-year mechatronics certificate with BIT program outcomes by adding mechatronics courses to the BIT electives list or developing a specific pathway of mechatronics courses for BIT students. The process of alignment and offering sections available for BIT student enrollment may require college administrative support or funding.

***We look forward to learning more about the curricular expansion and are cognizant that curriculum expansion would require additional administrative support and funding.***

- Support for equipment upgrades: 1) Our chromatography equipment is essential for several learning outcomes in winter and spring term labs. Current equipment is functional yet outdated. Newer chromatography equipment would support additional learning objectives, such as software use to input protocol parameters, which would better prepare students for modern applications of chromatography; and 2) Chromatography and other equipment upgrades in the lab could be considered collaboratively within the Science & Technology division to identify equipment which would benefit biology, chemistry, veterinary technology, or other departments as well as BIT.

***We appreciate and support the possibility of purchasing equipment that could benefit multiple departments in the Science and Technology division. We also understand the need to keep equipment up-to-date for our students. Please work with your division dean to ensure these items are on both the campus equipment priority list and the campus Perkins funded priority list.***

- Support for networking, professional development, internal alignment, and external partnerships: 1) Continue to provide funding for faculty networking and professional development, including participation in industry events such as those hosted by the Oregon Bioscience Association, attendance at conferences and other professional development events to improve teaching, and training in new technology to inform curriculum change; and 2) Provide support for internal alignment of PCC resources such as customized training and community education to optimize training for BIT students and partnerships with external associations.

***We appreciate and support the need for professional development for faculty and staff. Please ensure your division dean is aware of the opportunities for training and other types of professional development. Requests for funding can be made to multiple departments within the college including your division, the Perkins office, Professional and Organizational Development office and occasionally through the Rock Creek Dean of Instruction office.***

## **Closing**

In closing, we want to again thank the Bioscience Technology faculty for sharing the results of your program review with us. We enjoyed learning more about the discipline, your successes and plans for the future. We look forward to supporting your ongoing work on continuous program improvement.

Administrative Response submitted by Cheryl L. Scott, with input from and on behalf of the Deans of Instruction and Dean of Academic Affairs.

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