Annual Assessment Report

Department: Biology
Academic Year: 2023-24
Date of Submission: 9-19-24
Department Chair: Steve Julio

I. Response to the previous year PRC's recommendations

Item: Six year report suggestion that the biology introductory sequence start earlier	**Response: Adopted as a Key Question and discussed extensively over the course of several department meetings during the 2023-24 academic year**
Item:	**Response**
Item:	**Response:**
Item:	**Response:**
Notes:	

II A. Program Learning Outcome (PLO) assessment
If your department participated in the ILO assessment you may use this section to report on your student learning in relation to the assessed ILO. The assessment data can be requested from the Dean of Curriculum and Educational Effectiveness.

Program Learning Outcome	
Who is in Charge /Involved?	
Direct Assessment Methods	
Indirect	

Assessment Methods	
Major Findings	
Closing the Loop Activities	
Collaboration and Communication	

or/and

II B. Key Questions

Key Question	**Reorganizing the Biology core curriculum**
Who is in Charge/Involved?	**All departmental members**
Direct Assessment Methods	**None. Conversation/deliberation**
Indirect Assessment Methods	
Major Findings	**In response to our 6-year report, the PRC noted several important considerations for the longer-term success of our program as suggested by our external reviewer, one of which was "create a biology sequence starting in the fall of students' first year." We selected this suggestion as a Key Question to evaluate during the most recent assessment period, by discussing the benefits and liabilities, as well as the logistical considerations that would need to be in place should we adopt this new curricular framework.** **We referred to this endeavor as "changing the core," since holistically this would be a major shift in the way our majors would engage the common (ie, core) courses that all majors must take within their first two years. We**

	deliberated over several scenarios that would affect both curricular offerings and teaching loads to accommodate this projected change. First, I will describe the core change itself, and then provide comments on our deliberations that highlight both benefits and liabilities. **The proposal for core change is two fold: first, we would offer the first introductory biology course during the first semester of freshman year. Second, we would flip the order of the two-course introductory series, to offer organismal/ecology material (BIO-006) in the first semester (fall, freshman year) and molecular/cellular material (BIO-005) in the second semester (spring, freshman year). These two intro courses are currently offered with molecular/cellular material in spring of freshman year and organismal/ecology material in fall of sophomore year. The rationale for this arrangement has always been that exposure to a semester of general chemistry during fall of the freshman year would be a prerequisite foundation to engage levels of organizational complexity (ie, understanding the properties of atoms, molecules, and basic chemical pathways can then be applied to understand the simple biochemical properties of cells). Last, this would mean that our third core course, Genetics (BIO-114) would be offered in the fall of sophomore year, rather than than the spring of sophomore year when it is currently offered.** **Benefits of the core change:** • **Involve students in the discipline from the outset of their college career. This will give us an extra semester to introduce them to the discipline as well as get to know a subset of the biology faculty from the start (the first course would be team-taught, as it is now).** • **Improve recruitment to the major. While we are not a "numbers-driven" major since we are one of the highest subscribed majors on campus, we have noticed a dip in the number of talented students who decide on a biology major. Being able to interact with students from the outset and nurture the curiosity of gifted students would increase the chances that those students would choose a biology major.** • **Introduce a more accessible biology to beginning students. Currently, our first intro course that focuses on cellular/molecular biology tends to be less tangible to students, and thus harder to grasp theoretically. By starting with animal biology and ecology, we hope to provide a more familiar biological focus for entry into the discipline** • **Students would start upper-division coursework a semester earlier. This would provide the flexibility to accommodate other curricular opportunities, such as research and internships, relieve the burden of impacted scheduling, and better facilitate off-campus semester opportunities, such as the semester in Uganda experience that many of our majors wish to do.**

	Liabilities of the core change: • **By far, the largest impediment to implementing the core change is staffing. For four years (and counting), we have been trying to replace Eileen McQuade's position after she moved to administration. The replacement hire would teach both the lecture and laboratory sections for the BIO-005 equivalent course, which is obviously a major component of the core sequence. It makes little sense to initiate a core change with our current staffing and then need to reorganize staffing again once we hire Eileen's replacement. We need to have that hire secured to begin the core, and as of this writing, with budgetary constraints it is not clear that we will be approved to search for this position during the 2024-25 academic year. This situation remains the single largest obstacle to putting the core change vision into practice** • **Removal of a key foundational prerequisite. As explained above, with introductory biology staring first semester of freshman year with the core change, we lose a semester of general chemistry foundation. With students coming to college less prepared academically in recent years, this could be a significant hurdle to overcome, especially as we introduce them to concepts that are directly connected to chemistry, such as structure and function of DNA and simple biochemical pathways. We decided that the benefits of starting biology coursework earlier outweighs this concern, and this concern is further alleviated by the fact that many biology programs at similar institutions do in fact begin introductory biology during the first semester of college** • **Downstream effects. The scheduling of science courses within the first two years of STEM students' colleges careers is highly orchestrated to accommodate the chemistry, biology, physics, and math requirements that make up the supporting courses for the major. A scheduling change of even one course can cause the "dominoes to fall," as it can create conflicts with other courses' lecture or lab meeting times. With three semesters being affected with our core change, there will be scheduling logjams that will need to be alleviated, which will require cooperation between multiple departments (but especially Biology and Chemistry departments)**
Recommendations	**After much discussion and deliberation, we feel that changing the core is in the best interest of our program's long-term flourishing. Implementing the change will be hindered until we can hire Eileen McQuade's replacement, and that may not happen for the foreseeable future, either due to budgetary roadblocks or, has happened for at least three hiring cycles, no valid candidates/candidates declining offers. We will revisit this proposition once a successful candidate is hired. Ultimately, we want to put ourselves in a position to best serve our students, both from the perspective of providing them the early opportunity to consider the major and by shepherding them**

	through the program with a good early experience. Changing the core accomplishes both of these objectives.
Collaboration and Communication	

III. Follow-ups

Program Learning Outcome or Key Question	
Who was involved in implementation?	
What was decided or addressed?	
How were the recommendations implemented?	
Collaboration and Communication	

IV. Other assessment or Key Questions related projects

Project	
Who is in Charge /Involved?	
Major Findings	
Action	
Collaboration and Communication	

V. Adjustments to the Multi-year Assessment Plan (optional)

Proposed adjustment	Rationale	Timing

VI. Appendices

A. Prompts or instruments used to collect the data
B. Rubrics used to evaluate the data
C. Relevant assessment-related documents (optional)