

## **Plant Biology Undergraduate Program Review Program Response to Committee on Education Policy**

### **Overview**

We appreciate the review of our program and the suggestions to enhance student learning opportunities and to grow the student population in the major. To enhance student learning we have continued a multi-pronged approach of streamlining our curriculum, providing more diverse professional development opportunities for our students that extend beyond plans for graduate school, and maintaining invaluable research opportunities for every student. To grow the number of students in the major we are undertaking a thorough assessment of our capacity and opportunities to encourage enrollment. While we are addressing some bottlenecks in the program, notably limitations to enrollment in the BPSC 104 course, we recognize that we do have unrealized capacity to train more students. A larger challenge in growing the program is increasing student interest in a "Plant Biology" major. We are identifying ways to highlight and communicate the unique strengths of our program, including opportunities for faculty supervised research experiences and quarterly faculty advising, that may be of interest to students currently enrolled in other life-science majors at UCR. We are also developing a strategy to better brand our program for new or transfer students.

### **Responses to CEP Findings and Recommendations**

1. *The Plant Biology major should assess its capacity for growth in enrollment and identify limitations.*

We have substantial capacity for growth of the major. We are currently engaging in a full assessment of opportunities and limitations. Our program includes many faculty who can take on more undergraduates for required research activities, which would allow us to increase the number of students in our program at least by a factor of two. While faculty in the program can create additional upper-division laboratory course sections to increase growth opportunities, additional funding is needed. Our upper division lab course, BPSC 104, was identified as a critical bottleneck to growth. The teaching lab for this course, HSE1 (which is directly adjacent to a greenhouse supporting this course), is outdated and provides only 20 spaces for students. In addition, our teaching lab coordinator, who serves multiple BPSC courses, and also provides limited support for some BIOL courses is operating at the limits of his capacity. Expansion of BPSC 104 capacity will likely require additional lab support personnel.

To streamline the curriculum, we are participating in discussions with other life science departments about changes to the life science core curriculum as well as re-evaluating what components of the full core curriculum are needed for our students. We are actively discussing the justification for every course in our program to facilitate accelerated student graduation and to allow students to take plant biology courses earlier in their program. As part of this process, we will critically evaluate the prerequisites for all our upper division courses.

2. *Pursue mechanisms to increase the number of offerings of BPSC 104.*

BPSC 104 is a keystone course in our program. It is also in high demand to fulfill upper division laboratory-based class requirements in other Life Science majors. We want to both ensure that all our students have access to this class, while also increasing capacity to teach more students in total. We are now working with Divisional Dean Nugent in CNAS to allow seats in this class to be reserved for

Plant Biology majors. While we usually offer this course every quarter (including the summer), we are also looking at options to add additional sections each quarter. Addition of one 20-student section students requires an additional three hours of time in lab room (HSE1) and one 25% time teaching assistant. A fundamental constraint to increase offerings of BPSC 104 is the space limitation for laboratories in HSE1. Additional funding is needed to either modernize HSE1 and increase its size or establish a completely new teaching lab in close proximity to our greenhouse. In addition, financial support for an additional staff person supporting our teaching lab coordinator is needed. Should this not be possible, we need at least to increase the number of BPSC 104 seats reserved for students in our major, so it is guaranteed they can take this critical gateway course in their sophomore/junior years, without causing delays in graduation. However, given that BPSC 104 also serves as a critical upper division lab for majors of Biology and other life science majors, improving the infrastructure for this course to increase its capacity seems imperative. We will discuss options to leverage funding for this with the CNAS leadership.

- 3. Find ways to advertise the major as an alternative to Biology, particularly as they are finishing the core sequence of courses in their sophomore year.*

We are developing a plan to communicate with our faculty the opportunity to grow the major by advertising the program in life sciences core classes. Our faculty teach many introductory life science courses and we will expand our advertisements.

- 4. The Plant Biology Undergraduate Major website should be enhanced.*

During the next year we will undertake an assessment of the website to develop a plan for enhancement. We will focus our enhancements to recruitment of new students, improving learning for current students, and serving as a portal for graduates of our program. At the same time we will explore opportunities to enhance our social media presence. For both the website and social media engagement, the department will provide funding for a student intern.

- 5. The major should improve dissemination of information about career development.*

We are exploring how to update the recently initialized undergraduate seminar course (BPSC 191, Seminar in Agricultural Careers in the 21st Century) to provide comprehensive professional development for all of our students. This revised course will also borrow from lessons learned from our successful graduate student professional development course (BPSC 200A and BPSC 200B). We are considering making this one-unit course mandatory for all our majors.

- 6. The program should look for creative ways to engage their majors in settings that allow them to interact with faculty and each other, such as organizing additional social events and seminars/webinars.*

We will develop a more organized plan for enhancing student learning and engagement outside the classroom. We will coordinate with students in developing new engagement mechanisms. As part of this we are planning to enhance student opportunities to present in the summer at on-campus symposia, participate in departmental seminars, and greater engagement with the Botany-Entomology Undergraduate Student Association. We will also develop better mechanisms to connect students in the program to other campus clubs that BPSC faculty participate in. We are considering opportunities to

engage our students with the departmental seminar (BPSC 250) for credit or otherwise. Afterwards, they will be invited to attend the post-seminar social hour.

7. *The Course Catalog for Plant Biology should be streamlined to include only courses that are still offered, or indicate how often courses are available.*

During the prior year we updated the catalog to include only courses still offered. We will continue to check the catalog annually to better ensure it represents what is available.

8. *Identify ways of rebranding the department research in a way that will help make the case for future hires to help cover both teaching and research needs in emerging areas in Plant Biology.*

We continue to explore opportunities to communicate the extensive and innovative research conducted by faculty in the program. We are connecting needs and opportunities in the undergraduate program with more comprehensive departmental plans to align research and teaching needs for our students. As part of this effort, we are planning to enhance our already-strong connection with local community colleges to enable the program to attract a greater number of students from underrepresented STEM communities. We are also exploring opportunities to increase the visibility of the several life science majors in CNAS that are not Biology to encourage students to learn about additional options. One area of growth opportunity is highlighting the opportunities in our program for medical school applications, including the rigorous training in life sciences and uniquely the requirement for research experience.