2023-2024 Comprehensive Instructional Program Review -Biology Latest Version

2023-2024 Comprehensive Instructional Program Review - Biology

Program Overview and Goals

Mission and Alignment : Version by **Tsang, William** on **12/08/2023 05:44**

The mission of the department is to provide future biologists, health professionals and paraprofessionals with their introductory education in the biological sciences. Of equal importance is the role of the department in providing biological education to a diverse student population. We have recently expanded on that mission with creation of a Biotechnology CTE program which serves students who wish to enter directly into the workforce rather than first earning a four year degree. This program is an important alternative to (and/or supplement to) the traditional bachelor's degree pathway the department has been a part of.

Explain how your program supports the College's Mission.
The biology department consists of eight full-time faculty and roughly 17 part-time faculty. Those faculty teach approximately 74 sections across more than 11 different courses and their associated labs serving between 1300 – 1700 students each semester.

Likewise, degree options maximize the use of courses that are routinely offered by the department including general education and prerequisite courses for the purpose of maximizing the efficiency of the department in terms of course offering and scheduling. This will also create options for students who would like to pursue a particular interest or position their academic history for a particular program or career area.

Degrees and Certificates : Version by **Tsang, William** on **12/08/2023 05:49**

List the degrees and certificates the program offers as well as the number of units or courses required to complete the program.
The biology department offers six degrees including the Biology AS-T and the new Biotechnology AA. The biology department also recently added two certificates in Biotechnology (Biotechnology I: Basic Wet Lab Skills and Biotechnology II: Biomanufacturing). With the exception of the Biotechnology AA, degree requirements were designed to overlap with undergraduate requirements for both the CSU and UC system and to avoid unnecessary courses that would delay student transfer. Likewise, degree options maximize the use of courses that are routinely offered by the department including general education and prerequisite courses for the purpose of maximizing the efficiency of department in terms of course offering and scheduling will creating options for students who would like to pursue a particular interest or position their academic history for a particular program or career area.

Unlike our other Associates Degrees (which are designed to support students transferring to a university), the Biotechnology AA as well as the Biotechnology Certificate of Achievement are designed to assist students direct entry into the workforce.
The biology department also plays an important role in the Natural Sciences - General AA which is an interdisciplinary degree composed of courses throughout the SEM Division. Eleven courses offered by the biology department fulfill requirements of the Natural Sciences AA.
The details of each degree and certificate offered by the biology department are listed below:
Biology AS-T

- **REQUIRED COURSES UNITS**
- **BIOL 200 Principles of Biology 5**
- **BIOL 201 Principles of Biology 5**
- **CHEM 111 General Chemistry 5**
- **CHEM 112 General Chemistry 5**
- **MATH 116 Calculus for Managerial, Biological, and Social Sciences 4 or MATH 170 Analytic Geometry and Calculus I (4)**
- **PHYS 101 General Physics 4**
- **PHYS 102 General Physics 4**

Total Major Requirements 32
ASSOCIATE DEGREE FOR TRANSFER COMPLETION REQUIREMENTS:
(1) Completion of 60 semester units or 90 quarter units that are eligible for transfer to the California State University, including both of the following: (A) The Intersegmental GE Transfer Curriculum (IGETC) or the California State University GE-Breadth Requirements (CSU GE-Breadth). (B) A minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district. (2) Obtainment of a minimum grade point average of 2.0.
Biology AA
REQUIRED COURSES UNITS

- **BIOL 120 Introduction to Biological Science 4**
- **BIOL 200 Principles of Biology 5**
- **BIOL 201 Principles of Biology 5**
- **CHEM 111 General Chemistry 5**
- **CHEM 112 General Chemistry 5**
- **Select one of the following two courses:**
  - **MATH 116 Calculus for Managerial, Biological, and Social Sciences 4 or MATH 170 Analytic Geometry and Calculus I (4)**

Total Major Requirements 28
ADDITIONAL DEGREE REQUIREMENTS
Completion of a minimum of 60 semester units to include (1) the courses listed above, (2) the AA degree general education requirements, and (3) a grade of "C" or better in all courses required by major.
Biotechnology I: Basic Wet Lab Skills Certificate of Achievement
REQUIRED COURSES UNITS

- **BIOL 120 Introduction to Biology 4**
- **CHEM 110 Elementary Chemistry 4**
- **BTEC 120 Introduction to Biotechnology 4**
- **ET 103 Industrial Process Control 2**
- **MATH 112 Elementary Statistics 4**

Total Certificate Requirement 18
Biotechnology II: Biomanufacturing Certificate of Achievement
REQUIRED COURSES UNITS

- **BIOL 201 Principles of Biology 5**
- **CHEM 111 General Chemistry 5**
- **BTEC 150 Biomanufacturing Fundamentals 4**
- **BTEC 180 Quality and Regulatory Affairs in**
- **Biotechnology 3**

Total Certificate Requirement 17
Biotechnology AA
REQUIRED COURSES UNITS

- **BIOL 120 Introduction to Biological Science 4**
- **MATH 112 Elementary Statistics 4**
- **ET 103 Industrial Process Control 2**
- **CHEM 110 Elementary Chemistry 4**
- **BTEC 120 Introduction to Biotechnology 4**
- **CHEM 111 General Chemistry 5**
- **CHEM 112 General Chemistry 5**
- **BTEC 150 Biomanufacturing Fundamentals 4**
- **BTEC 180 Quality and Regulatory Affairs in**
- **Biotechnology 3**
- **BIOL 201 Principles of Biology 5**

Total Major Requirement 40
Botany AA
REQUIRED COURSES UNITS

- **BIOL 120 Introduction to Biological Science 4**
- **BIOL 200 Principles of Biology 5**
- **BIOL 201 Principles of Biology 5**
- **BOT 120 Introduction to Plant Science 4**
- **CHEM 111 General Chemistry 5**
- **CHEM 112 General Chemistry 5**
- **Select one of the following two courses:**
  - **MATH 116 Calculus for Managerial, Biological, and Social Sciences 4 or MATH 170 Analytic Geometry and Calculus I (4)**

Total Major Requirements 32
ADDITIONAL DEGREE REQUIREMENTS
Completion of a minimum of 60 semester units to include (1) the courses listed above, (2) the AA degree general education requirements, and (3) a grade of "C" or better in all courses required by major.
Microbiology AA
REQUIRED COURSES UNITS

- **BIOL 200 Principles of Biology 5**
- **BIOL 201 Principles of Biology 5**
- **CHEM 111 General Chemistry 5**
- **CHEM 112 General Chemistry 5**
- **MICR 200 Principles and Applications of Microbiology 5**

Total Major Requirements 25
ADDITIONAL DEGREE REQUIREMENTS:
Completion of a minimum of 60 semester units to include (1) the courses listed above, (2) the AA degree general education requirements, and (3) a grade of "C" or better in all courses required by major.
Zoology AA
REQUIRED COURSES UNITS

- **BIOL 120 Introduction to Biological Science 4**
- **BIOL 200 Principles of Biology 5**
- **BIOL 201 Principles of Biology 5**
- **CHEM 111 General Chemistry 5**
- **CHEM 112 General Chemistry 5**
- **ZOOL 120 Introduction to Animal Biology 4**
- **Select one of the following two courses:**
  - **MATH 116 Calculus for Managerial, Biological, and Social Sciences 4, or MATH 170 Analytic Geometry and Calculus I (4)**

Total Major Requirements 32

ADDITIONAL DEGREE REQUIREMENTS
Completion of a minimum of 60 semester units to include (1) the courses listed above, (2) the AA degree general education requirements, and (3) a grade of "C" or better in all courses required by major.

Six-Year Program Goals : Version by **Babiar, Ryan** on **11/29/2023 23:46**

See table

Program Goal	College's Goals Supported (Goal A - Goal F)	Status (not started; in progress; on hold; cancelled; completed; continued)	Action Plans/Timelines/Resource Needs
Improve success rates and course consistency through creation of new lab manual	Goal E	Completed-AP 150 Completed-AP 151 Continued-BIOL 120	-We are continually working on improving the Biol 120 lab manual and are working with multiple publishers to get this finished by Fall 2024 -All other courses continue to evaluate if lab manual changes are needed
Increase course success and relevance by revising BIOL 120 lab	GOAL A/E	Completed	-Complete re-write of Bio120 lab manual to update lab and concepts -Tying the lab to biotech program -pre-graded prelabs -post formative assessment -Tabulation of survey for awareness (digital link). Hire new FT faculty member to help with this.
Establish a schedule for reporting SLO's	GOAL D/F	Completed	
Try to find more locations for tutoring inside the science building	GOAL E	Completed and ongoing	-By Fall 2024 would like to have new space
Move tutors to Success Center with a set of models used in the A&P labs	GOAL A/C	Completed	-Tutors have materials and resources to conduct tutoring (5-10 tutors are there)
Discuss the possibility of implementing a "how to study for science courses" presentation each semester	GOAL A/C	Not completed	-Develop outline for addressing issue -exploring various formats; some are not practical (shift to using embedded tutor) -IN AP maybe using ASK program -Potentially using embedded tutors? To begin and achieve goals of increasing student success -Compensation for faculty
Increase more offerings of AP 151	GOAL A	Completed	
Find other rooms besides S129 to offer AP 151 labs		Completed and Continuing	limited on space
Develop and build the Biotech program	GOAL B	Program in progress and ongoing, first group Fall 2023	-Adjuncts that are qualified to teach specialty courses -Hope to hire an adjunct in 1-3 years time -Need to hire an assistant -More space needed for tissue culture -More equipment for program
Revise BIOL 105 to add a lab portion and make IGETC approve	GOAL A	In progress	-Meetings need to continue in order to clear a path for IGETC credit approval
Consider making an online version of BIOL 105	GOAL A	Not started	Have met with Ryan Babiar to discuss this moving forward -Depends on suitable this is. Hire new FT faculty member for assistance in filling these classes. -Might do this and IGETC simultaneously
Explore option to add Lab Fees	Goal A	Not started	This issue has been brought up to our new Dean, and will continue to be discussed. This would help us with our challenges of increasing our yearly budget by allowing the lab fees to help cover the cost of laboratory needs. We will start a conversation and action plan with Michael Page and Elizabeth Riley of health occupations.

Program Goal	College's Goals Supported (Goal A - Goal F)	Status (not started; in progress; on hold; cancelled; completed; continued)	Action Plans/Timelines/Resource Needs
Create new Microbiology course for healthcare professionals		In Progress	Next year the course will be submitted to curriculum -Need supplies for the course. Hire new FT faculty member. -Increase in pay for Kimbeau Try??
Continue to work with SLO committee in revising and updating SLO's for our courses	GOAL D/F	In progress	-Possibly 3 years -eLumen program continues to present a significant barrier to reporting SLO data and retrieving in a useable forma
Discuss the best way to use the computer room in S133	GOAL A	Ongoing	-Update computers? Finish by Spring 2025
Discuss making changes to AP 150 to include a zero credit or co-requisite class for mandatory "study" hall. We could also explore for other classes as well.	GOAL A	Ongoing	-Ryan Babiar speaking with curriculum about these changes. Had a meeting to discuss what changes would need to be made regarding enrollment and curriculum. Make decision by Fall 2025
Increase recruitment for tutors in all classes offered by biology department	GOAL A/D	In progress	-Since pandemic finding students is difficult -Potentially increasing hours they can teach -Time needed as we come back from pandemic to identify these students
Increase recruitment for tutors in the ASK program specifically for AP 150	GOAL A/D	Ongoing	-Each semester looking for more ASK tutors -promotions are done by CANVAS
Improve awareness of biology majors and promotion of SEM LCP	GOAL B	In progress	-Learning Career Pathway week -Matt Covill & Jeff Bradbury started bio/chem seminar (info session)
Attempt to look for more internship opportunities with local businesses regarding biology majors	GOAL B	In progress (biotech)	2-3 years (biotech) -Also include REUs -local opportunities do get passed around via email to students/CANVAS
Increase student awareness of internships	GOAL B	Ongoing	-Connect with community -Organize a list of available internships -Look to see where we can do internships
Improve part-time knowledge of procedures and expectations regarding all biology classes.	GOAL C/D	Ongoing	-Connecting with adjuncts prior to each week/activity and putting together guidelines Create a part-time Orientation Program for all our new hires. Lack resources due to time commitment
Increase success rates in AP 150 & 151	GOAL A	Ongoing	-Increased tutoring -Change some of the labs -Communication about what each course needs. Reach goal by Fall 2025
Determine if the new Dental Hygiene masters program in HSW will require AP 200 & 201	GOAL B/D/F	Not started	-unsure of what is required
Improve use of Canvas and CIDI labs for all instructors	GOAL E/F	Ongoing	--1-2 years before all are on board -group working on making online material accessible
Discuss best methods for communicating with students and sharing our expectations	GOAL A/D	Ongoing	-Scottie Henderson , Anna Valcarcel, Ryan Babiar and Michelle Stieber participated in faculty interest group explored ways to better communicate with students/expectations
Discuss how to use the new Anatomage table in our AP labs and make curriculum changes to address this issue	GOAL E	Ongoing	-1-2 year in implementing this resource into our courses by Fall 2024
Discuss best methods to communicate with our lab technicians on what they need and how to prepare for weekly labs	GOAL C/D	In progress	-faculty individually connect with Ikha about their courses -Lab coordinators meet with lab tech for needs

Program Goal	College's Goals Supported (Goal A - Goal F)	Status (not started; in progress; on hold; cancelled; completed; continued)	Action Plans/Timelines/Resource Needs
Re-establish relationships with local universities for REUs and other research internships		In Progress	Fall 2025
Develop a summer research program and provide students with field/hand on research experience	GOAL A/C	Not yet started	Fall 2026

Assessment Report and Data Analysis

Assessment Report (Part 1: Assessment Table) : Version by **Chavez, Esthela** on **04/02/2024 22:18**

ZOOL120: Introduction to Animal Biology

Explain the evidence for evolution.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	1	4.76%	5	23.81%	15	71.43%	0	0.00%	21	100.00%
2022 FA	4	19.05%	8	38.10%	6	28.57%	3	14.29%	21	100.00%
Totals	5	11.90%	13	30.95%	21	50.00%	3	7.14%	42	100.00%

Name the parts of eukaryotic cells and state their function.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	1	4.76%	13	61.90%	7	33.33%	0	0.00%	21	100.00%
2022 FA	4	19.05%	9	42.86%	8	38.10%	0	0.00%	21	100.00%
Totals	5	11.90%	22	52.38%	15	35.71%	0	0.00%	42	100.00%

Interpret the phylogenetic relationships of shared characters among groups on a simple tree.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	21	100.00%	0	0.00%	21	100.00%
2022 FA	5	23.81%	6	28.57%	10	47.62%	0	0.00%	21	100.00%
Totals	5	11.90%	6	14.29%	31	73.81%	0	0.00%	42	100.00%

Describe the distinguishing characteristics of major animal phyla and selected subphyla or classes.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	15	71.43%	6	28.57%	0	0.00%	0	0.00%	21	100.00%
2022 FA	1	4.76%	11	52.38%	9	42.86%	0	0.00%	21	100.00%
Totals	16	38.10%	17	40.48%	9	21.43%	0	0.00%	42	100.00%

Discuss the adaptions for the transition to land.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	6	28.57%	4	19.05%	11	52.38%	0	0.00%	21	100.00%
2022 FA	4	19.05%	5	23.81%	12	57.14%	0	0.00%	21	100.00%
Totals	10	23.81%	9	21.43%	23	54.76%	0	0.00%	42	100.00%

Identify ecological relationships between organisms.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	18	85.71%	2	9.52%	1	4.76%	0	0.00%	21	100.00%
2022 FA	2	9.52%	11	52.38%	7	33.33%	1	4.76%	21	100.00%
Totals	20	47.62%	13	30.95%	8	19.05%	1	2.38%	42	100.00%

In lab, given a dissected organism the student will be able to identify the major structures and describe their function.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	21	100.00%	0	0.00%	0	0.00%	0	0.00%	21	100.00%
2022 FA	3	14.29%	11	52.38%	7	33.33%	0	0.00%	21	100.00%
Totals	24	57.14%	11	26.19%	7	16.67%	0	0.00%	42	100.00%

In lab, describe the distinguishing characteristics of major animal phyla and selected subphyla or classes

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	14	66.67%	6	28.57%	1	4.76%	0	0.00%	21	100.00%
2022 FA	3	14.29%	11	52.38%	7	33.33%	0	0.00%	21	100.00%
Totals	17	40.48%	17	40.48%	8	19.05%	0	0.00%	42	100.00%

In lab, use a Punnett square to determine ratios of phenotypes and genotypes

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	20	95.24%	1	4.76%	21	100.00%
2022 FA	3	14.29%	10	47.62%	7	33.33%	1	4.76%	21	100.00%
Totals	3	7.14%	10	23.81%	27	64.29%	2	4.76%	42	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	76	40.21%	36	19.05%	76	40.21%	1	0.53%	189	100.00%
2022 FA	29	15.34%	82	43.39%	73	38.62%	5	2.65%	189	100.00%
Totals	105	27.78%	118	31.22%	149	39.42%	6	1.59%	378	100.00%

MICR200: Principles and Applications of Microbiology

Describe the basic principles of the immune system and its role in fighting against microbial pathogens

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	7	7.22%	47	48.45%	37	38.14%	6	6.19%	97	100.00%
2022 FA	6	9.09%	35	53.03%	19	28.79%	6	9.09%	66	100.00%
Totals	13	7.98%	82	50.31%	56	34.36%	12	7.36%	163	100.00%

Describe the characteristics of prokaryotic cells, eukaryotic cells, and viruses

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	13	13.40%	27	27.84%	55	56.70%	2	2.06%	97	100.00%
2022 FA	9	13.64%	12	18.18%	36	54.55%	9	13.64%	66	100.00%
Totals	22	13.50%	39	23.93%	91	55.83%	11	6.75%	163	100.00%

Demonstrate an understanding of the basic fundamentals of microbial genetics and regulation of gene expression

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	7	7.22%	44	45.36%	43	44.33%	3	3.09%	97	100.00%
2022 FA	27	40.91%	26	39.39%	9	13.64%	4	6.06%	66	100.00%
Totals	34	20.86%	70	42.94%	52	31.90%	7	4.29%	163	100.00%

Explain principles of microbial growth and its regulation by physical and chemical methods and also explain the common mechanisms of antimicrobial resistance

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	53	54.64%	24	24.74%	11	11.34%	9	9.28%	97	100.00%
2022 FA	34	51.52%	22	33.33%	6	9.09%	4	6.06%	66	100.00%
Totals	87	53.37%	46	28.22%	17	10.43%	13	7.98%	163	100.00%

Describe the causative agent, pathogenesis, symptoms, prevention, transmission and treatment of common microbial diseases.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	11	11.34%	44	45.36%	39	40.21%	3	3.09%	97	100.00%
2022 FA	20	30.30%	26	39.39%	16	24.24%	4	6.06%	66	100.00%
Totals	31	19.02%	70	42.94%	55	33.74%	7	4.29%	163	100.00%

In lab, correlate the staining differences of various bacteria to their microscopic anatomy, cell-wall structure, and life cycle

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	19	19.59%	36	37.11%	39	40.21%	3	3.09%	97	100.00%
2022 FA	17	25.76%	35	53.03%	14	21.21%	0	0.00%	66	100.00%
Totals	36	22.09%	71	43.56%	53	32.52%	3	1.84%	163	100.00%

In lab, correctly identify unknown bacterial cultures using techniques and biochemical tests common to the microbiology

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	28	28.87%	54	55.67%	14	14.43%	1	1.03%	97	100.00%
2022 FA	15	22.73%	43	65.15%	5	7.58%	3	4.55%	66	100.00%
Totals	43	26.38%	97	59.51%	19	11.66%	4	2.45%	163	100.00%

In lab, identify the microscopic stages and structures of fungi, protozoa, and helminths

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	17	17.53%	27	27.84%	50	51.55%	3	3.09%	97	100.00%
2022 FA	16	24.24%	17	25.76%	33	50.00%	0	0.00%	66	100.00%
Totals	33	20.25%	44	26.99%	83	50.92%	3	1.84%	163	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	155	19.97%	303	39.05%	288	37.11%	30	3.87%	776	100.00%
2022 FA	144	27.27%	216	40.91%	138	26.14%	30	5.68%	528	100.00%
Totals	299	22.93%	519	39.80%	426	32.67%	60	4.60%	1304	100.00%

Report Totals:

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	155	19.97%	303	39.05%	288	37.11%	30	3.87%	776	100.00%
2022 FA	144	27.27%	216	40.91%	138	26.14%	30	5.68%	528	100.00%
Totals	299	22.93%	519	39.80%	426	32.67%	60	4.60%	1304	100.00%

BIOL201: Principles of Biology

A. Describe the structure and functions of nucleic acids, proteins, lipids, and carbohydrates in the cell

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	24	92.31%	1	3.85%	1	3.85%	0	0.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	24	92.31%	1	3.85%	1	3.85%	0	0.00%	26	100.00%

B. Describe the events, control, and roles of molecules in cellular processes, including DNA replication, transcription, and translation and cell signaling

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%

C. Compare cellular respiration and photosynthesis in terms of purpose, location, cell type, input, and output

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	3	11.54%	9	34.62%	14	53.85%	0	0.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	3	11.54%	9	34.62%	14	53.85%	0	0.00%	26	100.00%

D. Demonstrate an understanding of the differences between mitosis and meiosis in terms of purpose, divisions, DNA content, and key phase events

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%

E. Describe the mechanisms and rules of inheritance and apply them using pedigrees and Punnett square analysis to make predictions regarding the genotypes and phenotypes of future generations

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%

F. In lab, demonstrate an understanding of the practical benefits from basic biotechnology techniques like PCR and gel electrophoresis and interpret results from these techniques

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	5	19.23%	15	57.69%	6	23.08%	0	0.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	5	19.23%	15	57.69%	6	23.08%	0	0.00%	26	100.00%

G. In lab, clearly communicate hypotheses and experimental results in written lab reports

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	19	73.08%	6	23.08%	1	3.85%	0	0.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	19	73.08%	6	23.08%	1	3.85%	0	0.00%	26	100.00%

H. In lab, demonstrate an understanding of and critically evaluate scientific data generated in the laboratory or gathered from primary literature

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	0	0.00%	0	0.00%	0	0.00%	26	100.00%	26	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	51	24.52%	31	14.90%	22	10.58%	104	50.00%	208	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	51	24.52%	31	14.90%	22	10.58%	104	50.00%	208	100.00%

BIOL115: Marine Biology

Students discuss how physical characteristics of the ocean affect the distribution of flora and fauna in the more common marine realms.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
2022 FA	17	77.27%	2	9.09%	3	13.64%	0	0.00%	22	100.00%
Totals	17	77.27%	2	9.09%	3	13.64%	0	0.00%	22	100.00%

Students identify and distinguish between the major characteristics of 9 major animal phyla, and select subphyla and classes.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
2022 FA	6	27.27%	7	31.82%	9	40.91%	0	0.00%	22	100.00%
Totals	6	27.27%	7	31.82%	9	40.91%	0	0.00%	22	100.00%

Student will be able to identify and discuss major ecological and biological interactions between organisms in the marine

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
2022 FA	4	18.18%	4	18.18%	14	63.64%	0	0.00%	22	100.00%
Totals	4	18.18%	4	18.18%	14	63.64%	0	0.00%	22	100.00%

Students use and explain how dichotomous keys are used to identify unknown marine flora and fauna.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
2022 FA	18	81.82%	4	18.18%	0	0.00%	0	0.00%	22	100.00%
Totals	18	81.82%	4	18.18%	0	0.00%	0	0.00%	22	100.00%

Students explain how oceanographic equipment is used to understand the different aspects of the ocean.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
2022 FA	20	90.91%	1	4.55%	1	4.55%	0	0.00%	22	100.00%
Totals	20	90.91%	1	4.55%	1	4.55%	0	0.00%	22	100.00%

Students discuss how humans' have impacted the ocean's properties and inhabitants and identify some ways in which humans can participate in its conservation.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
2022 FA	3	13.64%	11	50.00%	8	36.36%	0	0.00%	22	100.00%
Totals	3	13.64%	11	50.00%	8	36.36%	0	0.00%	22	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
2022 FA	68	51.52%	29	21.97%	35	26.52%	0	0.00%	132	100.00%
Totals	68	51.52%	29	21.97%	35	26.52%	0	0.00%	132	100.00%

BIOL105: Humans and the Environment

Students classify various organisms according to their niche and then insert these organisms correctly into a food chain, food pyramid, and food web, indicating the flow of energy.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	16	21.05%	32	42.11%	27	35.53%	1	1.32%	76	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	16	21.05%	32	42.11%	27	35.53%	1	1.32%	76	100.00%

Students recognize the difference between logistic and exponential growth curves and be able to indicate the presence of a carrying capacity and correctly identify possible limiting growth factors which will impact population growth.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	20	26.32%	27	35.53%	25	32.89%	4	5.26%	76	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	20	26.32%	27	35.53%	25	32.89%	4	5.26%	76	100.00%

Students know alternatives to current popular farming techniques (such as crop rotation, agroforestry, contour farming strip cropping, alternative to pesticiedes, organic farming, etc..)and be able to explain whether these alternative techniques reduce soil erosion or help to maintain soil fertility.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	31	40.79%	25	32.89%	13	17.11%	7	9.21%	76	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	31	40.79%	25	32.89%	13	17.11%	7	9.21%	76	100.00%

Students know the 3 types of fossil fuels, where they originate from, how they are each used by humans, and potential pros and cons of each.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	40	52.63%	16	21.05%	14	18.42%	6	7.89%	76	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	40	52.63%	16	21.05%	14	18.42%	6	7.89%	76	100.00%

Students identify energy alternatives to fossil fuels and how these alternatives can be harvested (sech as nuclear energy, wind, solar, geothermal, etc...) as well as any pros or cons of each.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	20	26.32%	38	50.00%	14	18.42%	4	5.26%	76	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	20	26.32%	38	50.00%	14	18.42%	4	5.26%	76	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	127	33.42%	138	36.32%	93	24.47%	22	5.79%	380	100.00%
2022 FA	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Totals	127	33.42%	138	36.32%	93	24.47%	22	5.79%	380	100.00%

BIOL 120: Introduction to Biological Science

State the names and functions of five different organelles in the cell.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	13	8.61%	8	5.30%	20	13.25%	110	72.85%	151	100.00%
2022 FA	3	7.50%	25	62.50%	12	30.00%	0	0.00%	40	100.00%
Totals	16	8.38%	33	17.28%	32	16.75%	110	57.59%	191	100.00%

Identify evidence to support the theory of evolution, and two mechanisms that cause evolution to happen.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	31	20.53%	42	27.81%	44	29.14%	34	22.52%	151	100.00%
2022 FA	11	26.83%	19	46.34%	11	26.83%	0	0.00%	41	100.00%
Totals	42	21.88%	61	31.77%	55	28.65%	34	17.71%	192	100.00%

Identify the reactants and products of photosynthesis and cell respiration and describe the role of both plants and animals in the carbon cycle.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	34	22.52%	23	15.23%	44	29.14%	50	33.11%	151	100.00%
2022 FA	9	21.95%	14	34.15%	18	43.90%	0	0.00%	41	100.00%
Totals	43	22.40%	37	19.27%	62	32.29%	50	26.04%	192	100.00%

Identify the steps of DNA replication, RNA transcription and translation of a protein segment; identify a mutation in a DNA sequence and explain how diseases caused by mutations can be passed onto offspring; analyze a DNA fingerprint and determine which individual left behind DNA at a simulated crime scene

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	13	8.61%	16	10.60%	8	5.30%	114	75.50%	151	100.00%
2022 FA	33	80.49%	0	0.00%	8	19.51%	0	0.00%	41	100.00%
Totals	46	23.96%	16	8.33%	16	8.33%	114	59.38%	192	100.00%

In lab, use a microscope to locate and identify plant, animal, and bacterial cells as well as structures, which may be visible in these cells such as the nucleus, cell membrance, chloroplasts, and cell wall.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	46	30.46%	32	21.19%	41	27.15%	32	21.19%	151	100.00%
2022 FA	18	43.90%	14	34.15%	9	21.95%	0	0.00%	41	100.00%
Totals	64	33.33%	46	23.96%	50	26.04%	32	16.67%	192	100.00%

In lab, compare and contrast algae, mosses, ferns, gymnosperms and angiosperms.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	40	26.49%	36	23.84%	46	30.46%	29	19.21%	151	100.00%
2022 FA	6	14.63%	20	48.78%	15	36.59%	0	0.00%	41	100.00%
Totals	46	23.96%	56	29.17%	61	31.77%	29	15.10%	192	100.00%

In lab, use the scientific method to develop hypotheses to predict outcomes of experiments and record experimental data to use to refute or support hypotheses.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	62	41.06%	45	29.80%	39	25.83%	5	3.31%	151	100.00%
2022 FA	15	36.59%	16	39.02%	10	24.39%	0	0.00%	41	100.00%
Totals	77	40.10%	61	31.77%	49	25.52%	5	2.60%	192	100.00%

In lab, compare and contrast members of a variety of animal phyla and describe unique characteristics of each phylum.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	58	38.41%	39	25.83%	38	25.17%	16	10.60%	151	100.00%
2022 FA	8	19.51%	10	24.39%	23	56.10%	0	0.00%	41	100.00%
Totals	66	34.38%	49	25.52%	61	31.77%	16	8.33%	192	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	297	24.59%	241	19.95%	280	23.18%	390	32.28%	1208	100.00%
2022 FA	103	31.50%	118	36.09%	106	32.42%	0	0.00%	327	100.00%
Totals	400	26.06%	359	23.39%	386	25.15%	390	25.41%	1535	100.00%

BIOL200: Principles of Biology

Explain adaptations of early plants to terrestrial environments

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	13	17.81%	48	65.75%	12	16.44%	0	0.00%	73	100.00%
2022 FA	11	23.40%	24	51.06%	11	23.40%	1	2.13%	47	100.00%
Totals	24	20.00%	72	60.00%	23	19.17%	1	0.83%	120	100.00%

Explain the mechanisms of evolution and speciation

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	31	42.47%	17	23.29%	25	34.25%	0	0.00%	73	100.00%
2022 FA	3	6.38%	18	38.30%	26	55.32%	0	0.00%	47	100.00%
Totals	34	28.33%	35	29.17%	51	42.50%	0	0.00%	120	100.00%

Compare and contrast reproduction and morphology, and water and nutrient acquisition in vascular plants

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	21	28.77%	34	46.58%	18	24.66%	0	0.00%	73	100.00%
2022 FA	3	6.38%	25	53.19%	19	40.43%	0	0.00%	47	100.00%
Totals	24	20.00%	59	49.17%	37	30.83%	0	0.00%	120	100.00%

Compare and contrast members of select invertebrate and vertebrate taxa by describing the characteristics that group them in their taxa

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	47	64.38%	11	15.07%	15	20.55%	0	0.00%	73	100.00%
2022 FA	4	8.51%	21	44.68%	22	46.81%	0	0.00%	47	100.00%
Totals	51	42.50%	32	26.67%	37	30.83%	0	0.00%	120	100.00%

Compare and contrast members of select plant and fungi (i.e., non-animal) taxa by describing the characteristics that group them in their taxa

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	9	12.33%	24	32.88%	40	54.79%	0	0.00%	73	100.00%
2022 FA	1	2.13%	7	14.89%	10	21.28%	29	61.70%	47	100.00%
Totals	10	8.33%	31	25.83%	50	41.67%	29	24.17%	120	100.00%

Describe ecological concepts that provide structure and function to ecosystems

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	47	64.38%	16	21.92%	9	12.33%	1	1.37%	73	100.00%
2022 FA	8	17.02%	27	57.45%	12	25.53%	0	0.00%	47	100.00%
Totals	55	45.83%	43	35.83%	21	17.50%	1	0.83%	120	100.00%

Describe ecological principles and how they inform conservation and biodiversity

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	49	67.12%	16	21.92%	7	9.59%	1	1.37%	73	100.00%
2022 FA	9	19.15%	21	44.68%	17	36.17%	0	0.00%	47	100.00%
Totals	58	48.33%	37	30.83%	24	20.00%	1	0.83%	120	100.00%

In lab, calculate the frequencies of alleles and genotypes of populations undergoing natural selection using the Hardy-Weinberg equation

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	11	15.07%	31	42.47%	29	39.73%	2	2.74%	73	100.00%
2022 FA	6	12.77%	21	44.68%	20	42.55%	0	0.00%	47	100.00%
Totals	17	14.17%	52	43.33%	49	40.83%	2	1.67%	120	100.00%

In lab, identify the anatomy of a variety of invertebrate animals as well as the frog and fetal pig

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	12	16.44%	42	57.53%	19	26.03%	0	0.00%	73	100.00%
2022 FA	13	27.66%	17	36.17%	17	36.17%	0	0.00%	47	100.00%
Totals	25	20.83%	59	49.17%	36	30.00%	0	0.00%	120	100.00%

In lab, identify the anatomy of a variety of plant taxa

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	39	53.42%	21	28.77%	13	17.81%	0	0.00%	73	100.00%
2022 FA	12	25.53%	16	34.04%	19	40.43%	0	0.00%	47	100.00%
Totals	51	42.50%	37	30.83%	32	26.67%	0	0.00%	120	100.00%

In lab, identify selected taxa of living organisms and their key characteristics

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	49	67.12%	13	17.81%	11	15.07%	0	0.00%	73	100.00%
2022 FA	9	19.15%	22	46.81%	16	34.04%	0	0.00%	47	100.00%
Totals	58	48.33%	35	29.17%	27	22.50%	0	0.00%	120	100.00%

In lab, use the scientific method to develop hypotheses to predict outcomes of experiments; record experimental data to use to refute or support these hypotheses

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	18	24.66%	30	41.10%	24	32.88%	1	1.37%	73	100.00%
2022 FA	6	12.77%	28	59.57%	13	27.66%	0	0.00%	47	100.00%
Totals	24	20.00%	58	48.33%	37	30.83%	1	0.83%	120	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	346	39.50%	303	34.59%	222	25.34%	5	0.57%	876	100.00%
2022 FA	85	15.07%	247	43.79%	202	35.82%	30	5.32%	564	100.00%
Totals	431	29.93%	550	38.19%	424	29.44%	35	2.43%	1440	100.00%

Course by SLO	Expected Performance	Performance Spring 2018	Performance Spring 2023
AP120 - Introductory Human Anatomy and Physiology (nonmajors and prep for nursing prereqs)			
Describe basic cellular processes and the molecular and cellular basis of human life, including molecular biology and protein synthesis	100%	72.2%	71.6%
Describe the structures and functions of muscles, muscle cells, and muscle contraction	100%	68.2%	75.2%
Explain the structures and functions of the human nervous system and the activity of neurons	100%	54.5%	64.2%
Explain the structures and functions of the human senses and its cells	100%	75.4%	74.9%

Explain the structures and functions of the human endocrine system	**100%**	**61.7%**	**69.5%**
Describe the structures and functions of blood and the human cardiovascular system	**100%**	**70.9%**	**71.3%**
Describe the structures and functions of the human lymphatic and immune systems	**100%**	**74.7%**	**67.3%**
Identify the structures and describe the functions of the human digestive system	**100%**	**66.3%**	**65.5%**
Identify the structures and describe the functions of the human respiratory system	**100%**	**65.2%**	**61.4%**
Identify the structures and describe the functions of the human urinary system	**100%**	**69.1%**	**65.7%**
Identify the structures and describe the functions of the male and female reproductive systems	**100%**	**79.7%**	**73.9%**
In lab, describe the physical aspects of cell membrane transport	**100%**	**62.6%**	**78.0%**
In lab, explain DNA structure, transcription, and protein synthesis	**100%**	**81.0%**	**74.7%**
In lab, explain the structure and functions of enzymes	**100%**	**71.4%**	**70.9%**
In lab, identify the major bones of the human skull and appendicular skeleton	**100%**	**61.9%**	**60.6%**
In lab, identify the major muscles of the human body	**100%**	**74.1%**	**76.7%**
In lab, identify the major organs and structures of the human nervous system, cardiovascular system, respiratory system, digestive system, urinary system, and reproductive system	**100%**	**85.5%**	**77.1%**

A&P150: Intro To Human Anatomy

A. Describe and understand anatomical terminology, body planes and cavities, organ systems and their functions. Learn functions of cell membrane, cellular transport and organelles. Describe and learn the four primary tissues structures, functions and locations. Understand the anatomy of the integumentary system and its functions.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	57	19.13%	71	23.83%	70	23.49%	100	33.56%	298	100.00%
2022 FA	54	25.71%	75	35.71%	80	38.10%	1	0.48%	210	100.00%
Totals	111	21.85%	146	28.74%	150	29.53%	101	19.88%	508	100.00%

B. Learn microscopic anatomy of bone, cellular components of bone, growth of bone and hormonal regulation of bone. Learn microscopic anatomy of skeletal muscle, sliding-filament theory, excitation-contraction coupling and functions of smooth and cardiac muscles. Learn six classifications of joints, all synovial joints, their names and anatomy, ranges of motion regarding synovial joints.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	52	17.45%	51	17.11%	95	31.88%	100	33.56%	298	100.00%
2022 FA	49	23.33%	75	35.71%	84	40.00%	2	0.95%	210	100.00%
Totals	101	19.88%	126	24.80%	179	35.24%	102	20.08%	508	100.00%

C. Learn anatomy of a neuron and how they function and communicate within the body. Learn all brain regions and their functions. Learn all cranial nerves and their functions. Learn regions of spinal cord and their functions. Learn the divisions of the ANS and its functions.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	48	16.11%	49	16.44%	101	33.89%	100	33.56%	298	100.00%
2022 FA	46	21.90%	65	30.95%	92	43.81%	7	3.33%	210	100.00%
Totals	94	18.50%	114	22.44%	193	37.99%	107	21.06%	508	100.00%

D. Learn the structures and functions of the cardiovascular system, including cardiac cycle and cardiac output, exchange of gases between blood and tissues. Learn the structures and functions of the respiratory system including exchange of gases between air and blood and neural regulation of breathing. Learn the structures and functions of the Lymphatic/Immune system including lymphatic anatomy and specific and non-specific immunity.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	42	14.09%	49	16.44%	103	34.56%	104	34.90%	298	100.00%
2022 FA	44	20.95%	71	33.81%	85	40.48%	10	4.76%	210	100.00%
Totals	86	16.93%	120	23.62%	188	37.01%	114	22.44%	508	100.00%

E. Learn the structures of the digestive system, how substances travel the rough the digestive system absorption of nutrients and neural regulation. Learn the structures of the urinary system, formation of GFR and its regulation, anatomy of a nephron and its functions, formation of urine. Learn the anatomy of the reproductive systems including spermiogenesis, ovarian and menstrual cycles.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	48	16.11%	50	16.78%	89	29.87%	111	37.25%	298	100.00%
2022 FA	44	20.95%	71	33.81%	82	39.05%	13	6.19%	210	100.00%
Totals	92	18.11%	121	23.82%	171	33.66%	124	24.41%	508	100.00%

F. In lab, identify the following: anatomical terminology, epithelial and connective tissues, integumentary structures, anatomy and bony landmarks of the appendicular skeleton, anatomy and bony landmarks and foramen of the axial skeleton, identify skeletal muscles and their specific actions, identify structures of a neuron and structures of the brain.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	68	22.82%	63	21.14%	122	40.94%	45	15.10%	298	100.00%
2022 FA	38	18.10%	54	25.71%	69	32.86%	49	23.33%	210	100.00%
Totals	106	20.87%	117	23.03%	191	37.60%	94	18.50%	508	100.00%

G. In lab, identify the following: structures of the spinal cord, structures of the eye and ear, structures of the heart and blood flow through the heart, specific arteries and veins, specific formed elements of the blood, structures of the respiratory system, structures of the digestive system, structures of the urinary system including blood flow through the kidney and filtrate through the nephron, structures of the reproductive systems.

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	112	37.58%	67	22.48%	66	22.15%	53	17.79%	298	100.00%
2022 FA	59	28.10%	53	25.24%	49	23.33%	49	23.33%	210	100.00%
Totals	171	33.66%	120	23.62%	115	22.64%	102	20.08%	508	100.00%

Totals for CSLOs

	Good Performance		Satisfactory Performance		Emergent Performance		N/A		Total	
2023 SP	427	20.47%	400	19.18%	646	30.97%	613	29.39%	2086	100.00%
2022 FA	334	22.72%	464	31.56%	541	36.80%	131	8.91%	1470	100.00%
Totals	761	21.40%	864	24.30%	1187	33.38%	744	20.92%	3556	100.00%

1.

Course by SLO	Expected Performance	Performance Spring 2018	Performance Spring 2023
AP120 - Introductory Human Anatomy and Physiology (nonmajors and prep for nursing prereqs)			
Describe basic cellular processes and the molecular and cellular basis of human life, including molecular biology and protein synthesis	**100%**	**72.2%**	**71.6%**
Describe the structures and functions of muscles, muscle cells, and muscle contraction	**100%**	**68.2%**	**75.2%**
Explain the structures and functions of the human nervous system and the activity of neurons	**100%**	**54.5%**	**64.2%**

Explain the structures and functions of the human senses and its cells	**100%**	**75.4%**	**74.9%**
Explain the structures and functions of the human endocrine system	**100%**	**61.7%**	**69.5%**
Describe the structures and functions of blood and the human cardiovascular system	**100%**	**70.9%**	**71.3%**
Describe the structures and functions of the human lymphatic and immune systems	**100%**	**74.7%**	**67.3%**
Identify the structures and describe the functions of the human digestive system	**100%**	**66.3%**	**65.5%**
Identify the structures and describe the functions of the human respiratory system	**100%**	**65.2%**	**61.4%**
Identify the structures and describe the functions of the human urinary system	**100%**	**69.1%**	**65.7%**
Identify the structures and describe the functions of the male and female reproductive systems	**100%**	**79.7%**	**73.9%**
In lab, describe the physical aspects of cell membrane transport	**100%**	**62.6%**	**78.0%**
In lab, explain DNA structure, transcription, and protein synthesis	**100%**	**81.0%**	**74.7%**
In lab, explain the structure and functions of enzymes	**100%**	**71.4%**	**70.9%**
In lab, identify the major bones of the human skull and appendicular skeleton	**100%**	**61.9%**	**60.6%**
In lab, identify the major muscles of the human body	**100%**	**74.1%**	**76.7%**
In lab, identify the major organs and structures of the human nervous system, cardiovascular system, respiratory system, digestive system, urinary system, and reproductive system	**100%**	**85.5%**	**77.1%**
AP151 - Introductory Human Physiology (a nursing school prerequisite)	**Expected**	**Spring 2018 93% retention**	**Spring 2023 46% retention**
Explain cellular functions such as membrane transport, protein synthesis, and cellular respiration.	**100%**	**80.7%**	**71.8%**
Explain the physiological mechanisms responsible for organ functioning and the integrated functions of the organ systems.	**100%**	**75.4%**	**82.2%**
Describe the negative feedback mechanisms used to maintain homeostasis.	**100%**	**77.8%**	**78.8%**
Interpret experimental data to demonstrate understanding of physiological processes.	**100%**	**82.3%**	**73.9%**
Distinguish between the major organic compounds in the body and the functions of each.	**100%**	**85.7%**	**79.8%**

Course by SLO	Expected Performance	Performance

Assessment Report (Part 2: Assessment Responses) : Version by **Tsang, William** on **12/08/2023 05:51**

The SLO results (student learning outcomes) of AP 120 and AP 151 as seen in our data tables are examples of the ways in which the department collects and analyzes SLO data. We are still working on the best strategy for establishing SLOS. One course, AP120- Introductory Anatomy and Physiology, has instituted a very specific set of 17 SLOs. They were chosen to facilitate the accumulation of granular data about our AP120 students. The other course, AP151, chose a more global set of 5 SLOs. This strategy was strongly recommended by the SLO committee at the time.

Data collection and reporting of the 17 AP120 SLOs allowed us to recognize 3 specific topics within the course that consistently were a challenge for our students. 1) The nervous system 2) Membrane transport and 3) Identifying bones. In response, we modified our lab schedule. The concept of membrane transport was moved from the 2nd week of the semester to the 7th week of the term. This gave students more time to dial in their study skills, learn the expectations of the course and it placed the topic close to the subject of the nervous system. Moving this lab raised the membrane transport SLO from 62.6% to 78%, an excellent improvement! Moving the lab also led to a more modest, but significant, improvement in the nervous system SLO. That SLO rose from 54.5% to 64.2%. To address the poor results of the bone identification SLOs we switched the order of the appendicular skeleton (arms and legs) and the axial skeleton (skull and spine.) The thought was that bones of the arms and legs were more tangible to students and that familiarity would encourage learning their names. This intervention was not successful. SLOs were 61.9% before and 60.6% after, essentially unchanged. We have created an online interactive anatomy model study site since that time but, due to patent issues, bones were not included in the website.

The SLO data from the AP151 course, Introductory Human Physiology, provides less granular data. AP151 has a prerequisite course, AP150- Introductory Human Physiology. These AP courses are two critical prerequisite courses for application to nursing programs, PA programs and PT programs. The data indicates that students who completed AP150 in person (before the pandemic) had a much higher success rate in AP151 than students who took the prerequisite in the online environment. The cellular, molecular SLO dropped from 80.7% before the pandemic when students took AP150 in-person to 71.8% when they returned to in-person but had completed their prerequisite on-line. The biochemistry SLO dropped from 85.7% down to 79.8% comparing the same period. What was particularly alarming for the faculty evaluating these results was that before the pandemic 93% of the students completed the course but in spring 2023 more than half of the students withdrew and the SLOs of those students are not even represented in the data. Clearly, taking AP150 - Intro Human Anatomy in the online environment did not prepare students to succeed in AP151. In the Spring 2023 semester, our completion rate was still well below the course's norm however we were reassured to see that the SLOs are rebounding.

Biology 200 is a major's level organismal biology course. The students who completed Bio200 in fall of 2022 significantly underperformed compared to the semesters prior to the pandemic. This may be another example of the impact of online learning. It was noted that student success for all of the CSLOs generally improved in the Spring 23 term. We will be watching closely to see if the rebound continues. Another lesson from the CSLOs of Bio200 is that students generally struggle with 2 of the foundational concepts in biology that are not readily memorized. We have discussed how to format Bio200 lab experiences to encourage scientific evaluation and reasoning.

The most challenging CSLO for Micro 200 students has long been the subject of the eukaryotic, parasitic organisms. Currently, we are exploring whether the amount of detail expected of students on this topic is appropriate for this pre-nursing requirement.

Zoo120 is a non-majors biology course. The CSLOs for Fall 22 and Spring 23 demonstrate the most dramatic impact of the online learning environment. Students in fall (our first term back) were dramatically underprepared for this lab biology course. Again, we saw a rebound in spring term and will follow CSLOs closely to understand where a deficit of preparation may continue to impact student success.

The increase in SLO's in MICR 200 and ZOOL 120 between fall and spring could be due to more students taking a science class in the fall semester which usually leads to more success when taking another science class in succession.

All AP 150 courses are offered in person only. We currently don't have any more space to offer more sections due to S129 being full throughout the week.

Explain the frequency (i.e., when and how often) and content of assessment process (e.g., planning, data collection, and results) for the program (e.g., department meetings, advisory boards, etc.). Also, describe the process for reviewing and discussing outcomes data.

We decided during one of our department meetings in the spring 2023 semester that we would evaluate our SLO's every semester. This is an ambitious goal that we will be working to meet. Each course has a leader that creates their respective SLO's to be assessed. It is also their responsibility to gather any needed SLO data from the adjunct professors to input into eLumen.

SLO's are a constant point of conversation in most of our department meetings. We are always striving to find better ways to create effective assessments and determine how we can better evaluate the topics that need to be improved upon in each of our classes.
We have attended CTX programs based on SLO's and we understand that this is an important part of class evaluation and ensuring the content we present is retained by the students.

Our review process is first done by the class leaders. Once the SLO data is assessed, we will use that data to determine if there are any topics/subjects that are showing diminished retention. We will reach out to the adjuncts to get their input on why they feel these subjects are not showing the retention we'd like.
Describe the process for development of plan for improvement and summarize the changes that discipline faculty plan to implement based on the analysis of the student learning and program effectiveness. Provide specific examples.
The lead instructor for each course will evaluate which SLO's aren't obtaining the effectiveness we expect. Then, we will reach out to the adjuncts to get their opinion on what they have seen in their individual classes regarding these topics.

Once this is done, several steps may be made to implement changes to these topics, including:

1. trying a different approach when teaching that subject.
2. changing a lab so to find different ways to present the material.
3. reevaluating any quizzes that might need to be changed for better effectiveness of learning.
4. examining if methods used by instructors having more success can be in certain topics can be applied into all corresponding sections to try and help increase effectiveness of learning.
5. Ichanging SLO's, which entails making changes in eLumen.

Example: It's common for students to not do well on the skeletal and muscle quizzes in the AP 150 classes. Ryan Babiar has changed his approach to this material by having the students tag the structures themselves and answer specific questions. He has found an increase in retention with this method. He has also implemented some practice quizzes online to give them a better idea of what the quizzes will look like and to practice their spelling on the fill-in-the blank questions. This is an ongoing change, so SLO data will need to be assessed over the next two years to gauge success rates.

Example: BIOL 120 was noticing that some of the labs they had created weren't going as planned. Due to this, the grades and lab reports weren't as expected. The department (including the adjuncts) had several meetings to discuss how they could improve the labs and what went wrong with the experiments. They have implemented these changes in the Fall '23 semester, and will need to review the SLOs after the semester is over to see if there were any improvements.

Example: Jesus Reyes is currently working on changing his SLOs for the BIOL 115 course to adapt to the new material he is teaching and stressing different methods of evaluation.

As a department, we find using eLumen somewhat challenging and difficult when assessing our SLO's and especially when trying to make any changes.

Adding a new full time instructor to the department could have a positive impact on SLO data. This would allow us to have more consistency regarding sections that are taught by full time faculty. This generally leads to increased continuity of learning for the students and less searching for adjunct faculty to teach these courses.

Data Analysis of Program Data : Version by **Tsang, William** on **12/08/2023 05:57**

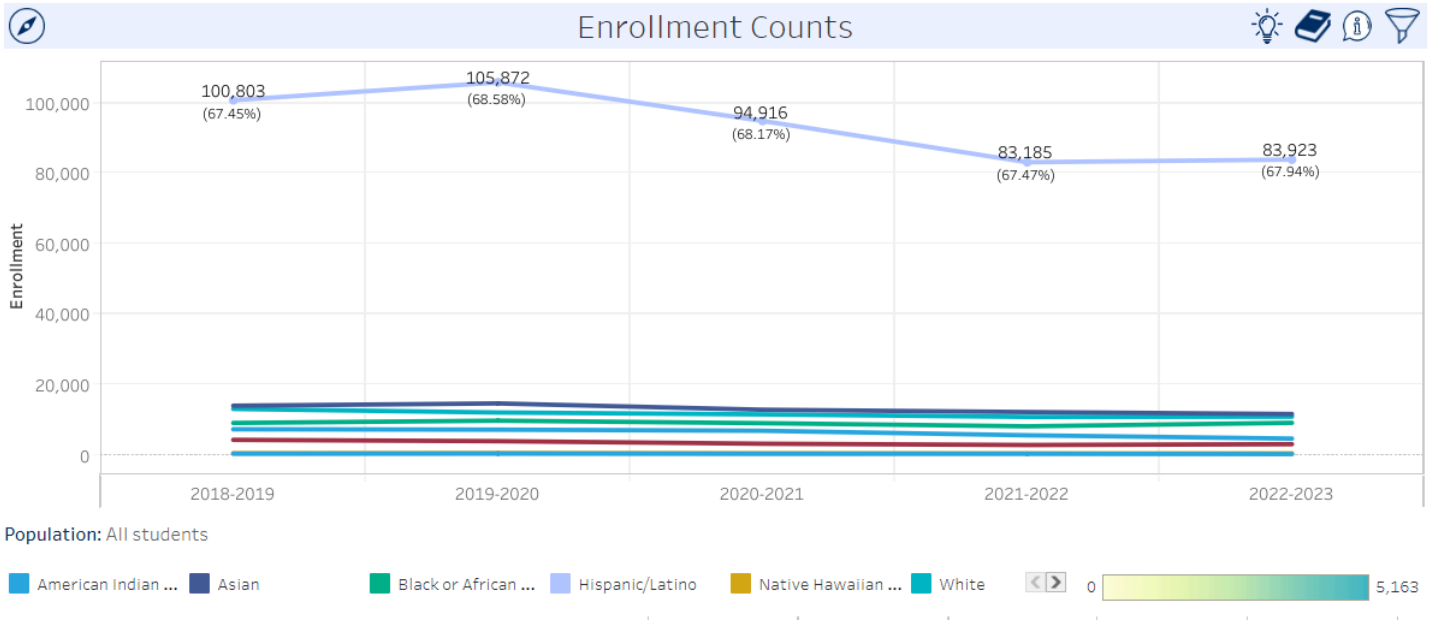


Figure 1. Enrollment counts of all students at the college. Data disaggregated by student race or ethnicity.

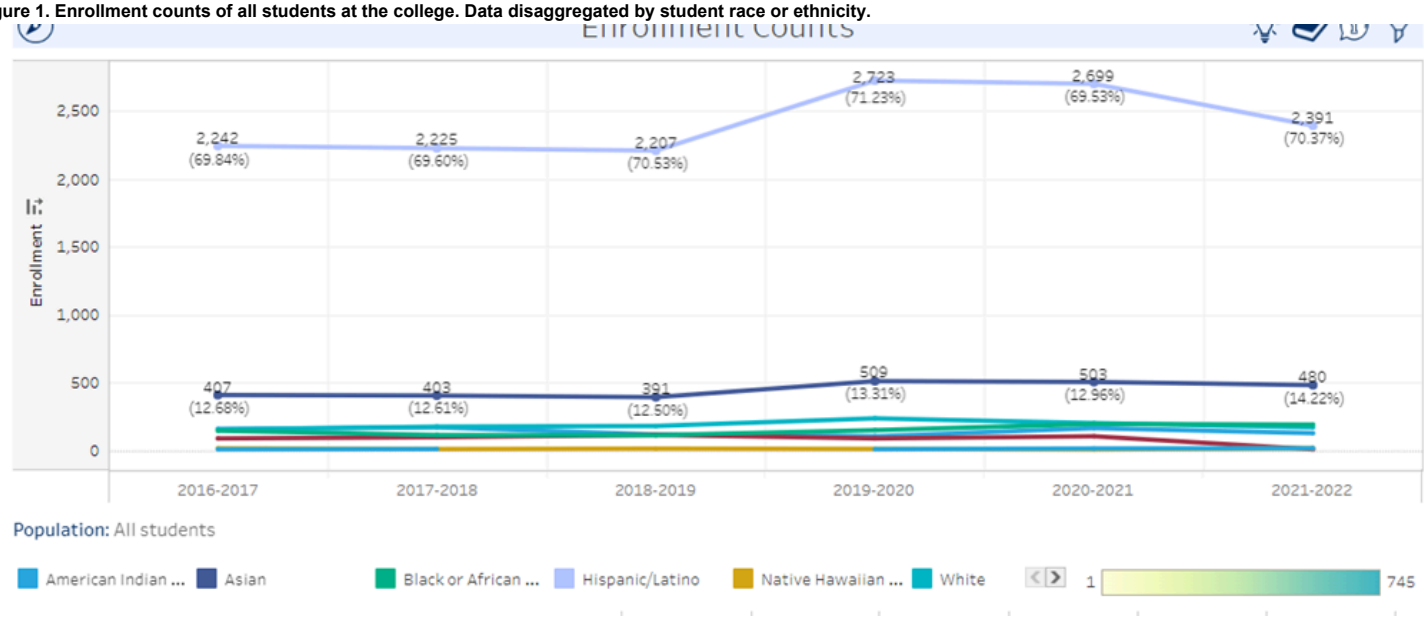


Figure 2. Enrollment of all students in the biology department. Data disaggregated by student race or ethnicity. The biology department has similar trends as the campus

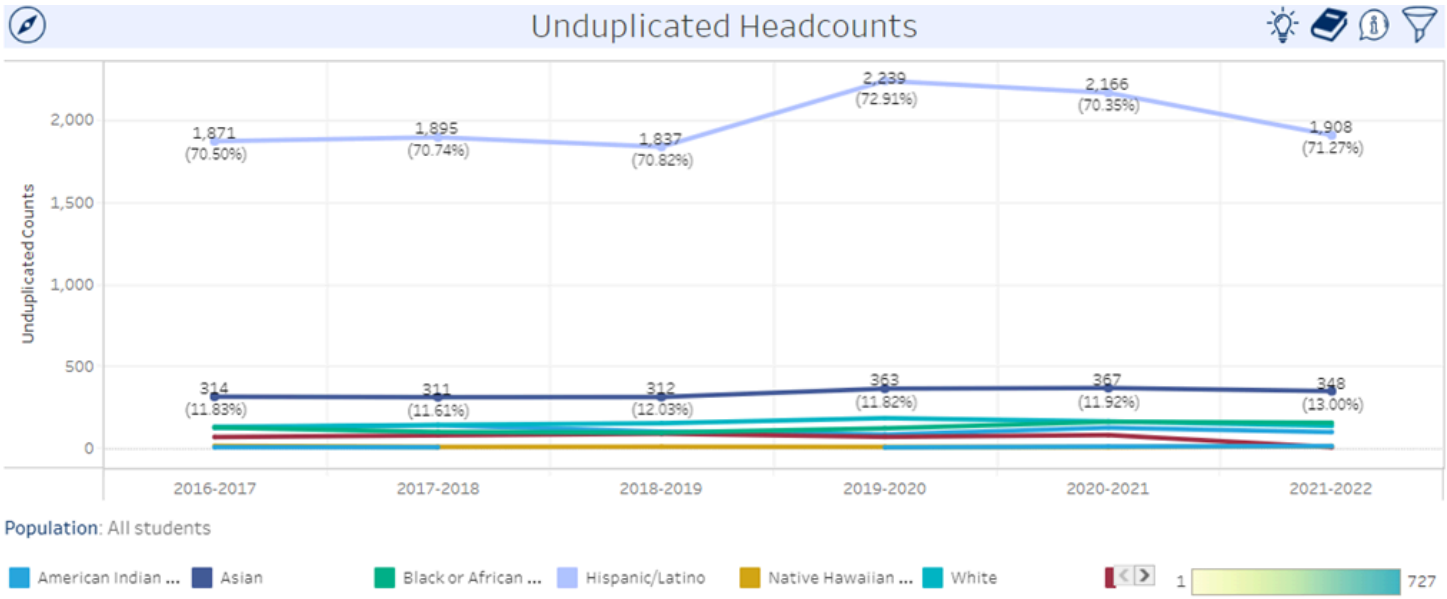


Figure 3. Unduplicated headcounts in the biology department. Data disaggregated by student race or ethnicity. Hispanic students make-up roughly 70% of the student population.

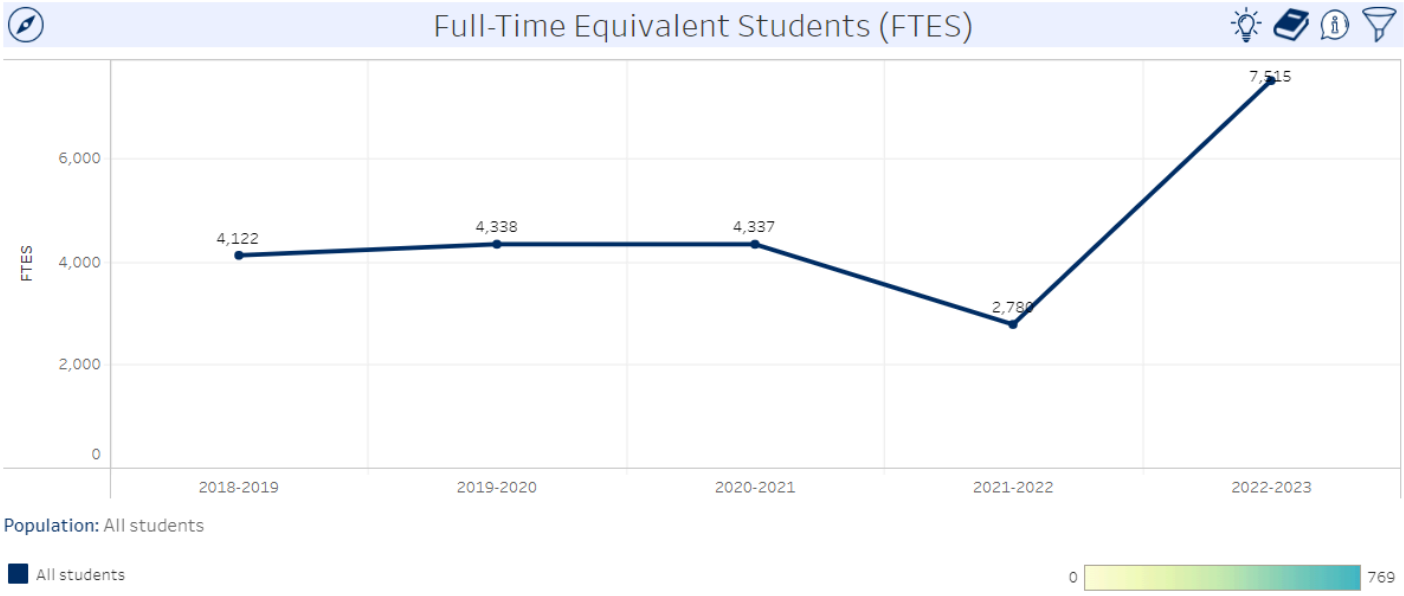


Figure 4. Full-Time Equivalent Students in the biology department. While overall enrollment has dropped, the number of FTEs has increased.

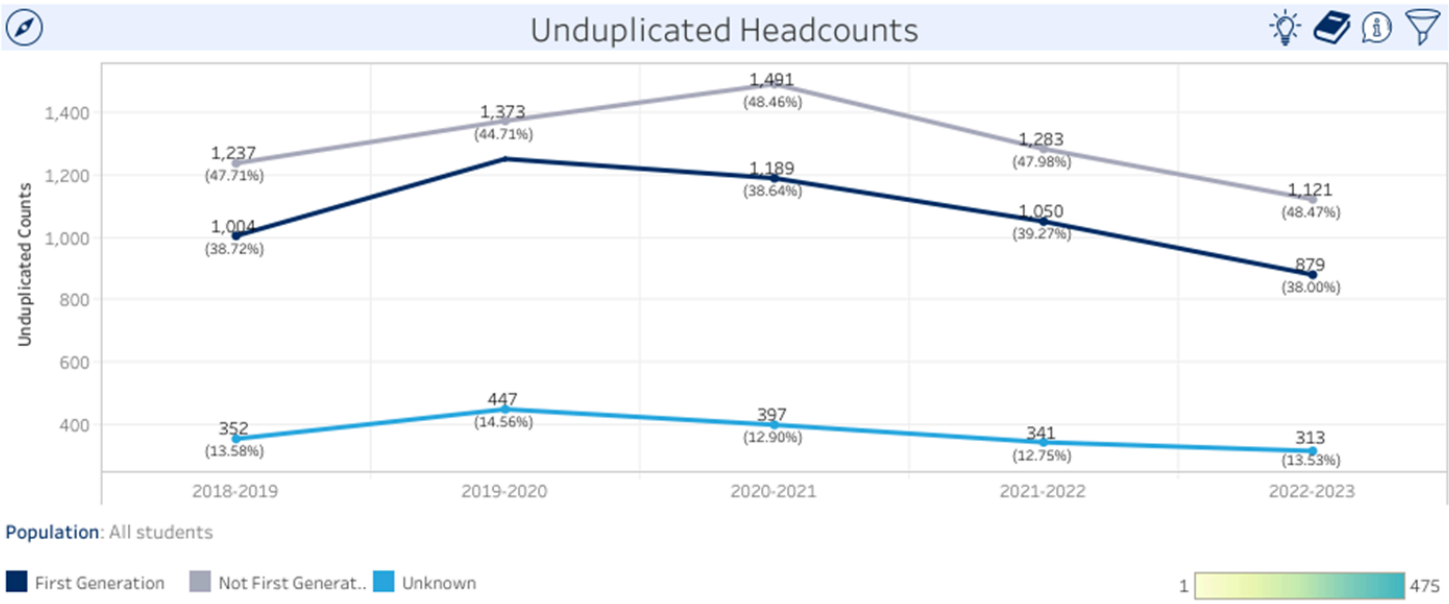
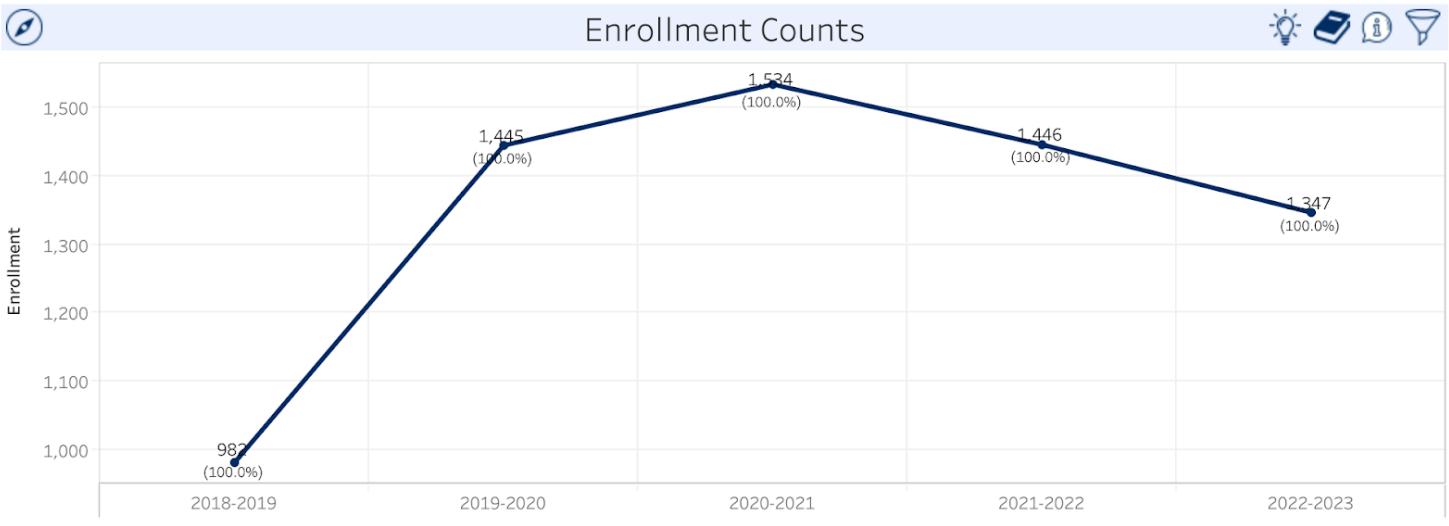


Figure 4. Unduplicated headcounts with data disaggregated by First-Generation or Non-First Generation students. Non-First Generation students have slightly higher enrollment than the First-Generation student population.



Division	Department	Subject	Course	Select Student Attribute	2018-2019 Academic Year	2019-2020 Academic Year	2020-2021 Academic Year	2021-2022 Academic Year	2022-2023 Academic Year
Grand Total					982 (100.0%)	1,445 (100.0%)	1,534 (100.0%)	1,446 (100.0%)	1,347 (100.0%)
Science, Engineering & Mathematics	BIOL	A&P	A&P 150	All students	407 (100.0%)	762 (100.0%)	845 (100.0%)	726 (100.0%)	679 (100.0%)
			A&P 151	All students	250 (100.0%)	364 (100.0%)	408 (100.0%)	428 (100.0%)	406 (100.0%)
		MICR	MICR 200	All students	325 (100.0%)	319 (100.0%)	281 (100.0%)	292 (100.0%)	262 (100.0%)

Figure 5. Enrollment in the courses required for many Health Occupation programs. The combined data are from the courses Microbiology 200, A&P 150 and 151.

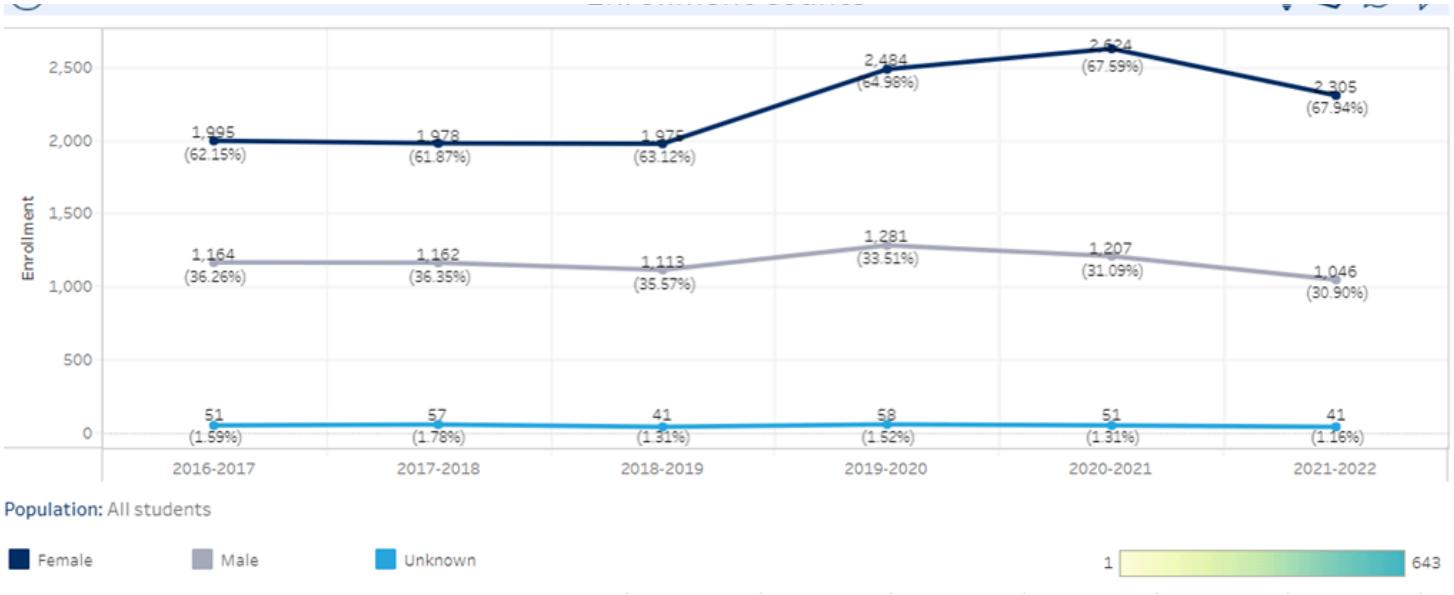
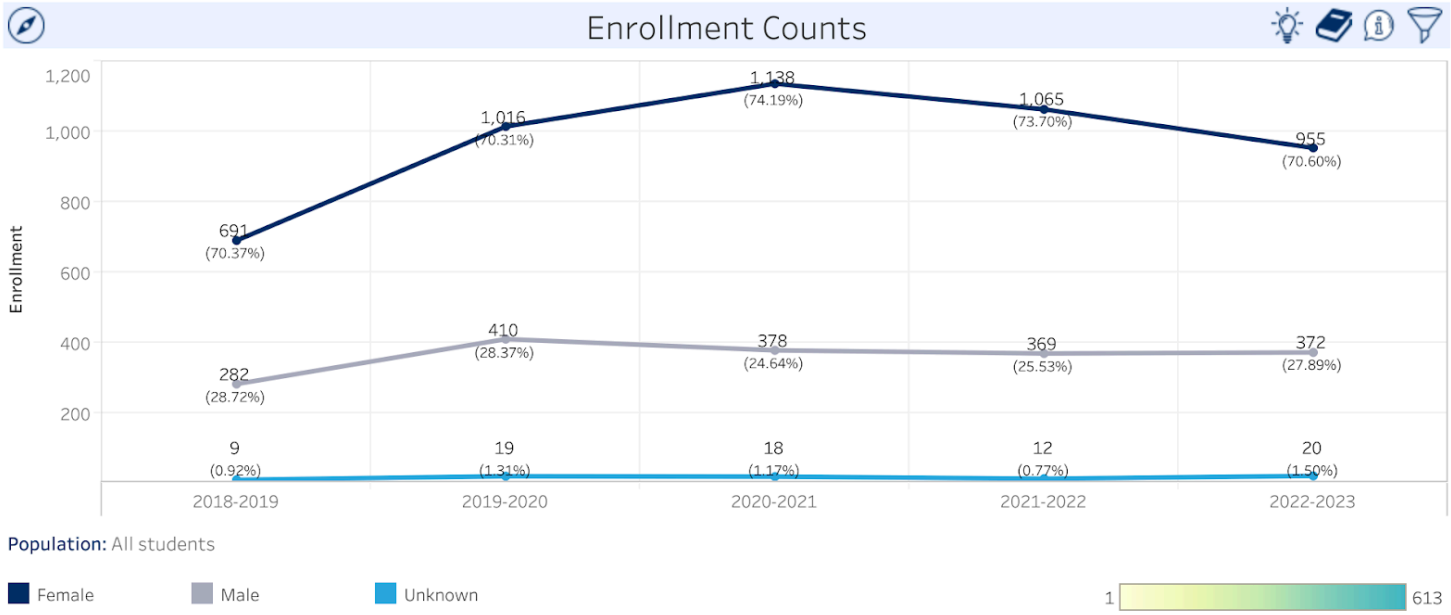


Figure 6. Enrollment in the biology department with data disaggregated by student gender. Female students make-up about 64%, almost twice the population of male students.



Division	Department	Subject	Course	Select Student At..	2018-2019 Academic Year	2019-2020 Academic Year	2020-2021 Academic Year	2021-2022 Academic Year	2022-2023 Academic Year
Grand Total					982 (100.00%)	1,445 (100.00%)	1,534 (100.00%)	1,446 (100.00%)	1,347 (100.00%)
Science, Engineering & Mathematics	BIOL	A&P	A&P 150	Female	271 (66.58%)	531 (69.69%)	613 (72.54%)	515 (70.94%)	469 (69.07%)
				Male	132 (32.43%)	220 (28.87%)	219 (25.92%)	205 (28.24%)	198 (29.16%)
				Unknown	4 (0.98%)	11 (1.44%)	13 (1.54%)	6 (0.83%)	12 (1.77%)
			A&P 151	Female	170 (68.00%)	255 (70.05%)	303 (74.26%)	320 (74.77%)	281 (69.21%)
				Male	78 (31.20%)	105 (28.85%)	101 (24.75%)	105 (24.53%)	117 (28.82%)
				Unknown	2 (0.80%)	4 (1.10%)	4 (0.98%)	3 (0.70%)	8 (1.97%)
		MICR	MICR 200	Female	250 (76.92%)	230 (72.10%)	222 (79.00%)	230 (78.77%)	205 (78.24%)
				Male	72 (22.15%)	85 (26.65%)	58 (20.64%)	59 (20.21%)	57 (21.76%)
				Unknown	3 (0.92%)	4 (1.25%)	1 (0.36%)	3 (1.03%)	

Figure 7. Enrollment counts by gender in courses required by many Health Occupation (HO) programs. These are combined data for A&P 150 & 151 and Micr 200. About 70% of the students are female in these HO courses as compared to approximately 60% in all other combined courses.

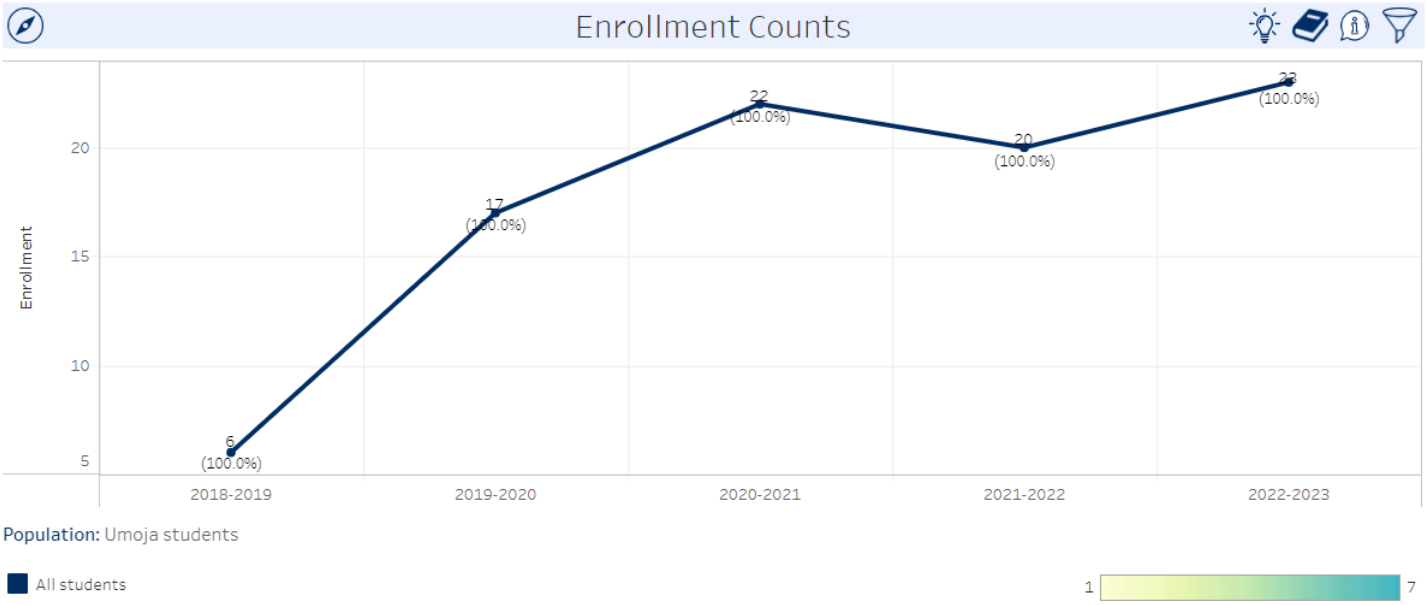


Figure 5a. Umoja students

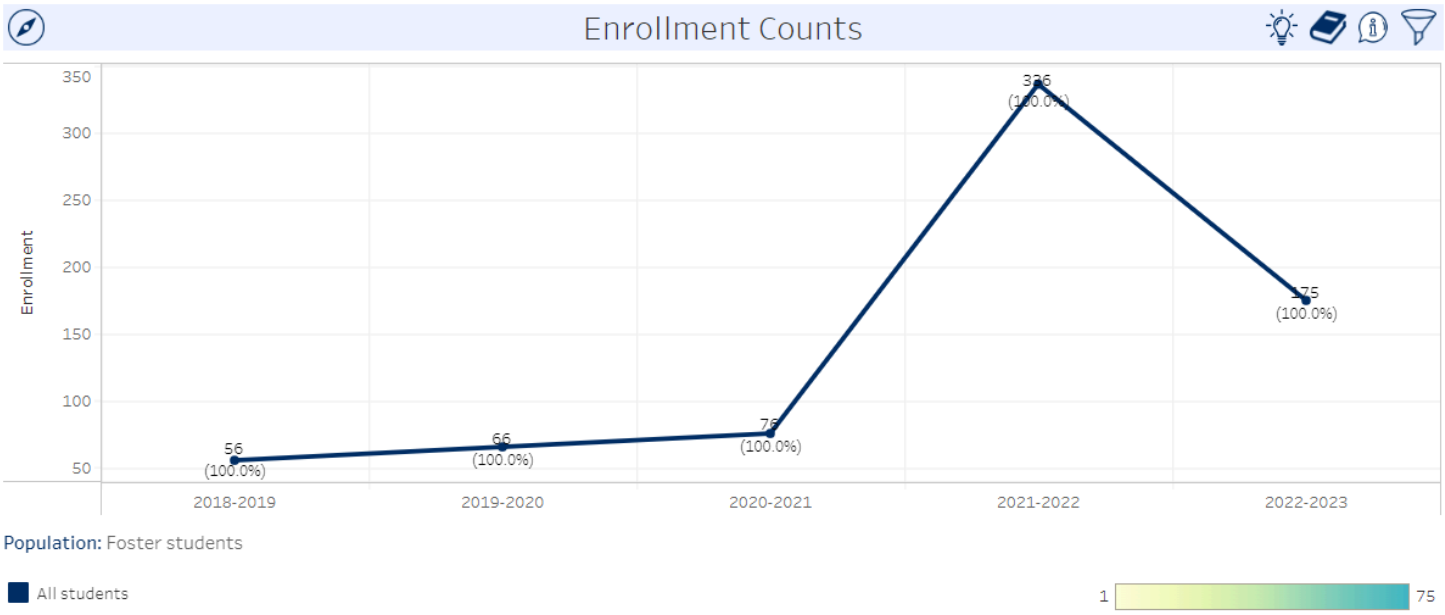
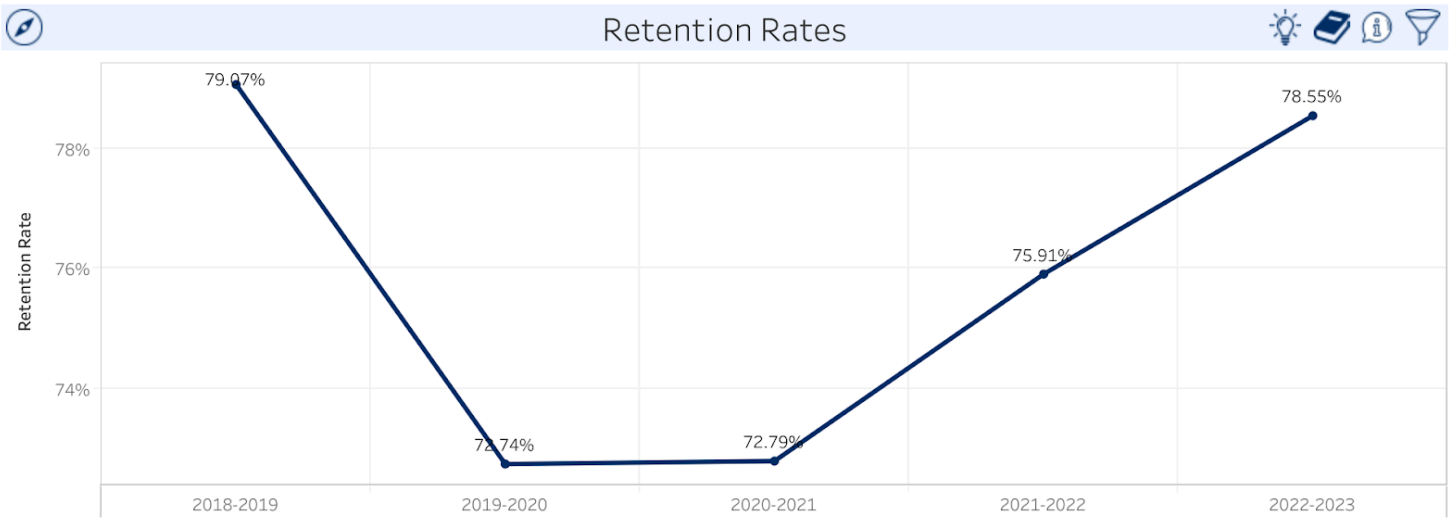


Figure 5b. Foster students



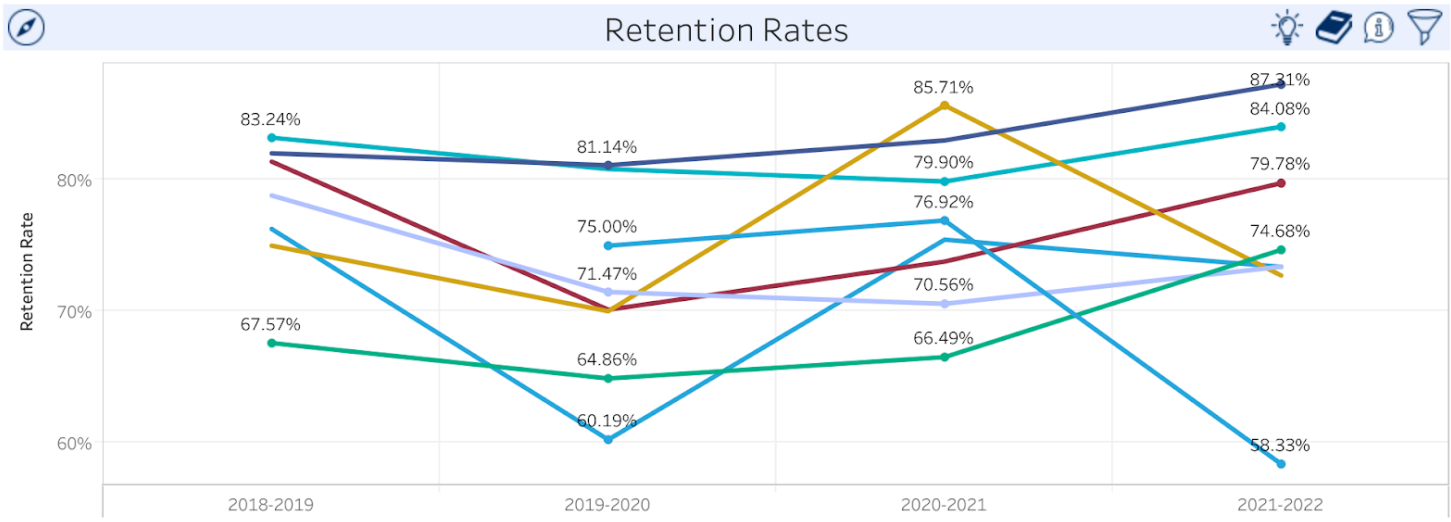
Population: All students

All students

33.33% 100.00%

Division	Department	Subject	Course	Select Student At..	2018-2019 Academic Year	2019-2020 Academic Year	2020-2021 Academic Year	2021-2022 Academic Year	2022-2023 Academic Year
Grand Total					79.07%	72.74%	72.79%	75.91%	78.55%
Science, Engineering & Mathematics	BIOL	A&P	A&P 120	All students	81.77%	80.49%	80.53%	77.05%	79.28%
			A&P 150	All students	79.36%	72.57%	75.74%	75.21%	72.31%
			A&P 151	All students	87.60%	79.40%	66.67%	78.04%	72.41%
			A&P 200	All students	61.36%	60.47%	48.84%	55.56%	33.33%
			A&P 201	All students	93.75%	89.47%	90.91%	100.00%	100.00%
		BIOL	BIOL 105	All students	84.39%	76.28%	81.13%	82.79%	82.64%
			BIOL 115	All students	81.82%	90.91%	89.47%	92.45%	86.00%
			BIOL 120	All students	73.76%	68.38%	68.75%	73.24%	87.12%

Figure 6. Retention rates of students in our courses. Overall, there has been an increase in retention in our courses since we have returned to campus instruction.



Population: All students

American Indian .. | Asian | Black or African A.. | Hispanic/Latino | Native Hawaiian .. | White

0.00% — 100.00%

Division	Department	Subject	Course	Select Student At..	2018-2019 Academic Year	2019-2020 Academic Year	2020-2021 Academic Year	2021-2022 Academic Year
Grand Total					79.07%	72.74%	72.79%	75.91%
Science, Engineering & Mathematics	BIOL	A&P	A&P 120	American Indian or ..		100.00%	100.00%	100.00%
				Asian	84.62%	97.37%	93.33%	87.88%
				Black or African A..	80.00%	85.00%	66.67%	68.00%
				Hispanic/Latino	81.42%	76.49%	78.75%	77.12%
				Native Hawaiian or..	75.00%	100.00%		66.67%
				Two or More Races	91.67%	87.50%	100.00%	66.67%
				Unknown	66.67%	77.78%	88.24%	58.33% DI
				White	92.86%	94.12%	84.21%	86.67%

Figure 7. Retention rates of students with data disaggregated by Race or Ethnicity.

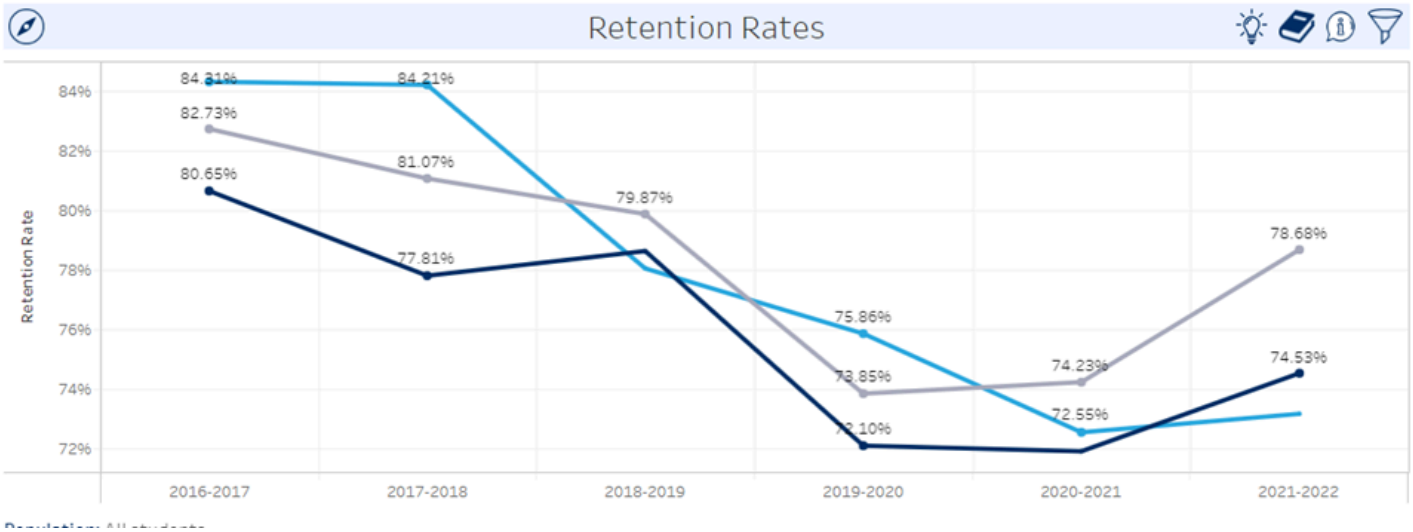
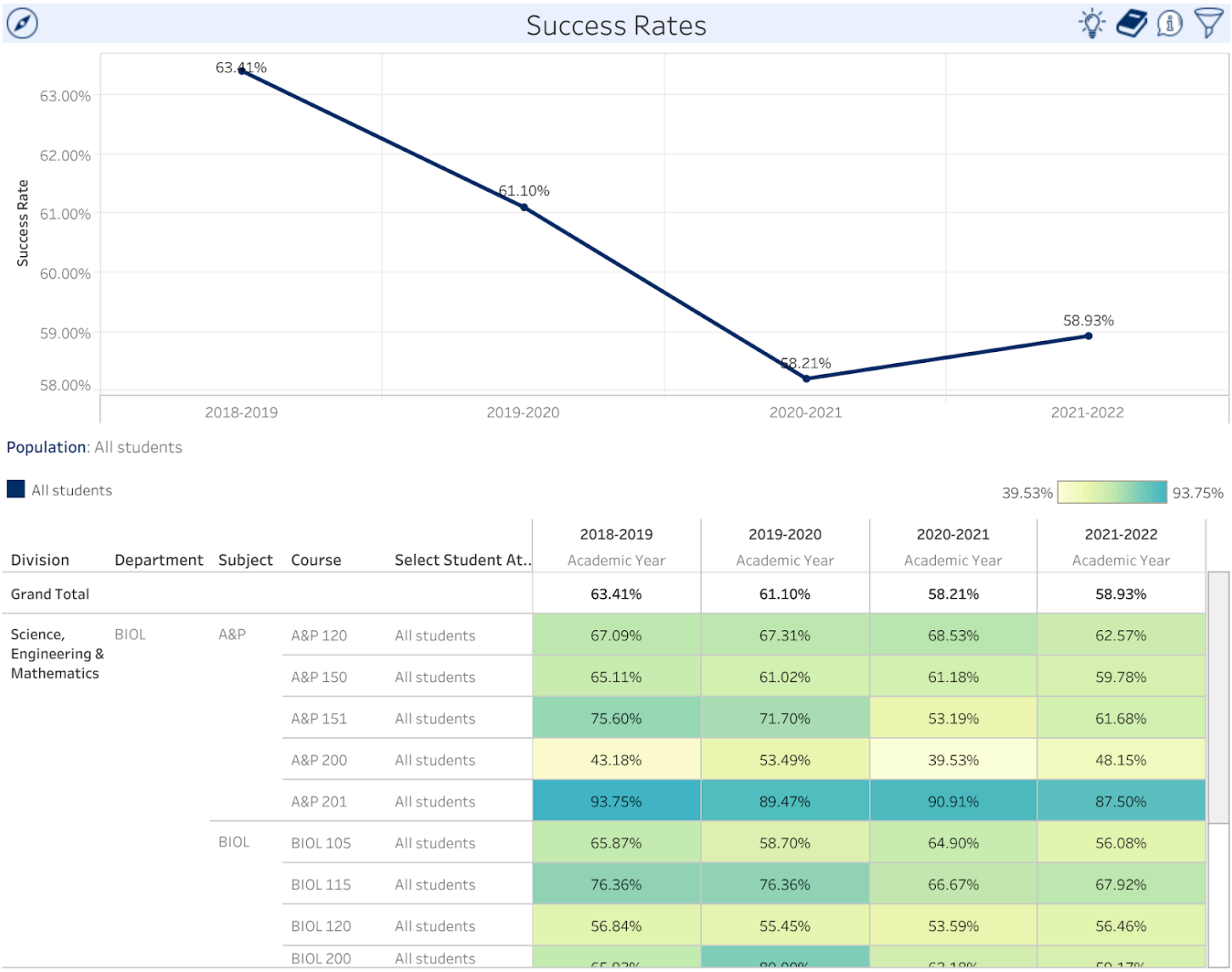


Figure 8. Retention rates by gender. Male students have higher retention rates than females.



Division	Department	Subject	Course	Select Student At..	2018-2019 Academic Year	2019-2020 Academic Year	2020-2021 Academic Year	2021-2022 Academic Year
Grand Total					63.41%	61.10%	58.21%	58.93%
Science, Engineering & Mathematics	BIOL	A&P	A&P 120	All students	67.09%	67.31%	68.53%	62.57%
			A&P 150	All students	65.11%	61.02%	61.18%	59.78%
			A&P 151	All students	75.60%	71.70%	53.19%	61.68%
			A&P 200	All students	43.18%	53.49%	39.53%	48.15%
			A&P 201	All students	93.75%	89.47%	90.91%	87.50%
		BIOL	BIOL 105	All students	65.87%	58.70%	64.90%	56.08%
			BIOL 115	All students	76.36%	76.36%	66.67%	67.92%
			BIOL 120	All students	56.84%	55.45%	53.59%	56.46%
			BIOL 200	All students				

Figure 9. Success rates looking across all courses in the biology department.

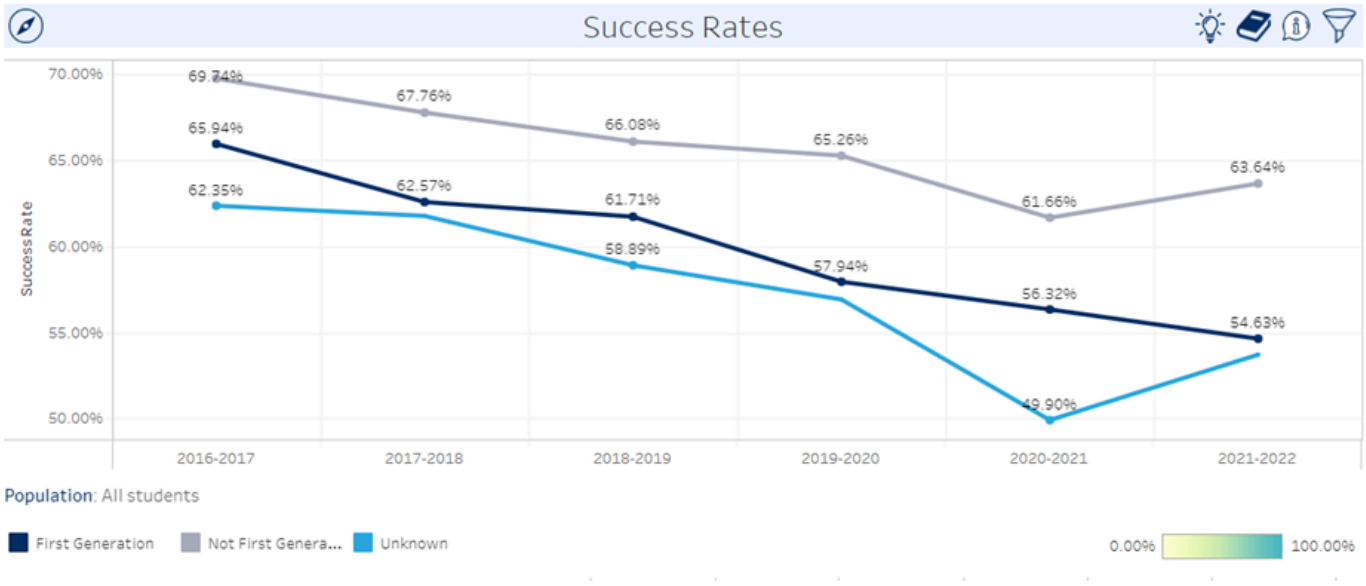


Figure 10. Success rates of First-Generation and Non-First Generation students.

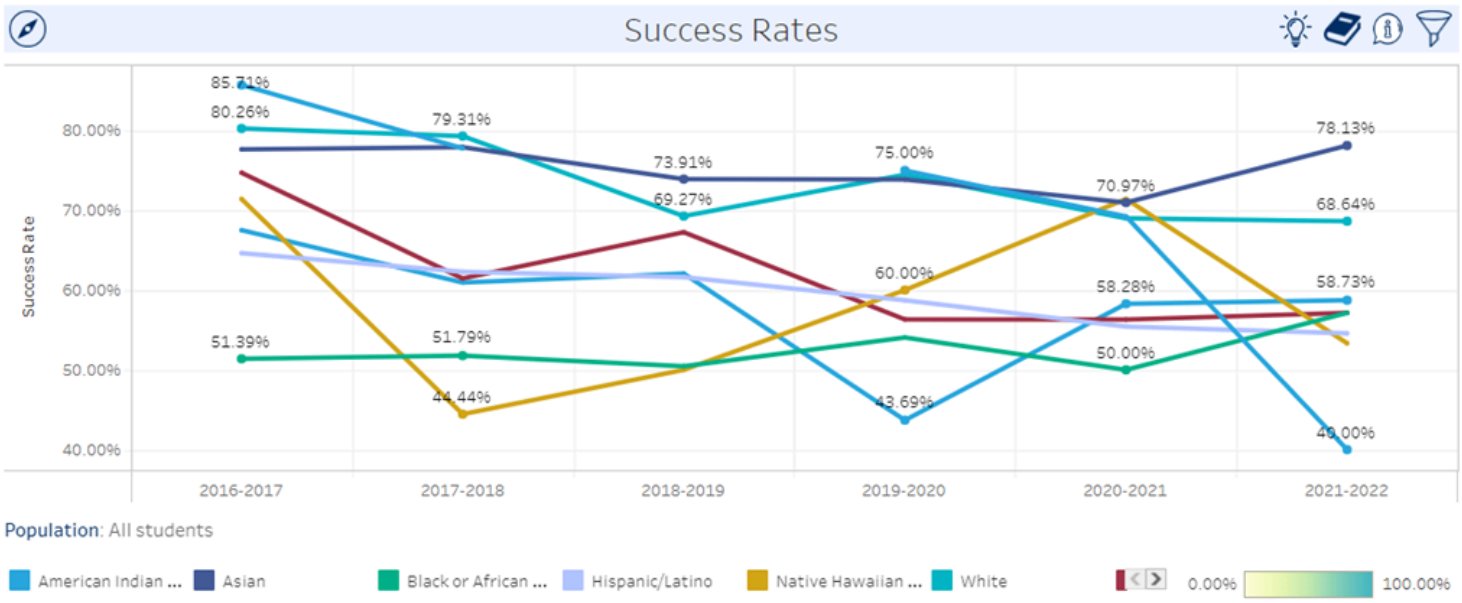


Figure 11. Success rates of students across all courses in the biology department. Data are disaggregated by Race or Ethnicity.

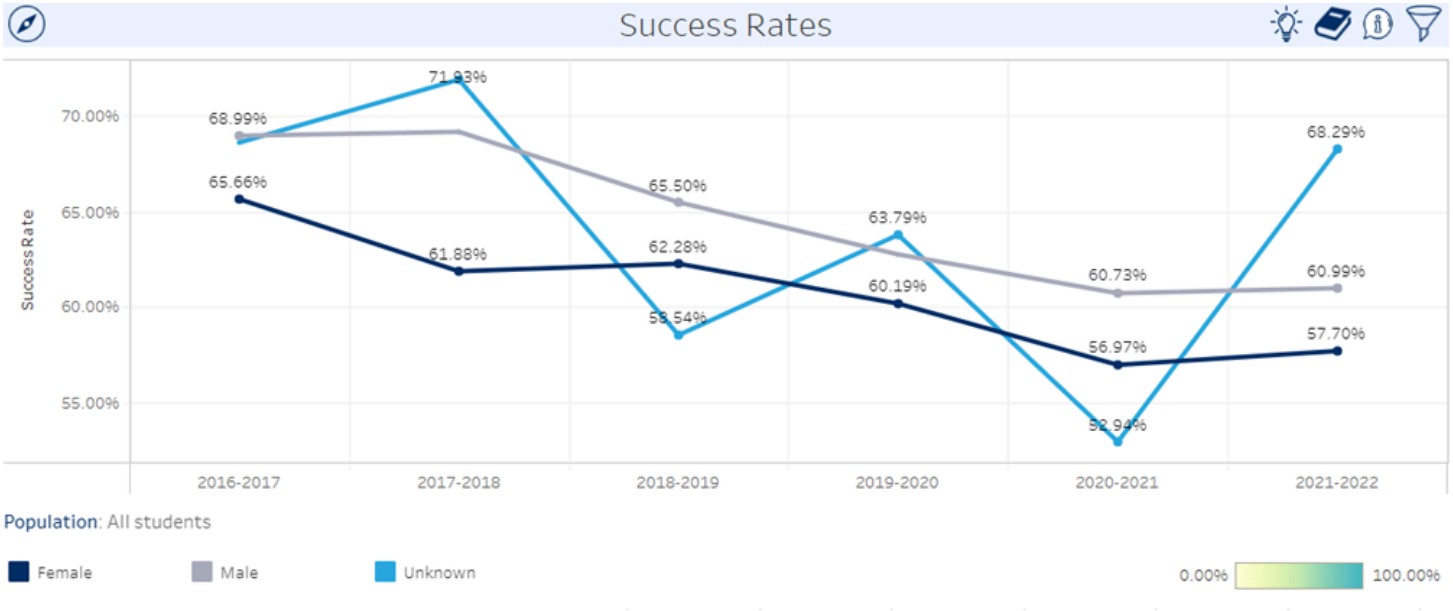


Figure 12. Success rates in the biology department based on gender.

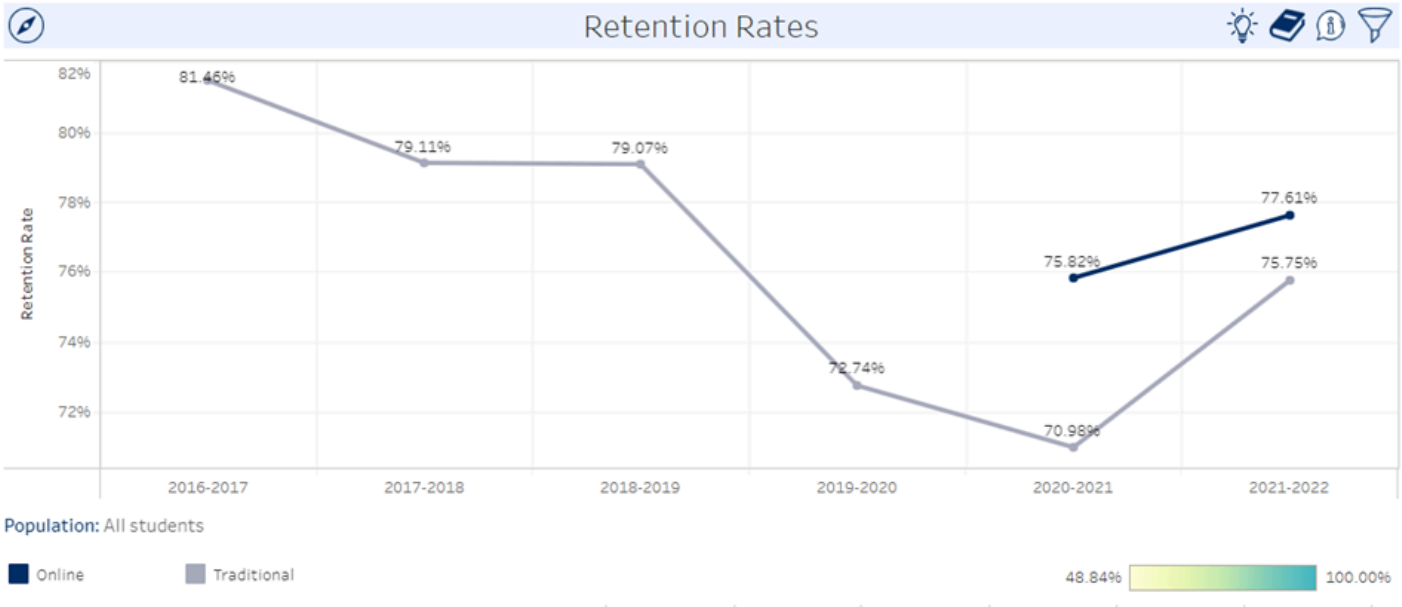


Figure 13. Retention rates comparing online and traditional delivery methods. Retention rates dropped dramatically during the pandemic, going from 79% to ~ 70%. Post pandemic the retention rates are slowly increasing.

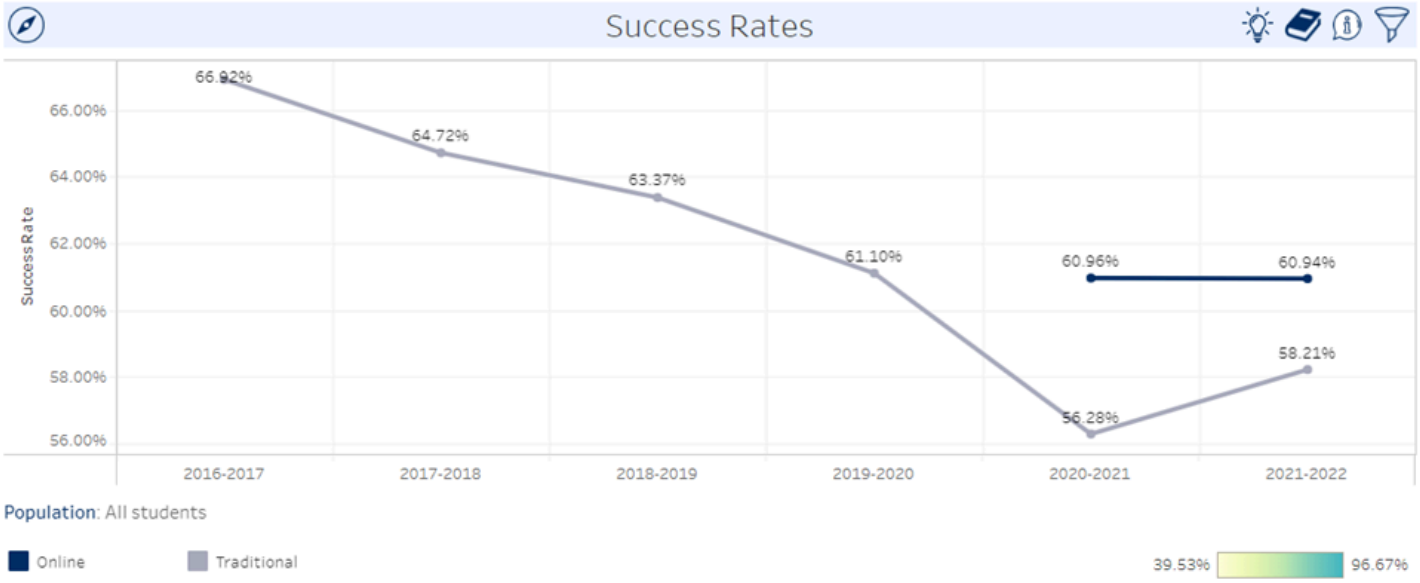


Figure 14. Success rates comparing online and traditional delivery methods. Success rates dropped dramatically during the pandemic, going from 61% to ~ 56%. Post pandemic the success rates are slowly increasing.

Describe your student demographics (race/ethnicity, gender, age, and others that might be relevant). Consider the following questions when writing your response:

- How do the demographics of your program and its related courses compare with the college as a whole?
- Have they changed over time?

In general, our demographics reflect the campus as a whole (Figures 1 & 2). Hispanic/Latino students steadily comprise about 70% of the population over the last few years. The numbers of American Indian/Alaskan Native, Native Hawaiian, and Black students are continually low in all courses.

There doesn't appear to be any significant change noted in the data tables over the past six years.

Headcount (unduplicated) and enrollment (duplicated) in the program. Consider the following questions when writing your response:

- Identify enrollment trends.
- Have there been an increase or decrease in enrollment in the last year?
- Are there differences in trends when you disaggregate the data (e.g., online versus face-to-face, demographics, special populations, etc.)?
- How will enrollment trends affect staffing decisions?

Enrollment was very high during the pandemic years 2020-2021. During the pandemic we could offer lecture courses that had a wide range of schedules (remote & online) and all labs were online. We had a handful of hybrid courses in Fall 2021 and 100% back on-campus courses in Fall 2022. We have seen a decrease in overall enrollment since coming back to on-campus classes in Fall 2021 (Figure 3). While enrollment has begun to increase in 11 courses post-pandemic, it dropped in Bio 105, Bio 120 and A&P 200/201 over the last year. The reasoning is not known for Bio 105 and 120, but many of our students were working during the pandemic or had increased family responsibilities. The increase in A&P 150 and 151 offerings shifted students from A&P 200 & 201. The drop in enrollment was mostly in the Hispanic/Latino student population.

Despite the slight drop in enrollment we have increased our FTEs (Figure 4).

First-Generation students follow the enrollment trends as Non-First Generation students, but are generally 10% lower in number (Figure 5).

The courses (A&P 150/151 & MICRO 200) required to get into a variety of Health Occupation programs, like Nursing and Dental Hygiene, remain steady. The number of Health Occupation students trying to enroll in our A&P and Microbiology courses continues to be in high demand. We have increased AP150 sections by 60% since the program review and concomitantly increased AP151 (Figure 5). These courses continue to be in high demand not only because of the number of students interested in pursuing nursing, but also because the Kinesiology AA-T degree includes AP150 and AP151. Prior to the formation of the Kinesiology AA-T degree it was uncommon for Kinesiology students to take the A&P sequence.

Similar to trends across the US, there are higher numbers of female identified undergraduates enrolled in our courses in comparison to male identified students (Figure 6), especially in the courses that are required for Health Occupation programs (Figure 7).

Our department firmly believes that the science courses are not meant to be taught online, especially the lab portion of each class. We understand that enrollment could be slightly decreased due to the lack of an online presence in our department. We acknowledge this fact and have started conversations to decide what courses could be offered online or at least in a hybrid format. If we did a hybrid format, we would most likely offer the lecture portion online and the labs would be in person.

We lost a significant number of our part-time faculty due to them obtaining full time jobs or moving out of state since the pandemic. We recently hired a new full-time faculty member to help the department with the increased demand for AP 151. It is likely that we will need another full-time faculty member next year to help with the demand for the biotechnology program and to fill the position that was left after one of our full-time faculty members retired.

Discuss the program's success and retention rates, addressing any performance gaps if success rates are lower for disproportionately impacted students. Consider the following questions when writing your response:

- How have the success and retention rates changed over time?
- Are there particular courses that have particularly low rates and may prove a barrier to program completion?

Retention overall has increased since returning to on-campus instruction, similar to pre-pandemic numbers. As a department we have slightly higher Retention Rates than the Division (73%), currently we are nearing our department's pre-pandemic rate (~79%) .

In the Race/Ethnicity data (Figure 7) we see a slight increase in retention in most groups. Across all courses the numbers of Native Hawaiian, Pacific Islander, American Indian, and Alaska Native students have been very low, making interpreting data difficult. In general, Black students have very low Retention Rates (68%), which is similar to the Division data(64%).

First-generation students generally had lower success rates over the last several years than Non-First-Generation students. The pandemic resulted in a wider gap between the two groups.

Black students show up more as DI in A&P 150, Bio 105, and Bio 120, but sample size is small, typically under 40 students. Sample sizes for students that identify as Native Hawaiian or American Indian are too small to make any generalized statements.

The biology department has a high number of female students (1.5-2X the males). While the enrollment is higher for female students, their retention (82% males vs 76% females; Figure 8) and success rates (65% males vs 55% females; Figure 12) are lower in comparison to male students.

AP 150 & 151 are courses that see high drop rates and non-passing grades. The reasons for this are extensive. Regardless, if students don't pass these courses they can't proceed to the degree they want or for transfer. This is a barrier for completion. As we state throughout this review, we are well aware of this and are constantly looking for ways to improve success rates. We are looking into cultural and racial trends for these courses to see if there's anything we can do to supplement any DI students.

With regards to success and retention rates, what is the program doing or planning to do to close performance gaps and address student equity? Consider the following question when writing your response:

- Are there differences in success rates across delivery method (e.g., face-to-face compared to online)?

The inability to teach laboratories on-campus, combined with logistical issues, probably contributed to lowered success. The department has seen a slight increase in success rates over the past year. We believe this to be due to courses returning to on-campus instruction, with direct contact with the students leading to better results. Students have remarked that they retain and understand material better when they have hands-on learning in the lab. We are seeing an increase in success rates since the Fall 2021 semester.

We noticed that while we were forced online due to the pandemic, students did not do as well with Online delivery versus face to face. The move to online lectures and labs because of the pandemic made it very difficult to teach material that requires hands-on learning and in person instruction. Whether this was due to students dealing with pandemic issues outside of school or with the move to online instruction, or a combination of these things, is not completely known. What is known is that a considerable amount of learning and interaction does take place in the in-person laboratory setting.

Since we have returned to all on-campus classes in 2021, we have seen an increase in retention (Figure 13) and success rates (Figure 14). This helps provide proof that these science courses truly benefit from direct contact, especially in the laboratory setting. This is a positive trend, and we expect it to get better as students transition from the online environment back into the classroom.

As mentioned previously, we are looking at the data from this program review to identify and gaps that might show regarding student equity. For example, the lower passing rates of our female students. We recognize that we might need to create workshops or study sessions to help ensure better passing rates for this population of students.

Discuss conclusions drawn from the program data, assessments (SLOs), and/or other data. Indicate any specific responses or programmatic changes based on the data.

When looking at our data, the biology department is doing a good job at addressing student equity and we continue to work on closing performance gaps. While there is overall improvement with retention and success rates, some groups (Asian, White, Non-First Generation, males) have higher gains.

We need to have more discussions as a department on how to increase success rates in our Hispanic and Black student populations. We are also aware that while we have a higher number of female students, their success rates need to improve. First generation success rates have dropped slightly in the past year. The thought of adding workshops to help these students gain a better understanding of the study process for science courses has been a topic in our department meetings. Now, we need to implement these strategies and track the success rates going forward.
We are proud of our retention rates over the past few years as the data shows they are gradually increasing. This is incredibly important as it shows students are staying in school and continuing to work their way towards achieving their academic goals.

While students may have more access with Online formats the success rates are lower. We will need more assistance (e.g., tutoring) for our students that make their way back to campus. It is evident that they will be behind in skills that they would normally learn in a laboratory environment.
After reviewing the data, we identified that there are more female than male students, however, they perform at a lower rate when examining success rates. After further review of the modality data, the department is considering moving some labs to a hybrid model to accommodate the changing landscape of higher education.

There were some SLO data that looked incomplete, but that is most likely due to the addition of new SLOs that have been entered on eLumen. So, they show 0% because they aren't being assessed currently.

Overall, we have had many conversations as a department about our concerns regarding students' ability to overcome certain challenges since returning to school after the pandemic. While we can't put our finger on it yet, we know that there has to be a way to get the students to start performing better and increase our success and retention rates. We would like to implement some type of workshop for the students to help them learn how to study for the science courses. These can also be found in our goals.

In AP150 there has been a demonstrated lack of understanding of body movements and how they relate to the muscle and skeletal systems so we restructured the AP150 lab to take two labs to cover the muscle system and reduced the histology covered in lab

Likewise in AP150, labs now include outside assignments for the purpose of preparing for and/or reinforcing lab concepts.

The addition of the Anatomage table in the AP labs provides us an opportunity to include a body movement demonstration using the table and its applications. The Anatomage table allows students to do virtual dissections on 4 different cadavers. It can also be used for regional anatomy, showing real organs from a cadaver. This is a resource we didn't have previously and will benefit students understanding of real structures along with the models we normally use in the lab.

Curricular Course Review : Version by **Tsang, William** on **12/08/2023 05:58**

Provide the curriculum course review timeline to ensure all courses are reviewed at least once every six years.

Below is a list of the courses offered in our department and their most recent curriculum course reviews. All have had COR reviews within the past three years. Currently, BIOL 105 & BIOL 115 are undergoing content reviews.

AP 120: 1-24-19
AP 150: 5-1-19
AP 151: 1-24-19
AP 200: 1-24-19
AP 201: 1-24-19
BIOL 105: 5-1-19
BIOL 115: 5-1-19
BIOL 120: 4-25-19
BIOL 200: 4-21-21
BIOL 201: 4-21-21
BTEC 120: 12-9-21
BTEC 150: 12-9-21
BTEC 180: 12-9-21
MICR 200: 5-1-19
ZOOL 120: 5-1-19

Explain any course additions to current course offerings.

BTEC 120: The department has added a new certification program and added courses in Biotechnology.

BIOL 105-Considerations to adding lab portion.

We have been considering changing the BIOL 105 course to add a lab section. We are working on figuring out if this would allow it to become a CALGETC course. We are also considering making this course DE certified.

BIOL 105, BIOL 115 and MICR 200 are all under current Periodic Review. We are diligently working on these courses and plan to have them done by December '23.

Explain any course deletions and inactivations from current course offerings.

The following courses were made inactive due to lack of demand, decreasing interest and difficulty staffing: BIOL 100, BIOL 110, BIOL 250, BIOL 202.

The following courses were made inactive due to decreased demand and the fact that most health programs are now accepting AP 150 & AP 151 instead: AP 200, AP 201

These changes were made due to a combination of low demand and changing university requirements. However, this change opens up room space for courses that are part of the new Biotechnology program and/or AP150 & AP151 sections.

Discuss how well the courses, degrees, and/or certificates meet students' transfer or career training needs. Consider the following questions:

- Have all courses that are required for the program's degrees and certificates been offered during the last two years? If not, has the program established a course offering cycle?
- How has degree and/or certificate completion changed over time?
- Are there sufficient completers compared with the size of your program?

All courses that are required for program degrees and certificates have been offered during the last two years. The only course that is offered once a year is BOT 120. We haven't found this once a year offering to be detrimental to student completion rates.

Awards by Area

"What is the Number of Awards awarded?"

	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022
Grand Total	23	29	45	23	25	40
All students	23	29	45	23	25	40

"What is the Number of Awards awarded as Associate Degrees for Transfer?"

Division	Department	Program	Academic Plan Title	Student Attribute	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22
Total Transfer Degrees					6	14	5	12	22
Science, Eng..	Biology	Biology	Biology	All students	6	14	5	12	22

"What is the Number of Awards awarded as Associate Degrees?"

Division	Department	Program	Academic Plan Title	Student Attribute	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22
Total Associate Degrees					23	23	31	18	13	18
Science, Engineering, & Math..	Biology	Biology	Biology	All students	20	17	23	13	11	16
		Botany	Botany	All students			1			
		Botay	Botany	All students	1		1			
		Microbiology	Microbiology	All students	2	3	2	3		1

Fall 23 Majors

Biology for Transfer-AST	**84**
Biology-AA	**4**
Biology-AB	**12**
Biology-AC	**25**
Black/Africana Studies-AA	**1**
Botany-AB	**1**

This data needs further evaluation. We have a large number of students enrolled in our biology department classes, but the amount of certificates awarded is relatively low. The good news is we are seeing almost double the amount of certificates awarded since we've been back on campus.
It's very possible that this data looks skewed due to most of our students working towards transferring to a university and not obtaining an AA or certificate before they transfer. Regardless, this is data we would like to research more and ultimately find a way to increase the amount of degrees and certificates awarded in our department.

As a department, we are committed to supporting the colleges goal of 50% of students graduating in 5 years. While supporting this goal, we can hold more seminars and meetings to encourage students to get their AA while working on their way to transferring to university.

Are any licensure/certification exams required for program completion or career entry?

- If so, what is the pass rate among graduates?
- Set an attainable, measurable goal for pass rates and identify any applicable performance benchmarks set by regulatory agencies.

N/A

Program Reflection

Six-Year Program Reflection : Version by **Tsang, William** on **12/08/2023 06:06**

Provide an analysis of your program throughout the last six years, reflecting on student demographics and enrollment. Reflect on any changes you would like to see in your program in the next six years.

The biology department consists of eight full-time faculty and roughly 17 part-time faculty. Those faculty teach approximately 74 sections across more than 11 different courses and their associated labs serving between 1300-1700 students each semester. There are three primary groups of students who enroll with the department: students fulfilling general education life science requirements, pre-nursing and kinesiology students, and biology majors. Courses within the biology department are critical to pre-nursing students as well as students pursuing the Kinesiology AA-T. The department also plays a crucial role in offering courses that fulfill the life science requirements for students transferring to complete a four-year degree.

The biology department has a demonstrated commitment of creating an engaging, supportive learning environment that provides quality instruction and fostering student growth. A key example of this is Advance Biology Seminar. Under the leadership of Professor Tydell, the department offers Advance Biology Seminars, a non-credit discussion style course that combines biology concepts, published research, and analytical MCAT questions for the purpose of developing student critical thinking skills, preparing students for university study, and combating the risk of stereotype threat. It also creates an opportunity for our high achieving students to find a community of like-

minded peers within the college. Another example of supporting student learning is our robust use of the embedded tutor program; many if not most of our labs are staffed with embedded tutors which not only provide extra assistance to students inside and outside of class but serve as peer models. The department likewise recruits students to serve as regular tutors through the Student Success Center and we communicate with the ASK (Academic Support Keys) program to try and recruit ASK mentors for AP150. The department also has a history of supporting student growth through undergraduate research. Prior to the COVID-19 pandemic the department worked in close partnership with CSULB to provide summer research internships to students and in promoting post-transfer opportunities such as BUILD (hands on research training), LSAMP (Louis Stokes Alliances for Minority Participation), and other undergraduate research programs.

The department is sensitive to the economic barriers many of our students face. To reduce cost to students, four courses within the department have adapted OER (Online Educational Resources) textbooks and several of our courses have department-created lab manuals which reduce costs compared to traditionally published manuals and have the added benefit of making the course materials more specific and targeted to the learning objectives thereby better supporting student success. Most of our remaining labs use instructor created materials that are provided at no cost to students.

The department's commitment to quality, engaging, and relevant instruction leans heavily on the use of labs connected to most of our courses. Much of biology is a hands-on enterprise involving direct observation (often with multiple senses), use and manipulation of equipment, experimentation, associated troubleshooting, and the analysis of data. These elements are central to a lab experience and when coupled with lecture sections they facilitate the use of multiple learning modalities which benefits students. As many of our courses serve as prerequisites for upper division courses or serve students entering hand-on professions such dental hygiene, physical therapy assistant, and nursing, the lab component of our courses promotes the development of the tactile skills and problem solving ability they will encounter in future courses and/or in their careers. Thus labs are an important component preparing students for future coursework and professional settings. They also provide our general education courses a course element that allows students to apply concepts introduced in lecture. Several of our courses conduct field trips, which enhances student understanding of biology by examining it in its real world context.

The biology department has continued to grow within the past 6 years. Coming back from the pandemic, we saw a slight decrease in enrollment due to students getting accustomed to online classes, but we are still above the levels of our previous program review. We feel as a department that our science courses get the best results when the labs are done in person. After the pandemic, students struggled coming back to class and getting accustomed to being in person for learning. Over the past year since we've been back 100% in person, we are seeing a gradual increase in our enrollment and most of our classes are completely full. We have also noticed that the success rates for the students is starting to improve due to the in person interaction and hands-on learning for the laboratory classes.

We are extremely proud of how many female students we see in our biology classes. We are also very proud of how we've seen our success rates increase since we've been back 100% in person. We would like to see the success rates in some of our classes increase. Especially the following: AP 150, AP 151, MICRO 200. Our department takes a lot of pride in the consistency of our enrollment. Our anatomy, physiology, microbiology, zoology, botany and upper level biology major courses classes are consistently full with a complete waitlist. We have also noticed that some of the enrollment in our BIOL 105 & BIOL 120 courses has dropped. These are classes mostly for non-majors. It could be due to students wanting to take some of these non-major classes online and are taking them at other schools with online offerings. It also could be due to a shift in majors for students since we've been back on campus.

Challenges the Department Faces

- **Further expansion of AP150 and AP151 sections to meet student demand is severely limited by the number of lab rooms that are available to the department. There are only a certain number of 3 hour blocks available for A&P labs. Compared to other area institutions Cerritos is severely under-resourced in terms of room availability**
    - **Our lack of dedicated A&P lab space requires AP151 labs to move from open lab to open lab throughout the day and week. Likewise, AP150 labs are followed by non-AP150 labs. This severely limits the amount of time instructors have to set up and prepare for lab and also creates significant constraints on the pedagogical approach faculty can employ in lab because of the inability of faculty to prep labs for different learning activities.**
- **Another facilities/room use challenge has arisen as Chemistry expands their program. We no longer have reliable use of S201 for our large lectures which has impacted course scheduling and availability as we try to shift displaced courses into S201 and S103.**

What is the six-year trend of degrees and certificates awarded? Is there anything you can do to help increase the number of students who acquire degrees and/or transfer?

Awards by Area

"What is the Number of Awards awarded?"

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Science, Engineering, & Math..	Biology	Biology	Biology	All students	20	17	23	13	11	16
		Botany	Botany	All students			1			
		Botay	Botany	All students	1		1			
		Microbiology	Microbiology	All students	2	3	2	3		1

Because of the large number of units needed to complete a BS in science, many students find it beneficial to transfer to a university as soon as they have met minimal transfer requirements so that they can get started on upper division courses and more effectively mix general education studies in with their upper division coursework. Likewise the biology department offers courses that count toward the Natural Science degree. We would also mention that all of the 120 level courses can also be taken by non-majors for gen education credit and in that sense we are making efficient use of department and college resources (i.e., Bio200 and Bio201 are the only degree specific courses). Degree programs also are aligned with CSU and UC transfer requirements so that students are taking a minimal number of courses to facilitate easy completion and transfer. Currently, we are aware of the college's major goals. We are working to support and promote the following goals:

- **Finish transfer level English and math within the first year at Cerritos.**
- **Finish at least 15 units of transfer eligible courses towards their degree within the first two years at Cerritos.**
- **Finish 30 units of courses by the end of their third year at Cerritos.**

It would be beneficial for the department to come up with a marketing campaign to promote these goals. Some action items include:
1) We could implement Modules and pages in our Canvas shells with these goals listed.
2) Having a counselor from the transfer department come and talk to our classes would also be helpful.
3) Making it part of our talking points throughout the semester in our lab and lecture classes.
4) Getting out adjuncts to also promote and support these college goals.

We are very active in the promotion of the SEM and Health Science and Wellness LCP's. This program is focused on getting students to declare an area of study, and then get a comprehensive educational plan put in place. This allows the students to see exactly which courses they should be taking and a time frame on when they should finish completion. It has allowed us to be more active in promoting their learning pathway and tracking their progression through the program. We believe this is a step in the right direction to help increase our completion rates, degrees and transfers.

Were there any unplanned events (positive or negative) that affected your program? If so, what were they and how did they affect the program?

The most obvious answer to this question is the Covid pandemic. We were all forced online in the spring of 2020 and continued this online/hybrid format for over a year. This was incredibly challenging for students and instructors alike. The science courses we teach don't translate online very well. These classes are meant to have hands-on components that are instrumental in the learning process as well as preparing them for their transfer or certificate goals. We saw a significant decline in the passing rates of students during our online offering of courses. Students have made comments on how much better they feel being back on campus for our classes.

There were some positives that did come out of this online environment. It allowed us to become more proficient with computer technology and online services. Most of us had to create recorded videos of class content, and those have become helpful to embed into our Canvas courses. It has given us another perspective on how students learn and allowed us to change our pedagogy for enhanced student learning. Some of us have been utilizing more computer based assessment techniques that seem to be working well for the students. It has also caused some of us to try and provide a more cost-free approach to our courses by offering more OER, including textbooks and homework tools.

Please describe any recent achievements in your program by faculty and staff who have won awards or distinctions, new projects your program has implemented, committee work, professional development work, conference presentations, community engagement, or recently published work.

More recently, due to the hard work of Professor Stieber and Professor Rojas the department created and has now launched two biotechnology certificates and a biotechnology AA. This is an important expansion of the department and we are now able to attract and serve a population of students whose primary interest is entering directly into the workforce rather than pursuing a four-year degree. They are holding monthly educational meetings to promote the program and are actively working on developing relationships with surrounding companies regarding this program. Last semester, there were two guest speakers on campus to talk about the job opportunities in biotechnology and both had full attendance with around 90 students at each event.

The department has an ongoing practice of exploring and adapting the use of new technologies in their courses. Two examples include a growing use of iPads for both course work and for the completion of quizzes and exams in-class. The biology department also recently acquired an Anatomage table (i.e., virtual dissection table) for its anatomy

and physiology program.

Anna Valcarcel has begun a project for a sustainable garden on campus. She will place native California plants on campus with educational signs describing each plant and its significance to nature. This will allow our Biology courses to visit the garden for lab and learning purposes. It will also be open to the public for their viewing and educational purposes.

The department is active in campus governance and leadership. For well over 18 consecutive years the department has had a faculty member participating in Faculty Senate. Department members are currently involved with Guided Pathways, serving as Health Professions Advisors, serving on the SLO committee, and chairing or co-chairing the extensive lab committees since the committees inception. We have also begun collaborating with members of the counseling department to promote a series of workshops developed by counselling for students in or considering the pre-nursing path and promote Project HOPE program.

The biology department is a vibrant and active member of the campus community that adapts to meet the changing needs of students through a combination of student support and instruction that blends new technologies and approaches with traditional practices.

Recent accomplishments from Michelle Stieber:

- Developed three new classes (all approved by curriculum committee)
    - BTEC 120 (Introduction to Biotechnology)
    - BTEC 150 (Biomanufacturing Fundamentals)
    - BTEC 180 (Regulatory Affairs in Biotechnology)
- Developed two new certificates and an AS Degree in Biotechnology (all approved by the curriculum committee and the Los Angeles Regional Consortium)
    - Certificates of Achievement in Biotechnology I: Wet-Lab Skills
    - Certificates of Achievement in Biotechnology II: Biomanufacturing
- Became certified to be a Bioscience Core Skills Institute Evaluator for the following microcredentials (I've also earned/passed these microcredentials):
    - Hazard Safety Assessment
    - Quantitative Skills I
    - Documentation and SOP
    - Aseptic Technique: Lab Bench Level
    - Small Volume Metrology
    - Problem Solving in a GMP Environment
    - Current Good Documentation Practices
- Completed the InnovATE Bio Leadership Institute
- Co-PI on National Science Foundation new to Advanced Technical Education small grant.
- Organized and implemented the Hands-On Biotech Workshop series (with Santos Rojas) to allow students to learn a variety of lab skills (for fun).

Provide a status update on goals from the last program review cycle.

Some of the biggest achievements we made from our last 6 year goals were:

- **Adding more sections of AP 150 & AP 151 which are always impacted courses in our department.**
- **Finding more rooms to hold the AP 151 labs so we could offer more sections.**
- **Hiring a FT A&P instructor in Fall 2023 to help staff these added sections.**
- **Coming up with a specific SLO reporting system and timeline.**
- **Adapting the AP 120 & 150 lab courses and pedagogy.**
- **Creating a new BIOL 120 lab manual with new lab procedures.**
    - **incorporating formative pre and post-lab activities to prepare students for lab and for them to improve their understanding after lab takes place.**
- **Increasing our use of tutors and TAs in all classes throughout the biology department, especially in A&P and Microbiology**
- **AP150, Bio120, Bio200, and Bio201 have adapted OpenSource text. Digital versions are available for free. This reduces student cost.**
- **Adding night sections of Bio200 and Bio201 to increase access to our courses**

If applicable, describe the resources the program received from the last review cycle and the impact it had on the program?

We received a duplicate of all the models we use in AP 120 & 150. This has allowed us to move our tutoring into the success center allowing more access to the models and increase the amount of tutoring offered outside the classroom
We recently received the Anatomage table in summer of 2023. We are learning how to properly use the table and plan to implement its use in the AP 120, 150, 151 labs in the fall of 2024.

Resource Requests

Faculty Resource Request(s) : Version by **Babiar, Ryan** on **10/18/2023 19:46**

1. Full time instructor
2. Part-time faculty

Program/Department/Division:
1. Biology/SEM
2. Biology/SEM
Title of instructor position:
1. Full time biology instructor
2. Part time biology instructor
Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

1. Critical
2. Critical
Is this position:

- New (not in the current budget)
- Replacement (in the current budget, currently vacant or will be vacant in the next budget year)
- Full-Time Temporary
- Conversion (grant to general fund)

1. Replacement
2. New

Cost estimate:

1. 82,000-103,000 depending on level of degree
2. Need information from HR depending on degree level

Occurrence:

- Recurring expense
- One-time augmentation

1. One time
2. Recurring

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

1. General fund
2. General Fund

Provide a summary and rationale for this position. Explain how the position will help the program better meet its goals.

1. We had one of our full time instructor's retire in spring of '23. Since then, we haven't received a replacement hire. Filling this position will allow us to provide more continuity for our students and filling more classes with a full time instructor. This could also allow us to increase more sections of certain courses which would increase enrollment and allow students to achieve their goals of transferring sooner.
2. We need more part time instructors to fill the new Biotechnology courses that are being offered. This will allow the department to further expand their offerings and provide continuity for students. It will also allow Santos Rojas and Michelle Stieber to teach more of their regular classes, MICR 200 and BIOL 201.

If this position is not filled, what is the potential impact to student success?

1. Decreased continuity of learning. Decreased offering of courses.
2. Increase sections of Biotechnology courses,. Better availability when making schedule. Increased continuity of teaching.

Classified Resource Request(s)

Program/Department/Division:

No Value

Position requested:

No Value

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

No Value

Is this position:

- New (not in the current budget)
- Replacement (in the current budget, currently vacant or will be vacant in the next budget year)
- Full-Time Temporary
- Conversion (grant to general fund)

No Value

Cost estimate:

No Value

Occurrence:

- Recurring expense
- One-time augmentation

No Value

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

No Value

Provide a summary and rationale for this position. Explain how the position will help the program better meet its goals.

No Value

If this position is not filled, what is the potential impact to student success?

No Value

Other Staffing Resource Request(s) (e.g., Manager, Confidential, etc.)

Program/Department/Division:
No Value
Position requested:
No Value
Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

No Value
Is this position:

- New (not in the current budget)
- Replacement (in the current budget, currently vacant or will be vacant in the next budget year)
- Full-Time Temporary
- Conversion (grant to general fund)

No Value
Cost estimate:
No Value
Occurrence:

- Recurring expense
- One-time augmentation

No Value
Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

No Value
Provide a summary and rationale for this position. Explain how the position will help the program better meet its goals.
No Value
If this position is not filled, what is the potential impact to student success?
No Value

Professional Development Resource Request(s) : Version by **Babiar, Ryan** on **10/18/2023 19:46**

Explain and justify the program's training and professional development needs. Explain how the training/professional development will help the program better meet its goals.
1. Chace Tydell frequently attends medical conferences so she can incorporate medical context into the pre-nursing classes. This idea of mastering physiology before they get into nursing is the best way to help them prepare.
2. Becoming member of the HAPS (Human Anatomy & Physiology Society). This group has extensive data and research material that could be incorporated into our A&P courses to further enhance student learning.
3. Attending HAPS (Human Anatomy & Physiology Society) Regional Conferences. These conferences provide seminars on new practices of teaching A&P in the classroom as well as access to new technology and instruments that could be uses to enhance student learning in the laboratory setting.
4. Further training sessions for using the Anatomage table in A&P labs.
5. American Society of Microbiology Conference for Undergraduate Educators
Professional Development Resource Request(s):
1. Coverage for attending medical conferences and help in finding any that might be relevant to our students.
2. Coverage for Human Anatomy & Physiology Society membership (4).
3. Coverage for Human Anatomy & Physiology Society regional conferences.
4. Coverage for any costs of training sessions regarding Anatomage.
5. Coverage for attending this conference.
Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

1. Important
2. It can wait
3. It can wait
4. Important
5. Important
Cost estimate:
1. Awaiting estimates- Varies depending on conference.
2. $440.00
3. $420.00
4. Awaiting estimates. Most likely free of charge.
5. $2500 per person.

Occurrence:

- Recurring expense
- One-time augmentation

1. Recurring
2. Recurring
3. Recurring
4. Recurring
5. One time

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

1. General fund (program 100)
2. General fund (program 100)
3. General fund (program 100)
4. General fund (program 100)
5. Perkins

Facilities Resource Request(s) : Version by **Babiar, Ryan** on **10/18/2023 19:46**

Identify and justify any facilities and equipment needs. Explain how it will help the program better meet its goals. If possible, indicate other disciplines who may share this space.

1. Analytical balance (3)- We only have one and this is necessary for students learning how to prepare solutions and media as part of the course.
2. -80C Freezer- Each semester we use bacteria and yeast strains that we need to purchase on a regular basis. A -80C would allow us to maintain stocks on a long-term, stable basis.
3. Bunsen Burners (30)- Our current bunsen burners don't work properly and can pose a safety hazard.
4. Micropipettes (p2)- Our current set is old and outdated. We need industry relevant tools.
5. Bioreactor (3)- Bioreactors are necessary equipment for the biomanufacturing course.
6. Anatomy Lab Rooms- We are running out of space to hold any added anatomy lab classes. This would allow us to offer more sections and decrease impacted classes.
7. Somso Human Kidney, Nephron and Glomerulus Model Set (3)- We have 7 models for 10 tables. This would allow every table to have access to this model.
8. Median Section of the Head (7)- We only have 3 models for 10 tables. This would allow every table to have this model.
9. Intestinal Wall Model (6)- We only have 4 models for 10 talbes. This would allow every table to have this model
10. Three-part colored human skull (6)- We only have 4 models for 10 talbes. This would allow every table to have this model
11. simple squamous epithelium slides (20)- our current slides are outdated and need to be refreshed
12. 3B Human left arm model (5)- We have 5 models for 10 tables. This would allow every table to have access to this model.
13. Elisco Human leg models (5)- We have 5 models for 10 tables. This would allow every table to have access to this model.
14. Office chairs (8)- Faculty chairs are getting older and we need better support for the hours we spend in our office working.
15. vacuum line- A vaccum line is necessary to maintain and operate instruments like the FPLC as the solutions need to be degassed.
16. 96 well plates (1 case of 25)- Plates are required for ELISA assays and a micropipetting lab
17. Micropipettes (p20)-10- Our current set is old and outdated. We need industry relevant tools.
18. Micropipettes (p200)-10- Our current set is old and outdated. We need industry relevant tools.
19. Micropipettes (p1000)-10- Our current set is old and outdated. We need industry relevant tools.
20. Metler Toledo Power cable and adapter (2)- We have two balances that were donated but we cannot use them as they are missing power cables.
21. Microplate Reader- Our current set is old and outdated. We need industry relevant tools.
22. Somso Digestive tract model (7)- We only have 3 models for 10 talbes. This would allow every table to have this model.
23. Somso Human Thoracic Organs Model- Increase number of existing models to provide more accessibility for students during lab
24. 3B Scientific Muscular Figure (8)- Increase number of existing models to provide more accessibility for students during lab
25. Allium root tip l.s. slides (20)- Due to attrition we have few of these slides left and the slides that are left are faded, cracked and difficulty to use
26. Coleus Stem Tip, l.s, 12 um (15)- Increase success of understanding organismal biology
27. Fern Antheridia and Archegonia w.m. (15)- Increase success of understanding organismal biology
28. Moss archegonial head l.s. 12um (15)- Increase success of understanding organismal biology
29. Taenia w.m. scolex & proglottids (15)- Update old slides and provide better material for our students.
30. Euspongia WM Prepared slide (15)- Update old slides and provide better material for our students.
31. Obelia Medusa Prepared slide (15)- Update old slides and provide better material for our students.
32. KS Kabells-Sifter for Garden use in Wheelbarrow and by Hands-Made (5)- Needed for doing field work
33. 100 ml volumetric flasks - Fisher scientific(4)- Increase material for student use and effectiveness in lab
34. Shovels 3- Increase material for student use and effectiveness in lab
35. Supply totes (5)-Increase material for student use and effectiveness in lab
36. 2L Flasks (3)- Increase material for student use and effectiveness in lab
37. hot plates (3)- Increase material for student use and effectiveness in lab
38. Somso Muscular Head models (3)- We have 6 models for 10 tables. This would allow every table to have access to this model.
39. cell spreaders (10)- replace some of the glass spreaders that break
40. alcohol jars with lids- We currently use open beakers when flaming tools using the ethanol and the flame. Jars with lids can help reduce the chances of catching the ethanol on fire
41. Test tube racks 72 wells (5)- replace rusty racks that get autoclaved constantly
42. Test tube racks 108 wells (5)- replace rusty racks that get autoclaved constantly
43. Autoclavable Tray (4)-replace old trays that are constantly used to autoclave media
44. Aspergillus Microscope Slides coniophores w.m. (12)-replace broken slides
45. Bacterial Capsules Slide, w.m. (12)-replace broken slides
46. Bacterial Types, separate smear gram stained (12)-replace broken slides
47. Penicillium Microscope Slides w.m. (12)--replace broken slides
48. Plasmodium cynomolgi slide (15)-replace broken slides

49. Stage Micrometer, Economy (3)-replace broken slides
50. Trichomonas vaginalis Slide, Smear (12)-replace broken slides
51. Schistosoma mansoni, Male/Female Slide (12)-replace broken slides
52. Schistosoma mansoni, Eggs Slide (8)--replace broken slides
53. Taenia pisiformis, Eggs Slide (8)-replace broken slides
54. Hookworm, Eggs Slide (5)-replace broken slides
55. Rhizopus, Sporangia and Zygotes Slide (5)-replace broken slides
56. API 20 E (X100)-replace broken slides

What impact will this have on student success? What is the consequence of not getting this request fulfilled?

1. Increase student learning and retention
2. Increase student learning and retention
3. Needed to run the labs successfully
4. Needed to run the labs successfully
5. Needed to run labs for the biotechnology program.
6. This would allow students more access to sections for anatomy & physiology. These classes are always impacted with a full wait list. If more sections were offered, we could possible see more students achieve their goal of transferring in a timely manner.
7. Increase student learning and retention
8. Increase student learning and retention
9. Increase student learning and retention
10. Increase student learning and retention
11. Increase student learning and retention
12. Increase student learning and retention
13. Increase student learning and retention
14. Increase faculty comfort and create more ergonomic working environment
15. Needed to run labs safely and successfully
16. Needed to run labs safely and successfully
17. Needed to run labs for biology and biotechnology classes.
18. Needed to run labs for biology and biotechnology classes.
19. Needed to run labs for biology and biotechnology classes.
20. Need proper cables to run labs properly.
21. Update lab materials and infrastructure.
22. Increase student learning and retention
23. Increase student learning and retention
24. Increase student learning and retention
25. Update lab material and infrastructure
26. Increase success of understanding organismal biology
27. Increase success of understanding organismal biology
28. Increase success of understanding organismal biology
29. Increase success of understanding organismal biology
30. Increase success of understanding organismal biology
31. Increase success of understanding organismal biology
32. Increase student learning and retention.
33. Update lab material and infrastructure
34. Increase student learning and retention.
35. Increase student learning and retention.
36. Increase student learning and retention.
37. Update lab material and infrastructure
38. Increase student learning and retention.
39. Update lab material and infrastructure
40. Update lab material and infrastructure
41. Update lab material and infrastructure
42. Update lab material and infrastructure
43. Update lab material and infrastructure
44. Update lab material and infrastructure
45. Update lab material and infrastructure
46.Update lab material and infrastructure
47. Update lab material and infrastructure
48.Update lab material and infrastructure
49. Update lab material and infrastructure
50. Update lab material and infrastructure
51. Update lab material and infrastructure
52. Update lab material and infrastructure
53. Update lab material and infrastructure
54. Update lab material and infrastructure
55. Update lab material and infrastructure
56. Update lab material and infrastructure

Facilities Resource Request(s):

1. Analytical balance (3)
2. -80C Freezer
3. Bunsen burners (30)
4.Micropipettes (p2
5.Bioreactor (3
6. Anatomy Lab Classrooms
7. Somso Human Kidney, Nephron and Glomerulus Model Set (3)
8. Median Section of the Head (7
9. Intestinal Wall Model (6)
10. Three-part colored human skull (6)

11. simple squamous epithelium slides (20
12. 3B Human left arm model (5)
13. Elisco Human leg models (5)
14. Office chairs (8)
15. vacuum line
16. 96 well plates (1 case of 25)
17. Micropipettes (p20)-10
18. Micropipettes (p200)-10
19. Micropipettes (p1000)-10
20. Metler Toledo Power cable and adapter (2)
21. Microplate Reader
22. Somso Digestive tract model (7)
23. Somso Human Thoracic Organs Model
24. 3B Scientific Muscular Figure (8)
25. Allium root tip l.s. slides (20)
26. Coleus Stem Tip, l.s, 12 um (15)
27. Fern Antheridia and Archegonia w.m. (15)
28. Moss archegonial head l.s. 12um (15)
29. Taenia w.m. scolex & proglottids (15)
30. Euspongia WM Prepared slide (15)
31. Obelia Medusa Prepared slide (15)
32. KS Kabells-Sifter for Garden use in Wheelbarrow and by Hands-Made (5)
33. 100 ml volumetric flasks - Fisher scientific(4)
34. Shovels 3
35. Supply totes (5)
36. 2L Flasks (3)
37. hot plates (3)
38. Somso Muscular Head models (3)
39. cell spreaders (10)
40. alcohol jars with lids
41. Test tube racks 72 wells (5)
42. Test tube racks 108 wells (5)
43. Autoclavable Tray (4)
44. Aspergillus Microscope Slides coniophores w.m. (12)
45. Bacterial Capsules Slide, w.m. (12
46. Bacterial Types, separate smear gram stained (12)
47. Penicillium Microscope Slides w.m. (12)
48. Plasmodium cynomolgi slide (15)
49. Stage Micrometer, Economy (3)
50. Trichomonas vaginalis Slide, Smear (12)
51. Schistosoma mansoni, Male/Female Slide (12)
52. Schistosoma mansoni, Eggs Slide (8)
53. Taenia pisiformis, Eggs Slide (8)
54. Hookworm, Eggs Slide (5)
55. Rhizopus, Sporangia and Zygotes Slide (5)
56. API 20 E (X100)

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

1. Critical
2. Critical
3. critical
4. critical
5. critical
6. critical
7. critical
8. critical
9. Critical
10. critical
11. critical
12. critical
13. critical
14. critical
15. Important
16. Important
17. Important
18. Important
19. Important
20. Important
21. Important
22. Important
23. Important
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25. Important
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27. Important
28. Important
29. Important
30. Important
31. Important
32. Important
33. Important
34. Important
35. Important
36. Important
37. Important
38. Important
39. Important
40. It can wait
41. it can wait
42. it can wait
43. it can wait
44. it can wait
45. it can wait
46. it can wait
47. it can wait
48. Critical
49. it can wait
50. Important
51. it can wait
52. it can wait
53. it can wait
54. it can wait
55. it can wait
56. it can wait

Cost estimate:

1. 6000.00
2. $9000.00
3. $3600.00
4. $2450.00
5. $156,000
6. Unknown. Would need quote from facilities for added classrooms.
7. $2475.00
8. $1176.00
9. $5910.00
10. $1758.00
11. $193.00
12. $3989.40
13. $4425.00
14. $1600.00
15. Awaiting estimate
16. $165.00
17. $2450.00
18. $2450.00
19. $2450.00
20. $900.00
21. $20,000.00
22. $7686.00
23. $1225.00
24. $6200.00
25. $2000.00
26. $93.75
27. $176.25
28. $156.50
29. $285.00
30. $86.25
31. $180.00
32. $500.00
33. $50.00
34. $105.00
35. $110.00
36. $73.44
37. $2127.00
38. $6522.00
39. $530.00
40. Waiting for quote
41. $150.00
42. $165.00
43. $240.00
44. $69.60
45. $105.00
46. $109.80

47. $80.40
48. $191.25
49. $70.35
50. $131.40
51. $287.40
52. $86.00
53. $77.20
54. $47.50
55. $32.50
56. $917.00

Occurrence:

- Recurring expense
- One-time augmentation

1. One time
2. One time
3. One time
4. One time
5. One time
6. Recurring
7. One time
8. One time
9. One time
10. One time
11. one time
12. one time
13. one time
14. one time
15. one time
16. one time
17. one time
18. one time
19. one time
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22. One time
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45. one time
46. one time
47. one time
48. one time
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50. one time
51. one time
52. one time
53. one time
54. one time
55. one time
56. one time

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity

- Categorical – 3SP
- Categorical – Other
- Other funding

We believe that all of these facilities resource requests would come from Instructional Equipment funding.

Technology and Software Resource Request(s) : Version by **Babiar, Ryan** on **10/18/2023 19:46**

Identify and justify technology and software needs. Explain how it will help the program better meet its goals. If possible, indicate other disciplines who may share the technology and/or software.

1. BioPac machines (10)- This would allow us to create more beneficial learning labs and update our technology for physiology labs

What impact will this have on student success? What is the consequence of not getting this request fulfilled?

1. increase student learning and retention

Technology and Software Resource Request(s):

1. BioPac Machines (10)

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

1. Important

Cost estimate:

1. $82,120.00

Occurrence:

- Recurring expense
- One-time augmentation

1. One time

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

1. Instructional equipment

Other Resource Request(s) : Version by **Babiar, Ryan** on **10/18/2023 19:46**

Identify and justify any other needs. Explain how it will help the program better meet its goals.

1. Hazardous Waste Removal with teaching labs

What impact will this have on student success? What is the consequence of not getting this request fulfilled?

1. Facilities used to cover the cost of hazardous waste removal. Now, they don't. If we don't get this figured into our budget, we will either have to stop using material that need hazardous waste (this isn't likely and will decrease student learning) or reduce what we normally order each semester. Adding this to our budget will allow us to continue ordering our normal supplies as well as make sure hazardous waste is removed.

Other Resource Request(s):

1. Hazardous waste removal

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

1. Critical

Cost estimate:

1. $8,000.00

Occurrence:

- Recurring expense
- One-time augmentation

1. Recurring

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

1. General fund (program 100)

Prioritized Resource Request Recommendations : Version by **Babiar, Ryan** on **09/16/2023 01:09**

Resource request:	Priority:	Cost estimate:	Program goal alignment:
Hazardous waste removal with teaching labs	Highest importance	$8,000.00 each year	To make sure we have enough funding for hazardous removal each semester
Full Time Instructor	High	$82,000-103,00 depending on placement on the step schedule	To provide more stability to the students and get more of our classes staffed by full time instructors
Flake Ice Machine FS0522A-1	High	$4,224.00	Need a dependable working ice machine
Analytical balance (3)	High	$6,000.00	We only have one and this is necessary for students learning how to prepare solutions and media as part of the course.
-80C Freezer	High	9000.00	Each semester we use bacteria and yeast strains that we need to purchase on a regular basis. A -80C would allow us to maintain stocks on a long-term, stable basis.
Bunsen Burners (30)	High	3600.00	Our current bunsen burners don't work properly and can pose a safety hazard.
Micropipettes (p2)	High	2450.00	Our current set is old and outdated. We need industry relevant tools.
Bioreactor (3)	High	156,000.00	Bioreactors are necessary equipment for the biomanufacturing course.
Part-Time Instructor	High	Need Information from HR	We need someone to teach the biomanufacturing and regulatory affairs courses.
BioPac machines (10)	High	82120.00	This would allow us to create more beneficial learning labs and update our technology for physiology labs
Somso Human Kidney, Nephron and Glomerulus Model Set (3)	High	2475.00	We have 7 models for 10 tables. This would allow every table to have access to this model.
Median Section of the Head (7)	High	1176.00	We only have 3 models for 10 tables. This would allow every table to have this model.
Intestinal Wall Model (6)	High	5910.00	We only have 4 models for 10 talbes. This would allow every table to have this model
Three-part colored human skull (6)	High	1758.00	We only have 4 models for 10 talbes. This would allow every table to have this model
simple squamous epithelium slides (20)	High	193.00	our current slides are outdated and need to be refreshed
3B Human left arm model (5)	High	3989.50	We have 5 models for 10 tables. This would allow every table to have access to this model.
Elisco Human leg models (5)	High	4425.00	We have 5 models for 10 tables. This would allow every table to have access to this model.
Office chairs (8)	High	1600.00	Faculty chairs are getting older and we need better support for the hours we spend in our office working.
vacuum line	Medium	Awaiting estimate	A vaccum line is necessary to maintain and operate instruments like the FPLC as the solutions need to be degassed.
96 well plates (1 case of 25)	Medium	165.00	Plates are required for ELISA assays and a micropipetting lab
Micropipettes (p20)-10	medium	2450.00	Our current set is old and outdated. We need industry relevant tools.
Micropipettes (p200)-10	medium	2450.00	Our current set is old and outdated. We need industry relevant tools.
Micropipettes (p1000)-10	medium	2450.00	Our current set is old and outdated. We need industry relevant tools.
Metler Toledo Power cable and adapter (2)	medium	900.00	We have two balances that were donated but we cannot use them as they are missing power cables.

Resource request:	Priority:	Cost estimate:	Program goal alignment:
Microplate Reader	medium	20,000.00	Our current set is old and outdated. We need industry relevant tools.
Somso Digestive tract model (7)	medium	7686.00	We only have 3 models for 10 talbes. This would allow every table to have this model.
Somso Human Thoracic Organs Model	medium	1225.00	Increase number of existing models to provide more accessibility for students during lab
3B Scientific Muscular Figure (8)	medium	6200.00	We don't have enough full body muscle models for use in the lab
Allium root tip l.s. slides (20)	medium	2000.00	Due to attrition we have few of these slides left and the slides that are left are faded, cracked and difficulty to use
Coleus Stem Tip, l.s, 12 um (15)	Medium	93.75	Increase success of understanding organismal biology
Fern Antheridia and Archegonia w.m. (15)	medium	176.25	Increase success of understanding organismal biology
Moss archegonial head l.s. 12um (15)	medium	156.50	Increase success of understanding organismal biology
Taenia w.m. scolex & proglottids (15)	medium	285.00	Increase success of understanding organismal biology
Euspongia WM Prepared slide (15)	medium	86.25	Increase success of understanding organismal biology
Obelia Medusa Prepared slide (15)	medium	180.00	Increase success of understanding organismal biology
KS Kabells-Sifter for Garden use in Wheelbarrow and by Hands-Made (5)	medium	500.00	Needed for doing field work
100 ml volumetric flasks - Fisher scientific(4)	medium	50.00	Increase material for student use and effectiveness in lab
Shovels 3	medium	105.00	Increase material for student use and effectiveness in lab
Supply totes (5)	medium	110.00	Increase material for student use and effectiveness in lab
2L Flasks (3)	medium	73.44	Increase material for student use and effectiveness in lab
hot plates (3)	medium	2127.00	Increase material for student use and effectiveness in lab
Somso Muscular Head models (3)	medium	6522.00	We have 6 models for 10 tables. This would allow every table to have access to this model.
cell spreaders (10)	medium	530.00	replace some of the glass spreaders that break
alcohol jars with lids	low	waiting for quote	We currently use open beakers when flaming tools using the ethanol and the flame. Jars with lids can help reduce the chances of catching the ethanol on fire
Test tube racks 72 wells (5)	low	150.00	replace rusty racks that get autoclaved constantly
Test tube racks 108 wells (5)	low	165.00	replace rusty racks that get autoclaved constantly
Autoclavable Tray (4)	low	240.00	replace old trays that are constantly used to autoclave media
Aspergillus Microscope Slides coniophores w.m. (12)	low	69.60	replace broken slides
Bacterial Capsules Slide, w.m. (12)	low	105.00	replace broken slides
Bacterial Types, separate smear gram stained (12)	low	109.80	replace broken slides
Penicillium Microscope Slides w.m. (12)	low	80.40	replace broken slides
Plasmodium cynomolgi slide (15)	low	191.25	replace broken slides
Stage Micrometer, Economy (3)	low	70.35	replace broken slides
Trichomonas vaginalis Slide, Smear (12)	low	131.40	replace broken slides

Resource request:	Priority:	Cost estimate:	Program goal alignment:
Schistosoma mansoni, Male/Female Slide (12)	low	287.40	replace broken slides
Schistosoma mansoni, Eggs Slide (8)	low	86.00	replace broken slides
Taenia pisiformis, Eggs Slide (8)	low	77.20	replace broken slides
Hookworm, Eggs Slide (5)	low	47.50	replace broken slides
Rhizopus, Sporangia and Zygotes Slide (5)	low	32.50	replace broken slides
API 20 E (X100)	low	917.00	replace broken slides