



Program Review All Fields

Biology [1]

Main

Overview

Academic Year 2022 - 2023

Originator Yuh, Patrick

Division Curriculum Division 10 - Liberal Arts and Sciences

Department Natural Sciences & Math

Program Biology

Program Type Instructional

Co-Contributors

Contributor

- Nari, Jennifer

Program Mission and Accomplishments

Gavilan College Mission Statement

Gavilan College actively engages, empowers and enriches students of all backgrounds and abilities to build their full academic, social, and economic potential.

Provide a brief overview of how the program contributes to accomplishing the mission of Gavilan College. In addition to a basic overview of your program's structure and services, be specific in connecting your program's services to elements of the mission statement (300 words or less).

A basic understanding of life is essential. The Biology program offers courses in understanding how living things work. This understanding informs many personal decisions related to one's health, career, and family (**social and economic potential**). Inherent in this learning is becoming familiar with the scientific process and logical thinking (**academic potential**).

The Biology program provides students with opportunities to build on all these areas. We offer courses for non-majors who need the GE, majors who may want to transfer to a 4-year campus, and health science students who seek a career in the nursing/allied health fields.

Some of our courses have Service Learning components, which help students learn through meaningful civic engagement (**academic, social, and economic potential**).

Additionally, the STEM III and STEM IV grants have supported our efforts in several ways:

- Tutoring/Supplemental Instruction for many biology courses (**academic and social potential**)
- Faculty mentors who meet with students throughout the semester to advise them on academic and

career matters (*academic and economic potential*)

- a STEM Center to serve as a space for learning and collaboration with other students and faculty (*academic and social potential*)

On the PIPR website, locate and review your previous program plan and subsequent annual updates. After studying, please list:

Response and follow-up to previous program reviews

1. **Increase one-year persistence rates by 3% to 60%**

In Fall 2019, it was possible to look up one-year persistence rates by Program. Now (Spring 2023) persistence data are shown for the entire campus and are not disaggregated by Program. Moreover, the last year for which persistence data are available is 2020-21.

2. **Map all biology course SLOs to PLOs and ILOs and update course SLOs**

Some course SLOs have been updated as they come up for 5-year curriculum updates. Mapping of SLOs to PLOs and ILOs has not yet been completed due to the more immediate urgency of other tasks brought on by Covid.

3. **Decrease average class size by 10%**

I am unable to look up average class sizes by Program.

Have the services of your program changed over the past three years? Please explain (300 words or less).

There have been no significant changes in what our program provides.

Student and Program Outcomes

College Goal for Student Achievement

The following questions refer to data regarding student achievement.

Find your discipline's course success information. Consider your department success rate trends over the last three years. Compare your overall success to the college average.

Are these rates what you expected after comparing with the college average? Are there any large gaps? Is there anything surprising about the data? What trends are suggested by the data?

Success Rates by Academic Year: Program vs. College

2021-22: 80% vs. 69% (11% higher)

2020-21: 80% vs. 70% (10% higher)

2019-20: 82% vs. 70% (12% higher)

We saw similar differences in the last PIPR. This is still surprising, given the rigor of typical STEM programs.

Now find your division persistence information. Consider your retention rate trends over the last three years. Compare your overall retention to the college average.

Are these rates what you expected after comparing with the college average? Are there any large gaps? Is there anything surprising about the data? What trends are suggested by the data.

Path: Tableau - Program Review/ Equity - D2. One Year Persistence Rate

Retention rate and persistence are not the same thing, so this question needs to be clarified.

Tableau indicates the following for retention rate:

AY: 2019-20, 2020-21, 2021-22

Natural Sciences: 83%, 86%, 86%

Gavilan: 85%, 85%, 87%

It appears retention rate for the NS department has been roughly the same as that of the college as a whole.

In the 2019 PIPR, this question asked specifically about **persistence rates**. In the 2019 PIPR, and elsewhere on Tableau, persistence data are shown to be in the 40-60% range. From the last Biology PIPR in 2019:

Term: Fall 15, Fall 16, Fall 17

Natural Science: 61%, 57%, 57%

Gavilan: 45%, 48%, 47%

This question is not directly comparable between the 2019 and 2023 PIPRs.

Success

The following questions refer to data regarding student achievement.

What are your set goals for course success? Do your individual course and department rates meet this goal?

Helpful Question: If your rates for success are lower than your goals, what are your plans to improve them (200 words or less)?

Path: Tableau - Program Review/ Equity - D3. Course Rates by Unit

We maintain our goal of 85% course success. We are currently at 80%, so almost there! Plans for improving:

- increased use of online resources (LMS, textbook ancillaries, videos)
- reaching out to part-time faculty to standardize expectations
- more professional learning focused on online teaching

How many students did your area serve (if you don't have an exact count, please provide an estimate)? How did they perform in comparison to those that did not use your services, if applicable? Given this information, how has your service or area supported student success and retention over the past three years (200 words or less)?

See Success and Retention dashboard in Tableau's Program Review section.

This question is for the Student Services PIPR.

Nonetheless, our headcount for the past three years:

- 2021-22: 1339
- 2020-21: 1345
- 2019-20: 1414

Equity

Equity

Gavilan College has identified the following populations as experiencing disproportionate outcomes: Males, African American, Native American, Students with Disabilities and Foster Youth.

For EOPS/ CalWORKs, MESA, TRiO, Puente, and VRC: LOCATE Success and Retention dashboard in Tableau's Program Review section. Examine your equity results over the last three years. If there are differences in success rates and/ or retention across groups, comment on any differences in success rates across groups. Helpful Questions: What current factors or potential causes can be connected to these areas of disproportional impact? How might your program or department address student equity gaps (200 words or less)?

For all other areas, how can your area help increase disproportionate student success? Contact your support team for any needed assistance in interpreting these data (200 words or less).

Please find Equity information in Tableau's Success and Retention dashboard.

Contact your support team for any needed assistance in using Tableau.

The largest outliers in retention rate for the Biology program (including Ecology and Environmental Science):

2019-20	2020-21	2021-22
Unknown ethnicity -9% (n = 22)	Unknown ethnicity -2% (n = 35)	Hispanic/Latinx -1% (n = 463)
African American -8% (n = 13)	Multiple ethnicities -3% (n = 287)	Multiple ethnicities -1% (n = 286)

Retention rate appears to be equalizing among various ethnicity groups.

Our Equal Employment Opportunity (EEO) Plan States

"Ensuring equal employment opportunity involves creating an environment that fosters cooperation, acceptance, democracy, free expression of ideas and is welcoming to persons of all gender expressions, persons with different abilities, and individuals from all ethnic and other groups protected from discrimination."

What is your area doing to support district efforts in creating an inclusive college environment? With what departments are you partnering? Did you identify barriers and institute change? How is you creating/ ensuring diversity in your department or in the classroom?

Some examples might be sponsoring cultural events and diverse speakers on issues dealing with diversity, exploring how to infuse diversity into the classroom and curriculum, integrating diversity into the evaluation of employees, promoting learning opportunities and personal growth in the area of diversity, or evaluating how the physical environment can be responsive to diverse employee and student populations.

- we try to incorporate inclusive teaching practices in our pedagogy
- we are mindful of diversity when interviewing and hiring PT and FT faculty in our area

- we design the interview questions for PT faculty, and have input for the FT faculty interview questions
- we value diversity in our program/department very highly
- however, demand > supply for faculty/staff
- so, we often lack the ability to consider diversity in our hiring (i.e. we have to take whomever we can get)

Find your Distance Education success information. If distance education is offered, consider any gaps in success rates between distance education and face-to-face courses. Do you notice any trends? Do these rates differ?

Path: Tableau Program Review/ Equity D9. Course Success Rates Locate your department. Filter by Delivery Methods

Helpful question: If disparity exists, how do you plan on closing the achievement gaps between distance education and face-to-face courses (300 words or less)?

Our DE success rates for Fall 19, Fall 20, Spr 21, Fall 21, Spr 22, Fall 22: 78%, 75%, 75%, 74%, 77%, 73%.
Our non-DE success rates for Fall 19, Fall 20, Spr 21, Fall 21, Spr 22, Fall 22: 79%, 91%, 90%, 76%, 75%, 83%.

Observations:

There appeared to be little gap pre-Covid (Fall 19)
Big gap in the year after Covid (Fall 20 and Spr 21)
The gap shrunk the following year (Fall 21 and Spr 22)
The gap widened again in Fall 22

Closing the gap – ensure online instructors have:
similar expectations in their courses
sufficient experience and expertise in delivering a high-quality online course

Learning and Area Outcome

Have you reviewed all of your Service Area Outcomes (SAOs) to ensure that they remain relevant for evaluating the performance of your area?

Are your SAOs mapped in curiQunet?

No

Are your SAOs up to date in curriQunet?

Yes

Have your SAOs been assessed in the last five years?

No

Have you reviewed all of your SAOs to ensure that they remain relevant for evaluating the performance of your area?

No

If you answered no to any of the above questions, what is your plan to bring your assessments into compliance (200 words or less)?

Dept Chair, Dean, and relevant FT faculty should work to address these tasks.

Outcome Assessments

Services Area Outcomes (SAO)

Review your SAOs data located in curriQunet. What is your department's acceptable achievement score goal for each outcome?

Instructional programs do not have SAOs. All questions mentioning SAOs must be updated to reflect the information requested for instructional program PIPRs.

I do not know how to answer this question as it is not meant for an instructional program, and I am not about to guess how it might be applied for one.

Institutional Learning Outcomes (ILO)

How do your SAO support the college ILOs? Be specific (200 words or less).

Instructional programs do not have SAOs. All questions mentioning SAOs must be updated to reflect the information requested for instructional program PIPRs.

Most of our program's courses support the first ILO (Develop and apply critical and creative thinking skills). A few also support the second ILO (Express and exchange ideas effectively through listening, speaking, reading, writing and other modes of interpersonal communication).

A thorough understanding of biology requires critical thinking skills, and the ability to express oneself in various ways.

Are you meeting your SAO success goals? What patterns stand out in your results? If your SAO results are lower than your goals, what are your plans to improve them (200 words or less)?

Instructional programs do not have SAOs. All questions mentioning SAOs must be updated to reflect the information requested for instructional program PIPRs.

I do not know how to answer this question as it is not meant for an instructional program, and I am not about to guess how it might be applied for one.

Curriculum and Course Offerings Analysis

Are there plans for new courses or educational awards (degrees/certificates) in this program? If so, please describe the new course(s) or award(s) you intend to propose (200 words or less).

Bio 2 (Organismal Biology) was approved as a new majors course to replace Bio 4 and 5 in the AS-T and our local AS. After several unsuccessful attempts, we began offering it in Spring 2023.

Provide your plans to either inactivate or teach each course not taught in the last three years (200 words or less).

- BIOT 103 (Biotech Lab Skills): no plans to teach this course; will likely inactivate
- BOT 104 (Biotech Seminar): no plans to teach this course; will likely inactivate
- BIO 21 (Field Ecology): no plans to teach this course; it was updated in Spring 2023
- HORT 20 (Horticulture): has been deactivated

Consider and analyze your location, time, and delivery method trends. Are classes offered in the appropriate sequence/ available so students can earn their degree or certificate within two years? Are courses offered face-to-face as well as have distance education offerings? Are they offered on the main campus as well as the off-site areas? Different times of day? (300 words or less).

- Currently, the majority of Biology courses are offered in a hybrid format, with lectures online and asynchronous and labs on campus
- Some of these may be offered offsite as new facilities are constructed

- The remaining Biology courses are offered online, with asynchronous lectures and synchronous labs
- Bio 10 is offered at many times of day and night because there is demand
- Majors courses are offered every semester
- Biology must very carefully coordinate with Math, Chemistry, and Physics to ensure students can earn their degree in two years
- That said, it is **highly** unlikely that students begin at a level of Math, Chemistry, and Biology to feasibly earn their degree in two years

Program and Resource Analysis

Please list the number of Full and Part Time faculty, staff and/ or managers/ administrator positions in this program over the past three years. Focus on your individual program.

Program and Resource Analysis

1. **2018**

How many students did your area serve in this year (if you don't have an exact count, please provide an estimate)?

1268

Full Time Faculty

2

Part Time Faculty

11

Full Time Staff

0

Part Time Staff

3

Full Time Mgr/Admin

1.00

Part Time Mgr/Admin

0.00

2. **2019**

How many students did your area serve in this year (if you don't have an exact count, please provide an estimate)?

1432

Full Time Faculty

3

Part Time Faculty

12

Full Time Staff

0

Part Time Staff

3

Full Time Mgr/Admin

1.00

Part Time Mgr/Admin

0.00

3. 2020**How many students did your area serve in this year (if you don't have an exact count, please provide an estimate)?**

1255

Full Time Faculty

2

Part Time Faculty

11

Full Time Staff

0

Part Time Staff

3

Full Time Mgr/Admin

1.00

Part Time Mgr/Admin

0.00

Faculty Percentages**Percentage Full to Part Time Faculty**

Year:2018

FT = 15.40%

PT = 84.60%

Year:2019

FT = 20.00%

PT = 80.00%

Year:2020

FT = 15.40%

PT = 84.60%

How have and will those with reassigned time, grant commitments and activity, projected retirements and sabbaticals affect personnel and load within the past in the next three years? What future impacts do you foresee (200 words or less)?

- 2 of 2 current FT Biology faculty had 20% resassign time through Fall 2021
- this results in overloads which tax FT faculty and cause greater dependence on PT faculty to teach
- even without reassign time, FT faculty teach overloads due to lack of qualified PT faculty
- the Biology program typically needs more PT faculty than our available PT pool
- this trend is unlikely to change in the next three years

Additional Comments

Evaluation of Resource Allocations

List the resource allocations from all sources (e.g., annual college budget request appropriations, Guided Pathways funds, grant funds, etc.) received in the last three years. For annual college budget request appropriations, reference your previous three-year plan and annual updates.

Please evaluate the effectiveness of the resources utilized for your program. How did these resources help student success and completion? For college budget request appropriations, list the result of the evaluation strategy outlined in your previous three-year plan and annual updates. For all other sources of funding, list the results of the evaluation strategy contained within the program or grant plan.

Did you receive additional funds?

Yes

Resource Allocation

1. **\$30,000**

Funding Source

Grant

Academic Year

2021 - 2022

Purpose of Funding

Lab tech position at 20 hrs/wk

Result

Biology labs are prepped and set up for teaching lab classes. The campus meets local, state, and federal safety regulations.

2. **\$100,000**

Funding Source

District

Academic Year

2021 - 2022

Purpose of Funding

2 lab tech positions at 35 hrs/wk

Result

Biology labs are prepped and set up for teaching lab classes. The campus meets local, state, and federal safety regulations.

3. **\$2,500**

Funding Source

Grant

Academic Year

2021 - 2022

Purpose of Funding

SI leaders for majors courses

Result

Regular participation in SI improves student success by roughly one letter grade.

4. **\$7,500****Funding Source**

Grant

Academic Year

2021 - 2022

Purpose of Funding

SI leaders for Biology courses

Result

Regular participation in SI improves student success by roughly one letter grade.

Program Productivity

Program Productivity Measurements

Determine the number of students you assist annually. Using the data provided by the business office, calculate your average cost effectiveness per student. **If you do not have student contact, please fill out Total allocated budget and Total spending.**

- **2021 - 2022**

Total Number of student contacts

1287

Total allocated budget**Total spending****Total cost per student (Student Contact/ Total Spending)**

Year and Student count

Evaluate your program costs. Are your costs in alignment with your budget? If not, what improvements can be made? Please explain any trends in spending, inconsistencies and unexpected results.

No idea.

Integrated Planning and Initiatives

What other areas is your program partnering with (i.e. guided pathways, grant collaboration, etc.) in new ventures to improve student success at Gavilan College? What is the focus of this collaboration? Helpful question: What are the department and your Integrated Planning/ Guided Pathways partners' plans for the next three years (200 words or less)?

- Biology has always worked closely with Math and the other Natural Sciences to develop a STEM cohort at Gavilan
- Biology now has an AS-T degree, and 2-year and 3-year program maps for Guided Pathways
- STEM III and IV grants have funded many initiatives aimed at improving student success:

- faculty mentors for students in the STEM Academy
- student internships at SJSU, UCSC, and other campuses
- tutoring services in the STEM Center
- laptop, iPad, portable WiFi potshot, and textbook loan programs
- etc.

Other Opportunities and Threats

Review for opportunities or threats to your program, or an analysis of important subgroups of the college population you serve. Examples may include environmental scans from the Educational Master Plan, changes in matriculation or articulation, student population, community and/ or labor market changes, EMSI data and etc. Helpful Question: What are the departmental plans for the next three years (200 words or less)?

- Biology is somewhat understaffed to meet current student needs
- We will be **severely** understaffed if EMP is implemented
- EMP, p. 16 #3:
 “The distinctive mix of advanced manufacturing, information and communications technologies, and research and development businesses places a premium on Science, Technology, Engineering, Mathematics, and Medicine (STEMM) fields of study. The College has well-established programs of study in these disciplines but will be called upon to increase the numbers of graduates.”
- We need sufficient 1) facilities, 2) lab tech support, and 3) full-time faculty to anchor the program and successfully grow the program

What are you discovering about instruction and/or services in this remote environment that you would want to maintain post-pandemic?

- A sizeable portion of our students and faculty prefer the flexibility of having part of their courses delivered online, either synchronously or asynchronously
- For faculty who wish to remain teaching online, more professional learning in honing their online teaching skills would be highly recommended and valued
- Overall, labs are still better to have on campus, so a hybrid modality may work best for many of our courses

What kinds of issues are exacerbated or emerging that are likely to remain, unless addressed?

- Digital divide issues remain. They appear to have been ameliorated, but eliminating them altogether is very challenging
- There should be on-campus course options for students who do not thrive in an online environment

Additional Questions

Please consider providing answers to the following questions. While these are optional, they provide crucial information about your equity efforts, training, classified professional support, and recruitment.

1. Does your division (or program) provide any training/mentoring for faculty and/ or classified professionals regarding professional development?

Some PD for STEM, little to no discipline-specific PD. Division meetings once a semester; STEM grants have funded some PD opportunities.

2. If there is a need for more faculty and/ or classified professional support in your area, please provide data to justify request. Indicate how it would support the college mission and college goals for success and completion.

We are hiring a 3rd FT Biology faculty this semester. If we are expanding our course offerings at our to-be-built Hollister site, that campus deserves the support of a dedicated FT faculty. Tableau data, if present, should indicate the lower-than-average campus %FT load for Biology compared with the college overall.

Biology is among the more efficient programs on campus. According to Tableau, program efficiency for the past three years:

381, 354, 346. We would make efficient use of another FT faculty.

3. What, if anything, is your program doing to assist the District in attracting and retaining faculty and classified professionals who are sensitive to, and knowledgeable of, the needs of our continually changing constituencies, and reflect the make-up of our student body?

We participate in hiring committees for classified and faculty positions in our program. Everyone in the Biology program values having staff who understand the nature of our student body and can work to nurture their growth and development.

We may have just hired a FT faculty who lives in the community, and wants to work with outreach to underrepresented groups on campus.

4. Are there program accomplishments/ milestones that have not been mentioned that you would like to highlight?

Biology is one of the more popular degree programs in STEM and the campus overall. We have a high number of completers each year.

Please share any recommendations for improvements in the Program Integrated Plan and Review process, analysis, and questions. Your comments will be helpful to the PIPR Committee and will become part of the permanent review record.

Please make different versions of the PIPR report so the questions actually make sense and are relevant to Instructional Programs vs. Student Services.

Also, it would be nice if it was made explicitly clear exactly how our PIPR reports will inform decision-making, and what tangible impact they will make on the integrated planning and budget/resource allocation process. "That's the dream" is a very demoralizing response to how these processes will be tied together.

Goals

Three-Year Program Plan Goals

1. **Increase one-year persistence rates by 3%**

Connection of Goal to Mission Statement, Strategic Plan (http://www.gavilan.edu/administration/master_plan/docs/SP_GoalsStrategiesDraft-final.pdf) and SAO Results

Connection to Mission Statement: we would be working towards an environment where all students are achieving their goals

Connection to Strategic Plan, Goal 1

Connection to SLO (**not* SAO*) Results: no direct connection

Proposed Activity to Achieve Goal**

Connect with students early, and throughout, semester

Responsible Party

Faculty, Dean, Department Chair

Fund amount requested. If a collaboration, what % required from each partner?

Deploy Starfish / Gav Connect widely among STEM courses so faculty can identify students that may need extra help early in the semester.

Total Three Year Resource Allocation Request

10000

Timeline to Completion Month / Year

August 2025

How Will You Evaluate Whether You Achieved Your Goal

Compare one-year persistence rates in the next two academic years to current rates.

2. **Map Biology course SLOs to PLOs and ILOs****Connection of Goal to Mission Statement, Strategic Plan (http://www.gavilan.edu/administration/master_plan/docs/SP_GoalsStrategiesDraft-final.pdf) and SAO Results**

Connection to Mission Statement: advancement of knowledge through innovative teaching and learning, effective communication

Connection to Strategic Plan, Goal 1

Connection to SLO (**not* SAO*) Results: no direct connection

Proposed Activity to Achieve Goal**

Curriculum work session

Responsible Party

Curriculum Committee, Faculty, Dean, Department Chair

Fund amount requested. If a collaboration, what % required from each partner?

Perhaps the work sessions can be supported at the meeting rate.

Total Three Year Resource Allocation Request

2000

Timeline to Completion Month / Year

June 2025

How Will You Evaluate Whether You Achieved Your Goal

Curriqnet will have the updated SLOs and they will be mapped to PLOs and ILOs

Executive Summary

Please provide a brief executive summary regarding program trends and highlights that surfaced in the writing of this report. Summarize, using narrative, your program goals for your next three years. Your audience will be your Peer Review Team, the PIPR Committee, President's Cabinet, Dean's Council, ASGC, Academic Senate, Budget Committee and Board of Trustees (300 words or less).

The Biology program has higher success rates (80% vs. 69%) than the College overall, and roughly the same retention rates (86% vs. 87%). At last check, it also has a much lower average cost per FTES than the College

average (\$2,475 vs \$7,203), exclusive of services funded through the STEM III and STEM IV grants.

The main trend appears to be increasing demand for Biology courses. Any successful lab science program has three absolute requirements to best serve students:

1. facilities, i.e. wet lab classrooms
2. lab tech support, i.e. staff to set up and prepare lab reagents, equipment, etc.
3. full-time faculty to anchor the program and provide administrative and institutional support

We have set forth these program goals:

1. Increase one-year persistence rates by 2%
2. Map Biology course SLOs to PLOs and ILOs

Goal 1 will improve student achievement and equitable access to resources. Goal 2 will help ensure students enroll in quality courses.

Program goals rely in large part on having accurate institutional data. It is our sincere hope that the College improves the quality of, and access to, data regarding the student metrics requested in this report. Doing so will help the Biology program meet the aforementioned goals, benefit all areas of the College, and enable us to serve students well in their education.

Attach Files

Attached File