Contents

Instructional Program Review

General Information

1. Name of department (program) under review.

   Biology

2. Who is the person(s) submitting the Program Review form?

   Mike Torok

3. What is the current academic year (i.e. 2022-23)?

   2022-23

4. Please describe the department/program, its staff and faculty, etc.

   The Biology program is one of the core programs in STEM. The Biology AS-T degree is housed in the Biology program. Courses in the Biology Program also support a variety of other programs at the college. The department also supports multiple degree programs. The full-time faculty include Micha Miller, Kathy Kenna (0.5 position), Michael Torok, and Ruth MacNeille (full-time temporary position). In addition to the 3.5 full-time faculty positions, 1-3 part-time faculty also teach in the program. The Biology Program is also supported by one full-time Instructional Support Specialist (Jason Irion). Jason's work is supported by 1-3 student workers each semester. Erin Naegle left at the end of Fall 2022 to take an administrative position outside YCCD. The Biology Program is also facing the retirements of Kathy Kenna and Micha Miller at the end of Spring 2023. It is anticipated that replacements for these retirements will start in Fall 2023.

5. Please describe how this department's/program's mission relates to the college's mission and strategic goals.

   Our mission in Biology is to develop inquisitive and lifelong learners. We use our engaging learning environment (Sugar Pine and local outdoor settings) to engage students and challenge their understanding of the natural world. Students are actively engaged in the scientific process in their biology courses and are asked to think conceptually and make connections among different aspects of biology. The Biology AS-T degree specifically prepares students to successfully transfer to the California State University System. The Allied Health AS degree and the MJC Nursing Prerequisite Track (both housed within Health Program) prepare students to enter a variety of health-related fields. In addition, five other degree programs are supported with Biology course offerings. We strive to reach and support all College goals by creating a balanced instructional environment through effective curriculum review for our courses and programs. Program SLOs have been mapped to our course offerings and to Institutional SLOs. Our instructors and support staff are also reflective practitioners, using assessments and student feedback to improve both courses and the Biology Program as a whole.

1. Review the Department Summary Data Table. What are the strengths? What are the challenges or areas of improvement? What is the impact on students? Respond to a minimum of three trends such as census enrollment, FTES/FTEF, course success rate, course retention rate, etc.

According to the data provided, the number of sections offered has been declining over the past few academic years. This is due to a combination of fewer part-time faculty and a decline in full-time faculty overload during the COVID pandemic response. Fill rates and census enrollment also declined during that same period – a trend consistent with what was observed throughout the entire California Community College system. Student success rates and retention also suffered during that same period.

2. Review the Department Student Equity – Success Rates Data Table. What are the strengths? What are the challenges or areas of improvement? What is the impact on students?

Two-thirds of our students in Biology are under the age of 24 and they tend to have lower success rates than students who are older. The success rates for our younger students are slightly below the college-wide average while the success rates for our older students are slightly above the college-wide average. One area of improvement could be additional time and effort dedicated to better preparing our students (particularly those who are younger) for the rigors of college.

Regarding ethnicity, most of our students fall into either the White (71%) or Hispanic (24%) subcategories and there do not appear to be significant differences in success rate between these groups. Curiously, the Unknown and the Asian subcategories appear to have higher success rates.

The Biology student population is approximately 70% female and 30% male, which is consistent with recent historical trends for college students in general. With the unequal sample sizes, it is not readily apparent whether there is a significant difference in success rates with respect to Gender.

3. Review the Program (Department) SLO Data Table. How does your department support ISLOs? What are the strengths and challenges? What is the impact on the college mission?

Performance of Biology students across the six PSLOs generally appears to increase with Age. The Calculation and Communication PSLOs results appear to be subpar for Biology students compared to students overall. Biology students under the age of 24 appear to struggle more with the Calculation PSLO than students overall. Performance on the Career SLO for Biology students is on par with college results as a whole. Biology students appear to have better than average performance on the Critical Thinking and Knowledge PSLOs. No Biology courses map to the Culture/Community PSLOs so no data are available.

The Biology Department needs to continue, and enhance, support from the Academic Achievement Center and the Embedded Tutor program. Early referral to available

student resources should be continued with appropriate follow-through to provide the best opportunities for improved performance.

Award Data Sheet

1. Review both tables on the Award Data Sheet. What are the strengths? What are the challenges or areas of improvement? What is the impact on students?

There appear to be many students who identify as Biology majors on their initial college application, but we do not see that translating to very many Biology AS-T awards. Further investigation into this observation is the primary focus of Goal 3.

Course Data Sheet

1. Review the Course Summary Data Table for each course. What are the trends for enrollment, retention, and success rates? What are the strengths? What are the challenges or areas of improvement? What is the impact on students?

Prior to the COVID pandemic, enrollments for like Biology courses were fairly consistent across terms. We did saw a drop in enrollment, success, and retention in most Biology courses during the pandemic which have still not yet fully recovered to pre-pandemic levels. Prior to the pandemic, retention for most Biology courses was 85-92% and success rates were 79-85%. There were some lower retention and success rates for a few Biology courses that have been traditionally fully online. This is a known issue for many courses offered fully online, but still warrants further exploration into mechanisms for improvement.

2. Review the Student Learning Outcomes Data Table for each course. What are the strengths and challenges? What is the impact on the college mission?

The Student Learning Outcomes (SLO) data highlighted several issues. First, we need more data. The sample sizes for most courses are too small to draw meaningful conclusions with a high degree of confidence. Most Biology courses offered every semester have not been evaluated each semester and that needs to change heading into the next review cycle. All Biology faculty will be strongly encouraged to assess SLOs for each course every time it is offered in order to get a more representative sample. That begin said, the SLO data that were collected look promising with about 83-93% of students meeting (or exceeding) the identified learning outcomes.

1. What courses and awards are due for 5-year review? To find this information, go to the Curriculum Committee webpage and click on the following links in the left menu bar: Course 5 Year Review Tracker link and Award 5 Year Review Tracker link.

All courses and the award for Biology are current with regard to curriculum review. Three courses (BIOL40, BIOL50, BIOL150) and the award (Biology AS-T) should be reviewed by the Fall 2023 curriculum deadline to be compliant by the 24-25 catalog.

Goal Setting

On the following pages, please establish goals for your department. Keep in mind the purpose of the Program Review to drive continuous improvement, as well as to help establish a need for funding or other support to achieve improved outcomes. **What sorts of things will the department be doing, or would like to be doing, to maintain, expand, or improve excellent instructional delivery?**

This template has space to establish up to three goals. If you wish to add more goals, additional forms are available in the Teams folder.

Goal 1

1. State the status of this goal (new, in-progress, or completed):

   In-Progress

2. State this goal is one or two sentences?

   Provide students access to and provide modern resources and technology to conduct scientific inquiries for science courses and promote student success.

3. What is a short name for this goal?

   Student Success Resources

4. In what ways will achieving the goal support the college's mission and/or core values?

   The tools and resources support the College's Mission Statement of providing opportunities for discovery in a supportive and engaging learning environment where students can master foundational skills. These tools and resources also support the College's Core Values of Academic Excellence and Success as well as Transformational Learning and Growth.

5. List the college-wide strategic goals that will be addressed by this goal (include all that apply and remove any that do not apply).

   - Increase award completion
   - Reduce barriers to completion
   - Reduce equity gaps
   - Increase transfer readiness
   - Increase workforce readiness
   - Maintain institutional stability

6. What steps are you going to take to achieve this goal?

   Purchase new equipment. Properly maintain existing equipment and facilities.

7. How are you going to measure completion of this goal?

   Students will:
   - Plan a program of data gathering and analysis that employ modern scientific procedures and technology.
   - Demonstrate social and professional skills needed to be successful in the modern work place (e.g. communications, working in groups, working with technology).
   - Write lab reports and research papers.
   - Be evaluated in lab using both formative and summative assessments to determine their content knowledge and critical thinking skills as well as their understanding of safety protocols, proper use of lab equipment, and techniques.
   - Outcomes will be assessed in a variety of ways across the various Biology courses.

8. If this goal was completed or is in progress, please provide an update and summarize efforts.

Partially Completed; In-Progress

9. Briefly describe or list the types of resources (staffing, equipment, technology, facilities, etc.) that are needed to support and achieve this goal. Then enter all resource requests through the Resource Allocation Requests link below.

Previous Equipment Requests: - Replace an old wooden culture box with a sanitary, acrylic laminar flow hood for tissue culture experiments in BIOL-6 (COMPLETE) - Replace dissected cadavers to be used in BIOL-30, BIOL-10, and BIOL-60 (COMPLETE) - Purchase a portable ductless fume hood for experiments done in BIOL-10, BIOL-6, and BIOL- 17 instead of utilizing the Chemistry instrument room (COMPLETE) - Bat station and software (RESCINDED) - Additional anatomical models to support a 3-dimensional understanding of Human Anatomy. (COMPLETE) - Paddle boat, cover, oars (COMPLETE) Facilities: - Continue to provide funds to maintain the reverse osmosis/deionized water (RO/DI) system, autoclave, ice machine, and other equipment maintenance. (ONGOING) - Floating dock (IN-PROGRESS) New Equipment Requests: - Refurbish or replace large freshwater tank in Sugar Pine 107 for research related to management of the San Diego Reservoir.

Resource Allocation Requests

- Enter requests in the Program Review Resource Allocations Request From (Secured – YCCD Login Required) located on the Program Review webpage under the Resource Allocation Requests heading.

Goal 2

1. State the status of this goal (new, in-progress, or completed):

   In-Progress

2. State this goal is one or two sentences?

   The Columbia College Science staff propose to purchase and install a handicapped accessible 30-foot floating EZ dock on the San Diego Reservoir. Students in the Biology and Forestry & Natural Resources courses would have safe access and be able to use the pond more effectively as an outdoor classroom. Students would be able to take samples, monitor progress of in situ experiments, as well as study the wildlife and ecology in the pond and surrounding area.

3. What is a short name for this goal?

   Floating EZ Dock

4. In what ways will achieving the goal support the college's mission and/or core values?

   This dock will support Transformational Learning and Growth as well as Academic Excellence and Success. Students will be able to actively engage in learning activities promote an awareness of sustainability and a positive campus environment.

5. List the college-wide strategic goals that will be addressed by this goal (include all that apply and remove any that do not apply).

   - Increase award completion
   - Reduce barriers to completion
   - Reduce equity gaps
   - Increase transfer readiness
   - Increase workforce readiness
   - Maintain institutional stability

6. What steps are you going to take to achieve this goal?

   The design for the dock has been forwarded to the Division of the State Architect (DSA) for review.

7. How are you going to measure completion of this goal?

   Once approved by DSA, the dock would need to be purchased, installed, and inspected.

8. If this goal was completed or is in progress, please provide an update and summarize efforts.

   Approvals by DSA typically take 3-5 years depending on the complexity of the project.

9. Briefly describe or list the types of resources (staffing, equipment, technology, facilities, etc.) that are needed to support and achieve this goal. Then enter all resource requests through the Resource Allocation Requests link below.

   Incorporation of experiments in appropriate courses for gathering and analyzing data in Microbiology, General Biology, Introduction to Environmental Science, and many Forestry & Natural Resources. Ongoing assessments of our own ecosystems can prompt proper management and sustainability of agreed upon outcomes and offer unique opportunities for student engagement.

Resource Allocation Requests

- Enter requests in the Program Review Resource Allocations Request From (Secured – YCCD Login Required) located on the Program Review webpage under the Resource Allocation Requests heading.

Goal 3

1. State the status of this goal (new, in-progress, or completed):

   In-Progress

2. State this goal is one or two sentences?

   Identify majors in Biology and Allied Health and determine the factors that promote and support completion.

3. What is a short name for this goal?

   Support for Biology and Allied Health Majors

4. In what ways will achieving the goal support the college's mission and/or core values?

   Provide transformational learning opportunities; increase awareness of educational opportunities at Columbia College; develop relationships within the communities we serve.

5. List the college-wide strategic goals that will be addressed by this goal (include all that apply and remove any that do not apply).

   - Increase award completion
   - Reduce barriers to completion
   - Reduce equity gaps
   - Increase transfer readiness
   - Increase workforce readiness
   - Maintain institutional stability

6. What steps are you going to take to achieve this goal?

   Guided pathways and advising guides have been completed for Biology and Allied Health. Work closely with college administration to ensure the proper scope and sequence of course offerings according to the advising guides. Replacement of retiring faculty will be essential to this effort. Augmenting our depleted part-time faculty pool will be necessary for growth. Host periodic events that foster interaction between faculty, staff, and major's students. It has also become apparent that course student learning outcomes (CSLOs) need to be assessed more frequently to increase the robustness of the data. Faculty in Biology and Allied Health also need to develop a shared understanding of the criteria used to assess those CSLOs to provide more meaningful data.

7. How are you going to measure completion of this goal?

   During our last Program Review cycle, it appeared that a large number of students who identified as Biology or Allied Health majors were unknown to the faculty, and their completion rates were poor. A variety of lines of inquiry were suggested to address these observations. We have made good progress since our last review cycle and have a better understanding of some of the issues and challenges thanks to the expert assistance of Research Analyst Matthew Connot in the College Research and Planning Office. One thing we have discovered is that student initially identify a major during the application process to the college, but there is little follow-up with these students unless they specifically request it or they make an appointment with a counselor for guidance. We would like to be more proactive by contacting these students early to help guide them through the process and helping to establish a support network of faculty, staff, and students. These interactions may also help identify barriers to success more quickly.

8. If this goal was completed or is in progress, please provide an update and summarize efforts.

In-Progress.

9. Briefly describe or list the types of resources (staffing, equipment, technology, facilities, etc.) that are needed to support and achieve this goal. Then enter all resource requests through the Resource Allocation Requests link below.

Identify and contact Biology and Allied Health majors at least at the beginning of each academic year (if not the beginning of each semester). Host periodic events to increase support for students and identify barriers to success and retention.

Resource Allocation Requests

- Enter requests in the Program Review Resource Allocations Request From (Secured – YCCD Login Required) located on the Program Review webpage under the Resource Allocation Requests heading.

Submit

- When you have completed all areas of the Program Review as outlined above, notify your dean by typing the @ symbol and your dean's name in the box below (e.g. @Sean Osborn, @Steve Amador, etc.).

@Sean Osborn
@Jeri Pourchot

Dean's Review and Feedback

Deans: Please review the form above and place any thoughts or feedback that you have in the space below. Feedback from AAC, counseling, industry, etc. can be included. When completed, please put the @ symbol and the faculty member name(s) at the end so that they will get notified when your review is completed.

There is an expectation of growthin the biology department. Several retirements create an opportunity for new perspectives and a renewed draw for students. As the enrollments slowly increase, so will the additional of more sections of biology and needed program growth.