

**Instructional Unit – Program Review
Fall 2019 – Spring 2022**

Part 1: - Program Overview

Program Name: Biology

Program Mission and Description: The Biology Department offers a diverse array of courses that serve as core requirements for students pursuing associate and baccalaureate degrees in a number of academic disciplines. As a result, the department mission emphasizes the following: (1) faculty are to prepare all students (science & non-science majors) for their future career goals; and (2) students should be exposed to scientific knowledge that would allow them to make informed decisions as they relate to biological matters.

Program Admission and Awards:

The Biology Department supports the Associate in Arts, Associate in Science and the Associate in Applied Science curriculums through Area III. Both our biology for majors (Bio 103, 104) and biology for non-majors (Bio 101, 102) can help to fulfill the 8 hours of Natural Sciences with laboratory requirement in Area III. In addition, several career programs have specific Biology course requirements. The table below outlines these programs and the courses within the Biology department that are required.

Table 1. Biology Course Program Distribution

Biology Courses	Programs that Utilize Biology Courses					Degree Awarded
BIO 101*						Transfer AA/AS
BIO 102*						Transfer AA/AS
BIO 103*	Clinical Laboratory Technology	Emergency Medical Service (Paramedic	Biomedical Equipment Technology	Veterinary Technology		Transfer AA/AS
BIO 104*						Transfer AA/AS
BIO 111	Funeral sciences					AA/AS
BIO 201	Clinical Laboratory Technology	Biomedical Equipment Technology	Nursing	Physical Therapy Assistant	Radiological Technology	AA/AS
BIO 202	Nursing	Physical Therapy Assistant	Radiological Technology			AA/AS
BIO 220	Nursing					AA/AS

***Area III Courses**

Table 2. 2019-2022 Biology Program Demographics

Category*	Student Totals (3yrs)	Percentage (of total students)
Total Students*	8356	100%
Number of Male	2352	28%
Number of Female	6004	72%
Age 18-25	5529	66%
Age 26-40	2247	27%
Age 41+	485	6%
African American Students	2042	24%
Asian Students	187	2%
Caucasian Students	5293	63%
Hispanic Students	246	3%

Table 3. Disaggregated Biology Program Demographics

Category*	2019-2020	2020-2021	2021-2022	2019-2022
Total Students	100%	100%	100%	100%
Number of Male	28%	26%	27%	28%
Number of Female	72%	74%	73%	72%
Age 18-25	71%	69%	69%	66%
Age 26-40	23%	25%	22%	27%
Age 41+	5%	5%	6%	6%
African American Students	24%	25%	25%	24%
Asian Students	2%	2%	3%	2%
Caucasian Students	64%	63%	62%	63%
Hispanic Students	2%	3%	4%	3%

*Unduplicated headcounts

Enrollment in biology courses averaged 3382 per academic year which was a significant decline from the previous program review period where we averaged 3709 students per academic year. The most significant drop was 2021-2022 where enrollment in biology courses was only 2964 students. 2021-2022 represents our transition back to more traditional course offerings after the move to internet during the worst of the COVID19 pandemic. We anticipate the enrollment to continue to rise over the next program review period. The number of females was significantly higher than males with an average of 72% compared to 28% for all three years. The difference

in gender is consistent with the overall college demographic. When looking at age cohorts and enrollment based on ethnicity, we saw that the percentages remained steady when compared to the previous review, while the number of students decreased across all demographics proportionally.

Modes of Delivery

The Biology utilizes three modes of delivery – traditional classroom instruction, internet, and hybrid. Total sections decreased 10% in 2020-2021, due to COVID-19. At that time we only online courses during the fall and spring semester. Summer 2021 we transitioned to select traditional offerings. By Fall 2021 we returned to offering a more traditional and hybrid courses, and we can see a significant increase in the number of hybrid courses offered, where students complete the lecture component via internet and come in weekly for the lab. Currently we are only offering BIO 101/102 and BIO 104 in the internet only format.

Table 4. Modes of Delivery

Modes of Delivery	Total Sections	Traditional	Internet	Hybrid
2019-2020	205	140	55	10
2020-2021	174	9	165	0
2021-2022	185	101	54	30

Program/Department Goals:

- 1. Provide pre-professional programs that offer a structured, timely and comprehensive education.**

The department continues to offer courses that provide a comprehensive introduction to the biological sciences.

- 2. Provide quality instruction in freshman and sophomore level courses in biology that transfer to senior institutions, and that lead to associate degrees.**

The department offers four transferable biology courses (BIO101, 102, 103, & 104) that meet requirements for both the associates and baccalaureate degrees. We currently offer all transferable courses fall, spring and summer. Historically BIO 104 has only been taught at the Shelby and Jefferson campuses. In order to increase accessibility to students served by our Clanton and Pell City campuses, we now offer BIO 104 online with a lab kit designed for students to use at home.

3. **Prepare students with a strong content knowledge in biology with emphasis on critical thinking and problem-solving skills, which will allow them to meet their career goals.**

The biology department offers courses that serve the needs of the non-majors, majors, and allied health students. Each course has a distinctive set of specific objectives and a broader set of student learning objectives which enable both faculty and students to stay abreast of the core content that is pertinent to the overall subject matter. Additionally, each course in the department has a laboratory component. This part of the course allows students to demonstrate problem solving and critical thinking skills as they conduct experiments, analyze data, and complete dissections.

4. **Advise students regarding choice of courses relevant to their academic major and senior institution. The Biology Department is committed to excellence in student advisement and career planning.**

Faculty members advise students during the college's regularly scheduled advising and New Student Orientation sessions. Additionally, all faculty members maintain an "open-door" policy as it pertains to assisting students with their academic and career guidance needs.

5. **Support public service activities by providing faculty expertise to government agencies, to industry, to educational systems and professionals desiring additional scientific education or advice.**

Throughout the three-year period, faculty members volunteered and participated in a number of professional development activities. Their activities and contributions to the department are as follows:

Dr. Erin Arnold – Over the past three years Dr. Arnold has worked to transition to open educational resources in all of her course offerings. She has worked to design and implement materials that align with the course objectives for BIO 101, BIO 201, BIO 202, and BIO 220 so that her students do not need to purchase any materials. In 2018-2019 Dr. Arnold was selected as a ROSE (Research of Science Education) fellow at UAB. Partnerships gained during her time as ROSE fellow led her to develop and implement a successful course based undergraduate research experience (CURE) in microbiology. Dr. Arnold also had the opportunity to publish and serve as an invited speaker on the topic of implementing CUREs at the Community College and using agar art to increase student engagement in Microbiology. In fall of 2021 Dr. Arnold participated in a semester long workshop on cross cultural virtual exchange. In the Spring of 2022 she partnered with faculty in France to implement a virtual exchange in her non-majors biology sections. She has been invited to speak about virtual exchange at regional community college conferences. In the fall and spring, Dr. Arnold

partners with other faculty across disciplines and campuses to participate in the Jeffstate Digital Museum. She designs projects for her classes that align with the museum theme and her course objectives. She also participates annually in the professional development designed to augment the Digital Museum. Finally, in the summer of 2022, Dr Arnold received a travel grant to participate in a conference on Urban Agriculture. Currently Dr Arnold is working with other biology faculty on a proposal to start a community garden on campus. On campus, Dr. Arnold serves on the Distance Education Committee and the QEP advisory board. She was also selected to participate in the Alabama Master Teacher Conference. Off campus, Dr. Arnold is Secretary of the Instructional Administrative Association.

Dr. Evan Boitet - Hired in January 2020. Dr. Boitet has implemented the use OER textbooks and lab materials for BIO 103 and BIO 201 courses in order to make course more accessible for students. Since 2021, he has served on the Faculty Senate council as the Jefferson campus representative for the math, science and engineering departments. In May 2022, he participated in the Red Mountain Project, a workshop designed by UAB Sustainability aimed at encouraging faculty to introduce ideas encompassing sustainability, environmental awareness, and climate change into their curriculum. Summer of 2022, he attended the 3rd Lecture Breakers Virtual Conference which focused on teaching strategies designed to break up lectures, energize the classroom, increase student engagement, and improve learning. Currently, working with the JSCC Phi Theta Kappa Honor Society to implement PTK's selected college project of establishing a community garden on the Jefferson campus. Currently a member of the National Science Teaching Association.

Charles Venglarik – Dr Venglarik completed the online course titled "Applying the QM Rubric: ACCS Guide To Success." in the summer of 2021. QM is based on writing measurable learning objectives that align throughout a course. He is in the middle of rewriting the BIO 104S lectures based on the QM Rubric using the Open Education Resource (OER) "BIOLOGY 2e" (OpenStax.org). He also developed "take home" laboratory kits for BIO 104S that provide hands-on experience required for a "manipulative lab". Historically BIO 104S was only taught at the Jefferson and Shelby-Hoover campuses due to low enrollment. Moving the class to online with a lab kit provides access to historically underserved students at the Clanton-Chilton County, and St Clair-Pell City campuses. Dr Venglarik began teaching BIO 220 (General Microbiology) in the Spring of 2020. He has since amassed a large collection of Microbiology textbooks and lab manuals for reference. The Jefferson Campus adopted the OER textbook "Microbiology" (Open Stax.org) for BIO 220. The other textbooks provide additional information and some historical perspective. Dr Venglarik is also collaborating with Dr Arnold to pilot new inquiry-based labs for Microbiology. His collection of lab manuals has been useful in this regard. Their

goal is to develop an OER lab manual that will enable students to answer fundamental questions related to microbiology and not saddle them with the expense of a commercial lab manual. Finally, Dr. Venglarik continued his membership in the Human Anatomy and Physiology Society (HAPS) and recently joined the National Association of Biology Teachers (NABT). Membership in HAPS and NABT gives access to historical research articles that have been useful in developing or updating lab exercises and the latest ideas involving pedagogy.

Dr. Kelley Black – Dr. Black has attended several webinars on both scientific concepts as well as educational concepts. One webinar in particular was on the graphing skills of undergraduate students and how to improve the skills. Over the last 3 semesters, she administered a simple survey to all of her classes to see which type of teaching method(s) they preferred. Over 80% of the students who participated in the survey stated that they prefer to have various teaching modes at their disposal. The students are now provided with not only the lecture handout, but also PowerPoint presentations, lecture videos, and practice quizzes at the end of the videos. Students can then chose which type of presentation best suits their learning style. As a result of the quarantine in 2020, Dr. Black learned new applications for teaching such as producing quality lecture videos that include animations, clips of other videos, and sometimes a little humor. Educational research has shown that humor can increase learning retention by 6%. She has found that if the students are somewhat entertained by the videos, they are much more likely to watch them. All of the lecture notes are provided online, but Dr. Black has been revising them to include hyperlinks to short videos, no more than 1-2 minutes in length. If the student chooses not to watch a lecture video, they can still open a hyperlink to see a short video or animation that helps augment the lecture.

Nic Kin – Is the PI on an R25 awarded from the NIH entitled “Blazing to Biomedical Careers”. Dr. Kin has also successfully instituted a flipped-classroom model in BIO 103. At the national level, Dr. Kin is a full member of the Training, Workforce development and diversity subcommittee – C(TWD-C) Review Panel, National Institute of General Medical Sciences (NIGMS). In the local community Dr Kin is the Secretary of the Board of Directors for the Big Canoe Creek Preserve Partners and Chairman of the Board of Directors of the St Clair Community Health Clinic. Dr. Kin was recognized by his Alma Mater, The Ohio State University and was presented the Biomedical Sciences Graduate Program Alan Yates Alumni Award. During the review period, Dr. Kin was also invited to attend the Alabama Master Teacher Conference.

Crystal Wheeler – Dr. Wheeler attended the 36th Annual Conference of the Human Anatomy and Physiology Society in Fort Lauderdale, FL. She also applied for and was accepted as a member of the second cohort of the Community College Anatomy and Physiology Education Research program. Dr. Wheeler,

along with Ms. Miller applied for, and were awarded a grant from the ACHE/ACCS OER Grant Program.

Dr. Julie Maharrey- Dr. Maharrey was a participant in the Instructional Leadership Academy hosted by the Alabama Community College System. On campus, she was just accepted to the JSCC Leadership Academy for the currently academic year. She has participated in a variety of diverse professional development opportunities including: McGraw Hill Reverse Classroom Biology Lab online training; Quality Matters Training; UAB Gross Anatomy for Teachers virtual workshop; HHMI BioInteractive workshops: Exploring the Biology of Skin Color, Using Interactive Videos and Embedded Questions, and Vaccinations; Safe Zone Training, Strategies for Maximizing In-person A&P Labs using digital tools before, during and after lab; McGraw Hill Digital Anatomy symposium, and Lecture Breakers Virtual Conference. Dr. Maharrey also attended the 2022 Diversity Conference offered by the ACCS.

Stephanie Miller – Completed a 3.5 year membership of the Instructional Administrators Association. She also attended the 2021 and 2022 ACCS Diversity Conference. Ms. Miller is a committee member for the Jefferson State Leadership Academy. Earlier in 2022, she attended an OER and Dual Enrollment conference that was sponsored by the Southern Regional Education Board. Stephanie continues to serve as chair of the Biology Department at the Shelby Campus.

Amanda Swindall – Dr. Swindall was selected by her students and peers as the Outstanding Faculty Member for Jefferson State Community College for 2020-2021. She also received the 2020-2021 ROSE Fellowship in partnership with UAB, which focused on implementing new strategies to improve BIO 103 laboratory experiences. In addition, she served as the Anatomy and Physiology committee chair for 2020-2022. Dr. Swindall is the lab director for the Pell City campus and serves on the Honors Day Committee.

Program/Department Outcomes Achievement: The program goals that are explicitly linked to our student learning outcomes would be goals 2 and 3.

The Biology Department offers four courses which meet Area III requirements for transfer to Alabama public four-year institutions. These courses include the following: Introduction to Biology I and II and Principles of Biology I and II. Of these four courses, Introduction to Biology I is the most frequently offered course of the three-year period with an average of 35 course sections.

A review of 3-year assessment data identified certain trends and targets for improvement. When analyzing the data for our non-majors offerings – BIO 101 and BIO 102, the results showed a significant increase in learning success compared to our last 3 year program review (2016-2019). It should be noted that during the review period, the course competencies and learning objectives were reviewed at the level of the ACCS and the courses were changed. The anatomy and

physiology component of BIO 101 was removed and placed in BIO 102 as part of the comparative species content. This has allowed more time in the semester to focus on fundamental Biology concepts which can be correlated to an increase in student understanding of these concepts.

The results for the science major courses, Principles of Biology I (103) and II (104) showed impressive improvements, with no one identifiable factor. Most improvements that we sought to implement during this review cycle were stymied by the pandemic. Now as things are returning back to normal, we will resume the textbook selection process. Our goal is to find a book for BIO 103/104 that aligns with all of the learning objectives for both courses. This process will be headed up by the BIO 103/104 committee. Faculty turn over also likely impacted BIO 103/104 student learning, as during the pandemic we lost the full time faculty members at our two largest campuses (Jefferson and Shelby) that taught a majority of BIO 103 and BIO 104 sections. This transition period is the optimal time to reevaluate and explore new pedagogical methodologies in teaching Biology majors level courses. In BIO 103, one instructor has developed a flipped-classroom model. For BIO 104, the biggest change is that we have a full time instructor that has developed an online section of the course with an at home lab component.

The Biology department offers feeder courses for the Nursing and Allied Health programs. These courses include Anatomy and Physiology I and II and Microbiology. These courses are not part of the STARS articulation agreement. However, students pursuing BS degrees in Nursing and Allied Health fields as well as students meeting criteria for graduate degree programs may complete the courses.

The Anatomy and Physiology I (201) and Anatomy and Physiology II (202) data showed that across the two-semester anatomy and physiology offerings, students have consistently mastered the concept of homeostasis and can identify and recognize major structures for the systems studied. Results indicate students showed significant improvement (compared to 2016-2019) and were able to meet the criteria for success when presented with more conceptual material – defining the structural and functional relationship and understanding the physiology of the various organ systems. Concerted efforts were made to utilize case studies to improve engagement and provide relevant examples of how this material is used. Also, during the review period, all of Anatomy and Physiology courses transitioned to online formats and were able to provide students with materials that they could access 24/7 including, recorded lectures, recorded lab videos, and lab images. Instructors worked diligently to experiment with new online tools to ensure students stayed engaged. As we transitioned back to in person learning, most instructors kept some of the tools, and students were given access to materials to study with at home at their convenience.

Results from student performance in Microbiology (220) demonstrated success in all but the first SLO. The first SLO covers the most basic biology information, highlighting the lack of biology background of most of our students. That said, while we did not hit the 70% threshold, we did see an improvement over the course of 3 years from 57% to 67% success. The topics covered in SLO 1 include cellular biology, cellular respiration, and genetics. It should be noted that general biology (BIO 103) is NOT a prerequisite for BIO 220. The biology faculty overwhelming

supports a mandatory requirement of Principles of Biology I as a standard pre-requisite for the course. If students were to take BIO 103 before BIO 220, faculty believe there would be an increase not only in the content covered in SLO1 but better overall class achievement. In the meantime, the department will continue to implement approaches that include faculty stressing basic cell biology throughout the semester through supplemental activities and emphasis in the laboratory. It should also be noted that while still meeting the 70% threshold for success, we did see a decrease in the success rate for SLO 4, which involves laboratory skills. While instructors employed a variety of creative approaches to meeting the laboratory learning objectives during the COVID induced lockdowns, it appears that none was a perfect substitute for the in person microbiology lab experience. This is something to consider as demand for fully online courses increases.

Part 2: Program/Department Change

Program/Department Goal Changes: We have not currently changed our departmental goals.

Course Student Learning Outcome Changes: Within this cycle we moved to ensure that all sections across all four campuses are assessed. We have reached that goal, with it being standard practice at all campuses to administer the course based SLO assessment quizzes. It should be noted that the course competencies set by the ACCS were changed dramatically for BIO 101/102 and Learning Objectives were modified to reflect those changes. The SLO assessments were also reviewed and updated to ensure we were testing students on material relative to the new learning objectives.

Part 3: Evidence of Staff Participation in Program Review

Faculty/staff participation: The majority of departmental faculty participates in the SLO assessment and analysis process. Roles are divided by course offerings as can be seen in the below table. The department has been divided into course based committees (* denotes chair for the Program Review time frame). The committee is responsible for managing the SLO assessment reports, book selections and other department wide policies for each specific course offering.

Table 4. Faculty SLO Course Assignments

BIO 101	BIO 102	BIO 103	BIO 104	BIO 201	BIO 202	BIO 220
Crystal Wheeler*	Crystal Wheeler*	Charles Venglarik*	Charles Venglarik*	Amanda Swindall*	Amanda Swindall*	Stephanie Miller*
Erin Arnold	Erin Arnold	Kelley Black	Kelley Black	Julie Maharrey	Julie Maharrey	Kelley Black
Nic Kin	Nic Kin	Evan Boitet	Evan Boitet	Evan Boitet	Evan Boitet	Nic Kin
Julie Maharrey	Julie Maharrey	Stephanie Miller	Stephanie Miller	Zareen Dodwad-Kahn	Zareen Dodwad-Kahn	Erin Arnold
Zareen Dodwad-Kahn	Zareen Dodwad-Kahn			Crystal Wheeler	Crystal Wheeler	

All SLO data is collected and compiled into Excel spreadsheets (designed by Charles Venglarik) each semester.



Program: Biology (BIO 101)

Assessment period: Fall 2019 – Summer 2022

Program or Department Mission:

Program or Department Mission:

The mission of the Biology Department is consistent with the mission of Jefferson State Community College. The department provides biology courses appropriate for students majoring in both science and non-science disciplines. Our teaching aims to help prepare students for their future professions both inside and outside of the scientific field and also to be a more informed member of their community, able to make responsible decisions in biological matters.

Course Student Learning Outcomes & Assessment Plan

Biology 101 Course Level Assessment Rubric:

General Education Objective

The student will demonstrate ability to apply reasoning and logic to assess ideas and situations, support positions, draw conclusions, and solve problems

The student will demonstrate understanding of mathematical concepts and scientific principles, and ability to use computers

Department Level Student Learning Outcomes

1. Students will understand the principles and processes that are fundamental to life.
2. Students will understand the fundamental principles of biology at the elemental, cellular, molecular, and organism levels.
3. Students will receive the appropriate Biological knowledge to support a career within the Scientific, Medical, or Health and Fitness community
4. Students will understand principles of human biology that relate to health and fitness

Course Level Student Learning Outcomes

1. Students will recognize how the scientific method is utilized to explore biological processes.
2. Students will have the ability to recognize biological processes at the molecular, cellular and organismal levels.
3. Students will demonstrate an ability to identify basic genetic and molecular biology principles.

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence			Use of Results												
<p>1. Students will recognize how the scientific method is utilized to explore biological processes</p>	<p>Student learning outcomes were assessed by using a 15 question standardized multiple choice examination at the end of the semester. A total of three questions (Q-1 – Q-3) were used to assess SLO-1.</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO 1.</p>	<table border="1" data-bbox="926 466 1669 898"> <tr> <td data-bbox="926 466 1094 573"></td> <td data-bbox="1098 466 1266 573">Jefferson</td> <td data-bbox="1270 466 1669 573"># students tested = 356 # correct = 965 % correct = 90</td> </tr> <tr> <td data-bbox="926 576 1094 683"></td> <td data-bbox="1098 576 1266 683">Shelby</td> <td data-bbox="1270 576 1669 683"># students tested = 476 # correct = 1265 % correct = 89</td> </tr> <tr> <td data-bbox="926 686 1094 794"></td> <td data-bbox="1098 686 1266 794">Pell City</td> <td data-bbox="1270 686 1669 794"># students tested = 239 # correct = 591 % correct = 82</td> </tr> <tr> <td data-bbox="926 797 1094 898"></td> <td data-bbox="1098 797 1266 898">Clanton</td> <td data-bbox="1270 797 1669 898"># students tested = 38 # correct = 55 % correct = 48</td> </tr> </table> <p data-bbox="926 946 1308 1011">Total Students Tested = 1109 Total Annual Success Rate: 81%</p>				Jefferson	# students tested = 356 # correct = 965 % correct = 90		Shelby	# students tested = 476 # correct = 1265 % correct = 89		Pell City	# students tested = 239 # correct = 591 % correct = 82		Clanton	# students tested = 38 # correct = 55 % correct = 48	<p>The students tested did meet the requirements for success for SLO 1.</p> <p>The success rate for SLO 1 is 81% which is a moderate increase from last 3 year report where the success rate was measured at 77%. This could be because we have been providing all students with the course material online throughout the semester.</p> <p>We will continue to make the lecture notes and study aids</p>
	Jefferson	# students tested = 356 # correct = 965 % correct = 90																
	Shelby	# students tested = 476 # correct = 1265 % correct = 89																
	Pell City	# students tested = 239 # correct = 591 % correct = 82																
	Clanton	# students tested = 38 # correct = 55 % correct = 48																

					available to students online throughout the semester.	
2. Students will have the ability to recognize biological processes at the molecular, cellular and organismal levels	Student learning outcomes were assessed by using a 15 question standardized multiple choice examination at the end of the semester. A total of seven questions (Q4-Q10) were used to assess SLO-2.	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO 2.		Jefferson	# students tested = 356 # correct = 2054 % correct = 82	The students tested did meet the requirements for success for SLO 2. The success rate for SLO 1 is 76% which is a moderately increase from last 3 year report where the success rate was measured at 70%. This could be because we have been providing all students with the course material online throughout the semester.
				Shelby	# students tested = 476 # correct = 2136 % correct = 64	
				Pell City	# students tested = 239 # correct = 1502 % correct = 90	
				Clanton	# students tested = 38 # correct = 186 % correct = 70	
			Total Students Tested = 1109 Total Annual Success Rate: 76%			
3. Students will demonstrate an ability to identify basic genetic and molecular biology principles.	Student learning outcomes were assessed by using a 15 question standardized multiple choice examination at the end of the	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related		Jefferson	# students tested = 356 # correct = 1330 % correct = 75	The students tested did meet the requirements for success for SLO 3. The success rate for SLO 1 is 78% which is a significant
				Shelby	# students tested = 476 # correct = 1774 % correct = 75	
				Pell City	# students tested = 239 # correct = 1064 % correct = 89	
				Clanton	# students tested = 38	
			Total Students Tested = 1109 Total Annual Success Rate: 76%			

	<p>semester. A total of five questions (Q11-Q15) were used to assess SLO-3.</p>	<p>to SLO 3.</p>			<p># correct = 141 % correct = 74</p> <p>Total Students Tested = 1109 Total Annual Success Rate: 78%</p>	<p>increase from last 3 year report where the success rate was measured at 52%. It should be noted that SLO 3 was modified to account for a change in the course competencies as determined at the state level. Previously SLO 3 measure students mastery of the anatomy and physiology component of the course. This material has been moved to BIO 102, allowing for more time to be spent on molecular biology.</p>
<p>Plan submission date: September 23, 2022</p>			<p>Submitted by:</p>			



Assessment Record

Program: Biology (BIO 102)

Assessment period: Fall 2019 – Summer 2022

Program or Department Mission:

Program or Department Mission:

The mission of the Biology Department is consistent with the mission of Jefferson State Community College. The department provides biology courses appropriate for students majoring in both science and non-science disciplines. Our teaching aims to help prepare students for their future professions both inside and outside of the scientific field and also to be a more informed member of their community, able to make responsible decisions in biological matters.

Course Student Learning Outcomes & Assessment Plan

Biology 102 Course Level Assessment Rubric:

General Education Objective

The student will read, understand, and evaluate materials written at a variety of levels and for a variety of purposes.

Department Level Student Learning Outcomes

1. Students will understand the principles and processes that are fundamental to life.
2. Students will understand the fundamental principles of biology at the elemental, cellular, molecular, and organism levels.
3. Students will receive the appropriate Biological knowledge to support a career within the Scientific, Medical, or Health and Fitness community
4. Students will understand principles of human biology that relate to health and fitness

Course level student learning outcomes

1. Students will demonstrate knowledge of evolution in both plant and animal life.
2. Students will identify general characteristics, anatomy, and taxonomy of plant and animals.
3. Students will explain the interrelationships between the varied life forms on earth and identify the role of humans within ecological systems.

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence			Use of Results
1. Students will demonstrate knowledge of evolution in both plant and animal life.	Student learning outcomes were assessed by using a 25 question standardized multiple choice examination at the end of the semester. A total of 7 questions (Q1-Q7) were used to assess SLO 1.	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO 1.		Jefferson	# students tested = 9 # correct = 47 % correct = 75	The students tested did meet the requirements for success for SLO 1. The success rate for SLO 1 is 80% which is markedly increase from last 3 year report where the success rate was measured at 67%. This could be because we have been providing all students with the course material online throughout the semester. We will continue to make the lecture notes and study aids available to students online throughout the semester.
				Shelby	# students tested = 198 # correct = 1103 % correct = 80	
				Pell City	# students tested = 190 # correct = 1075 % correct = 80	
				Clanton	# students tested = 0 # correct = % correct =	
				Clanton	# students tested = 0 # correct = % correct =	
			Total Students Tested = 397 Total Annual Success Rate: 80%			
2. Students will identify general characteristics, anatomy, and	Student learning outcomes were assessed by using a 25	70% or > successful 69% or < unsuccessful	Fall 2021	Jefferson	# students tested = 9 # correct = 83 % correct = 66	The students tested did meet the requirements for success for SLO 2.
				Shelby	# students tested = 198	

<p>taxonomy of plant and animals.</p>	<p>question standardized multiple choice examination at the end of the semester. A total of 14 questions (Q8-Q21) were used to assess SLO 2.</p>	<p>The percent is based upon the average of correctly answered questions related to SLO 2.</p>	<table border="1" data-bbox="888 134 1631 427"> <tr> <td></td> <td></td> <td># correct = 2267 % correct = 82</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 190 # correct = 2299 % correct = 86</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 0 # correct = % correct =</td> </tr> </table> <p>Total Students Tested = 397 Total Annual Success Rate: 84%</p>			# correct = 2267 % correct = 82		Pell City	# students tested = 190 # correct = 2299 % correct = 86		Clanton	# students tested = 0 # correct = % correct =	<p>The success rate for SLO 2 is 84% which is markedly higher than from last 3 year report where the success rate was measured at 70%. This could be because we have been providing all students with the course material online throughout the semester.</p> <p>We will continue to make the instructional materials available to students online throughout the course.</p>			
		# correct = 2267 % correct = 82														
	Pell City	# students tested = 190 # correct = 2299 % correct = 86														
	Clanton	# students tested = 0 # correct = % correct =														
<p>3. Students will explain the interrelationships between the varied life forms on earth and identify the role of humans within ecological systems.</p>	<p>Student learning outcomes were assessed by using a 25 question standardized multiple choice examination at the end of the semester. A total of 4 questions (Q22-Q25) were used to assess SLO 3.</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO 3.</p>	<table border="1" data-bbox="888 846 1631 1284"> <tr> <td></td> <td>Jefferson</td> <td># students tested = 9 # correct = 28 % correct = 78</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 198 # correct = 674 % correct = 85</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 190 # correct = 689 % correct = 91</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 0 # correct = % correct =</td> </tr> </table> <p>Total Students Tested = 397 Total Annual Success Rate: 88%</p>		Jefferson	# students tested = 9 # correct = 28 % correct = 78		Shelby	# students tested = 198 # correct = 674 % correct = 85		Pell City	# students tested = 190 # correct = 689 % correct = 91		Clanton	# students tested = 0 # correct = % correct =	<p>The students tested did meet the requirements for success for SLO 3.</p> <p>The success rate for SLO 3 is 88% which is markedly from last 3 year report where the success rate was measured at 69%. This could be because we have been providing all students with the course material online throughout the semester.</p>
	Jefferson	# students tested = 9 # correct = 28 % correct = 78														
	Shelby	# students tested = 198 # correct = 674 % correct = 85														
	Pell City	# students tested = 190 # correct = 689 % correct = 91														
	Clanton	# students tested = 0 # correct = % correct =														

				We will work to improve this score by adding additional study materials for population ecology. We will continue to make the instructional materials available to students online.
Plan submission date: September 23, 2022				



Assessment Record

Program: Biology (BIO 103)

Assessment period: Fall 2019 – Summer 2022

Program or Department Mission:

Program or Department Mission:

The mission of the Biology Department is consistent with the mission of Jefferson State Community College. The department provides biology courses appropriate for students majoring in both science and non-science disciplines. Our teaching aims to help prepare students for their future professions both inside and outside of the scientific field and also to be a more informed member of their community, able to make responsible decisions in biological matters.

Course Student Learning Outcomes & Assessment Plan

Biology 103 Course Level Assessment Rubric:

General Education Objective

The student will demonstrate ability to apply reasoning and logic to assess ideas and situations, support positions, draw conclusions, and solve problems

The student will demonstrate understanding of mathematical concepts and scientific principles, and ability to use computers

Department Level Student Learning Outcomes

1. Students will understand the principles and processes that are fundamental to life.
2. Students will understand the fundamental principles of biology at the elemental, cellular, molecular, and organism levels
3. Students will receive the appropriate Biological knowledge to support a career within the Scientific, Medical, or Health and Fitness community
4. Students will understand principles of human biology that relate to health and fitness

Course Level Student Learning Outcomes

1. Students will demonstrate knowledge of the fundamental concepts and processes in biology including the scientific method, evolution, biological macromolecules and biochemistry
2. Students will demonstrate an ability to identify molecular and cellular processes in prokaryotic and eukaryotic cells.
3. The student will demonstrate an ability to recognize genetic, morphological and life cycle characteristics of bacteria, fungi, and viruses.

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence		Use of Results
1. Students will demonstrate knowledge of the fundamental concepts and processes in biology including the scientific	Student learning outcomes were assessed by using a 14 question standardized multiple choice examination at	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly	Jefferson	# students tested = 224 # correct = 824 % correct = 87%	The students tested did meet the requirements for success for SLO 1. The success rate (80%) is nearly identical to the last 3-year report (79%).
			Shelby	# students tested = 366 # correct = 1245 % correct = 85%	
			Clanton	# students tested = 126 # correct = 498	

<p>method, evolution, biological macromolecules and biochemistry</p>	<p>the end of the semester. A total of four questions (Q1 – Q4) were used to assess SLO1</p>	<p>answered questions related to SLO1</p>	<table border="1"> <tr> <td></td> <td>% correct = 95%</td> </tr> <tr> <td>Pell City</td> <td># students tested = 64 # correct = 1990 % correct = 70%</td> </tr> </table> <p>Total Students Tested = 800 Total Annual Success Rate: 80%</p>		% correct = 95%	Pell City	# students tested = 64 # correct = 1990 % correct = 70%	<p>The pandemic and the loss of 3 full-time faculty disrupted this 3-year cycle. Textbook selection described in Fall of 2019 was suspended. BIO 103 learning outcomes improved with all-online classes only to decline upon reopening.</p> <p>The department also replaced the faculty pairs described for each course sequence in the previous report with new committees of 4-6 faculty.</p> <p>The BIO 103/104 SLO committee will 1) Resume the textbook selection process. 2) Reevaluate the SLO questions. 3) increase availability of online resources. 4) pilot new labs</p>		
	% correct = 95%									
Pell City	# students tested = 64 # correct = 1990 % correct = 70%									
<p>2: Students will demonstrate an ability to identify molecular and cellular processes in prokaryotic and eukaryotic cells.</p>	<p>Student learning outcomes were assessed by using a 14 question standardized multiple choice examination at</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly</p>	<table border="1"> <tr> <td>Jefferson</td> <td># students tested = 244 # correct = 1254 % correct = 77%</td> </tr> <tr> <td>Shelby</td> <td># students tested = 366 # correct = 1670 % correct = 69%</td> </tr> <tr> <td>Clanton</td> <td># students tested = 126 # correct = 808</td> </tr> </table>	Jefferson	# students tested = 244 # correct = 1254 % correct = 77%	Shelby	# students tested = 366 # correct = 1670 % correct = 69%	Clanton	# students tested = 126 # correct = 808	<p>The students tested did not meet the requirements for success for SLO 2.</p> <p>The success rate for SLO 2 (69%) improved markedly compared to</p>
Jefferson	# students tested = 244 # correct = 1254 % correct = 77%									
Shelby	# students tested = 366 # correct = 1670 % correct = 69%									
Clanton	# students tested = 126 # correct = 808									

	<p>the end of the semester. A total of seven questions (Q5 – Q11) were used to assess SLO2</p>	<p>answered questions related to SLO2</p>	<table border="1" data-bbox="869 139 1440 298"> <tr> <td data-bbox="869 139 1045 188"></td> <td data-bbox="1045 139 1440 188">% correct = 92%</td> </tr> <tr> <td data-bbox="869 188 1045 298">Pell City</td> <td data-bbox="1045 188 1440 298"># students tested = 64 # correct = 270 % correct = 60%</td> </tr> </table> <p data-bbox="869 337 1205 363">Total Students Tested = 800</p> <p data-bbox="869 376 1251 402">Total Annual Success Rate: 69%</p>		% correct = 92%	Pell City	# students tested = 64 # correct = 270 % correct = 60%	<p data-bbox="1642 142 1877 207">the last 3 year cycle (59%).</p> <p data-bbox="1642 233 1915 688">As mentioned previously This 3-year cycle was disrupted by the pandemic and loss of 3 full-time faculty. The last 3-year report described changing textbooks as a possible means of improving this learning outcome. That process was suspended in Spring of 2020.</p> <p data-bbox="1642 711 1915 1026">The newly formed BIO 103/104S SLO committee will resume the process of textbook selection with the aim of making cell & molecular biology easier to understand.</p> <p data-bbox="1642 1049 1902 1292">Additionally, they will evaluate online resources and lab exercises that might make these processes more intuitive for learners.</p>
	% correct = 92%							
Pell City	# students tested = 64 # correct = 270 % correct = 60%							

<p>3: The student will demonstrate an ability to recognize genetic, morphological and life cycle characteristics of bacteria, fungi, and viruses.</p>	<p>Student learning outcomes were assessed by using a 14 question standardized multiple choice examination at the end of the semester. A total of three questions (Q12 – Q14) was used to assess SLO3</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO3</p>	<table border="1" data-bbox="869 139 1440 574"> <tr> <td data-bbox="869 139 1045 250">Jefferson</td> <td data-bbox="1045 139 1440 250"># students tested = 244 # correct =625 % correct = 83%</td> </tr> <tr> <td data-bbox="869 250 1045 360">Shelby</td> <td data-bbox="1045 250 1440 360"># students tested = 366 # correct =836 % correct = 70%</td> </tr> <tr> <td data-bbox="869 360 1045 470">Clanton</td> <td data-bbox="1045 360 1440 470"># students tested = 126 # correct = 836 % correct = 92%</td> </tr> <tr> <td data-bbox="869 470 1045 574">Pell City</td> <td data-bbox="1045 470 1440 574"># students tested = 64 # correct = 96 % correct = 50%</td> </tr> </table> <p data-bbox="869 613 1205 646">Total Students Tested = 800</p> <p data-bbox="869 652 1251 685">Total Annual Success Rate: 72%</p>	Jefferson	# students tested = 244 # correct =625 % correct = 83%	Shelby	# students tested = 366 # correct =836 % correct = 70%	Clanton	# students tested = 126 # correct = 836 % correct = 92%	Pell City	# students tested = 64 # correct = 96 % correct = 50%	<p>The students tested did meet the requirements for success for SLO 3.</p> <p>The success rate for SLO 2 (72%) improved markedly compared to the last 3 year cycle (63%).</p> <p>The newly formed BIO 103/104S SLO committee will update the SLOs and the assessment. The ACCS revised course descriptions in 2019. “Fungi” was moved from BIO 103 to BIO 104S, which impacts this SLO. We will also consider measures of “discrimination” for each question in the assessment</p> <p>The depth of explanation for bacteriology and virology will be a consideration in our textbook evaluation.</p>
Jefferson	# students tested = 244 # correct =625 % correct = 83%											
Shelby	# students tested = 366 # correct =836 % correct = 70%											
Clanton	# students tested = 126 # correct = 836 % correct = 92%											
Pell City	# students tested = 64 # correct = 96 % correct = 50%											
<p>Plan submission date:</p>			<p>Submitted by:</p>									



Program: Biology (BIO 104S)

Assessment period: Fall 2019–Summer 2022

Program or Department Mission:

The mission of the Biology Department is consistent with the mission of Jefferson State Community College. The department provides biology courses appropriate for students majoring in both science and non-science disciplines. Our teaching aims to help prepare students for their future professions both inside and outside of the scientific field and also to be a more informed member of their community, able to make responsible decisions in biological matters.

Course Student Learning Outcomes & Assessment Plan

Biology 104 Course Level Assessment Rubric:

General Education Objective

The student will demonstrate ability to apply reasoning and logic to assess ideas and situations, support positions, draw conclusions, and solve problems

The student will demonstrate understanding of mathematical concepts and scientific principles, and ability to use computers

Department Level Student Learning Outcomes

1. Students will understand the principles and processes that are fundamental to life.
2. Students will understand the fundamental principles of biology at the elemental, cellular, molecular, and organism level
3. Students will receive the appropriate Biological knowledge to support a career within the Scientific, Medical, or Health and Fitness community
4. Students will understand principles of human biology that relate to health and fitness

Course Level Student Learning Outcomes

1. The student will recognize the fundamental principles and supporting evidence necessary to explain Darwinian evolution.
2. The student will demonstrate an ability to identify the structural characteristics and life cycles of both plant and animal phyla.
3. The student can recognize components of community ecology and identify how biodiversity contributes to a stable ecosystem.

Intended	Means of	Criteria for	Summary & Analysis of Assessment Evidence	Use of Results
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Outcomes	Assessment	Success			
<p>1. The student will recognize the fundamental principles and supporting evidence necessary to explain Darwinian evolution.</p>	<p>Student learning outcomes were assessed using a 20 question multiple-choice assessment at the end of each semester. A total of 9 questions (Q1-Q6 and Q 18-20) were used to assess understanding of SLO1</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions (1 to 6) related to SLO 1. (6 questions)</p>	<p>Jefferson</p>	<p># students tested = 179 # correct = 1298 % correct = 84%</p>	<p>The students tested did meet the requirements for success for SLO 1.</p> <p>The success rate for SLO 1 (81%) improved markedly compared to the last 3-year cycle (60%).</p> <p>The pandemic and faculty turnover disrupted this 3-year cycle. The factors that mediate the improvement are unknown. The move to online learning is one possibility. We will continue to offer an online BIO 104 as a service to students at the Pell City and Clanton campuses.</p> <p>The department created committees of 4-6 faculty in the Fall of 2021. The Shelby BIO 104 instructor was hired full time and is a member of the committee</p>
<p>Shelby</p>	<p># students tested = 63 # correct = 414 % correct = 73%</p>	<p>Total Students Tested = 242 Total Annual Success Rate = 81%</p>			
<p>2. The student will demonstrate an ability to identify the structural characteristics and life cycles of both plant and animal phyla.</p>	<p>Student learning outcomes were assessed using a 20 question multiple-choice assessment at the end of each semester. A total of 6 questions (Q7-Q12) were used to assess mastery of SLO2</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions (7 to 12 and 18 to 20) related to SLO 2. (9 total)</p>	<p>Jefferson</p>	<p># students tested = 179 # correct = 958 % correct = 89%</p>	<p>The students tested did meet the requirements for success for SLO 2.</p> <p>The success rate for SLO 2 (85%) improved markedly compared to the last 3-year cycle (73%).</p> <p>We will continue to reteach key topics and emphasize</p>
<p>Shelby</p>	<p># students tested = 63 # correct = 272 % correct = 72%</p>	<p>Total Students Tested = 242 Total Annual Success Rate = 85%</p>			

				learning via online resources and class discussions.	
3. The student can recognize components of population and community ecology and identify how biodiversity contributes to a stable ecosystem.	Student learning outcomes were assessed using a 20 question multiple-choice assessment at the end of each semester. A total of 5 questions (Q13-Q17) were used to assess mastery of SLO3	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions (13 to 17) related to SLO 3. (5 total)	Jefferson	# students tested = 179 # correct = 644 % correct = 72%	The students tested did meet the requirements for success for SLO 3. The success rate for SLO 1 (70%) improved markedly compared to the last 3-year cycle (57%). We will work to include ecology topics throughout the semester to ensure the material is covered adequately.
			Shelby	# students tested = 63 # correct = 198 % correct = 63%	
			Total Students Tested = 242 Total Annual Success Rate = 70%		
Plan submission date:			Submitted by:		



Assessment Record

Program: Biology (BIO 201)

Assessment period: Fall 2019 – Summer 2022

Program or Department Mission:

Program or Department Mission:

The mission of the Biology Department is consistent with the mission of Jefferson State Community College. The department provides biology courses appropriate for students majoring in both science and non-science disciplines. Our teaching aims to help prepare students for their future professions both inside and outside of the scientific field and also to be a more informed member of their community, able to make

responsible decisions in biological matters

Course Student Learning Outcomes & Assessment Plan

Biology 201 Course Level Assessment Rubric:

General Education Objective

The student will demonstrate ability to apply reasoning and logic to assess ideas and situations, support positions, draw conclusions, and solve problems

The student will demonstrate understanding of mathematical concepts and scientific principles, and ability to use computers

Department Level Student Learning Outcomes

1. Students will understand the principles and processes that are fundamental to life.
2. Students will understand the fundamental principles of biology at the elemental, cellular, molecular, and organism levels.
3. Students will receive the appropriate Biological knowledge to support a career within the Scientific, Medical, or Health and Fitness community
4. Students will understand principles of human biology that relate to health and fitness

Course Level Student Learning Outcomes Assessed

1. Students will be able to identify the terminology used in anatomy and physiology
2. Students will be able to identify and recognize the distinct characteristics of the systems listed below
 - A. Integumentary System
 - B. Skeletal System
 - C. Muscular System
 - D. Nervous System
3. Students will recognize the relationship between structural organization and function
4. Student will define homeostasis and identify the role of homeostasis within and between appropriate systems

5. Students will identify the major structures of each system
- A. Integumentary System
 - B. Skeletal System
 - C. Muscular System
 - D. Nervous System

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence			Use of Results												
<p>SLO 1: Students will be able to identify the terminology used in anatomy and physiology</p>	<p>Student learning outcomes were assessed by using a 16 question standardized multiple choice examination at the end of the semester. A total of 2 questions (Q2 and Q3) were used to assess SLO1</p>	<p>Correct responses by 70% of the students for each SLO will be defined as a successful outcome.</p>	<table border="1" data-bbox="888 581 1635 1015"> <tbody> <tr> <td data-bbox="888 581 1060 690"></td> <td data-bbox="1060 581 1239 690">Jefferson</td> <td data-bbox="1239 581 1635 690"># students tested = 633 # correct = 1241 % correct = 83%</td> </tr> <tr> <td data-bbox="888 690 1060 799"></td> <td data-bbox="1060 690 1239 799">Shelby</td> <td data-bbox="1239 690 1635 799"># students tested =889 # correct = 1369 % correct = 83%</td> </tr> <tr> <td data-bbox="888 799 1060 907"></td> <td data-bbox="1060 799 1239 907">Clanton</td> <td data-bbox="1239 799 1635 907"># students tested = 238 # correct =507 % correct = 84%</td> </tr> <tr> <td data-bbox="888 907 1060 1015"></td> <td data-bbox="1060 907 1239 1015">Pell City</td> <td data-bbox="1239 907 1635 1015"># students tested = 337 # correct =520 % correct = 77%</td> </tr> </tbody> </table> <p data-bbox="888 1015 1635 1047">Total Students Tested = 2097</p> <p data-bbox="888 1047 1635 1079">Total Annual Success Rate =82 %</p>				Jefferson	# students tested = 633 # correct = 1241 % correct = 83%		Shelby	# students tested =889 # correct = 1369 % correct = 83%		Clanton	# students tested = 238 # correct =507 % correct = 84%		Pell City	# students tested = 337 # correct =520 % correct = 77%	<p>The students tested did meet the requirements for success in SLO 1. The success rate for SLO 1 is 82%. This is a slight improvement from the last 3-year review, which was 81%. An effective change throughout this 3-year review was making course material online throughout the term, which we think may have contributed to student success in all SLOs measured. Instructors continued to diligently emphasize terminology used in anatomy and physiology</p>
	Jefferson	# students tested = 633 # correct = 1241 % correct = 83%																
	Shelby	# students tested =889 # correct = 1369 % correct = 83%																
	Clanton	# students tested = 238 # correct =507 % correct = 84%																
	Pell City	# students tested = 337 # correct =520 % correct = 77%																

					throughout the term. Instructors will continue to intentionally incorporate vocabulary terms throughout instruction in lecture and lab. This will include specific regional and directional terminology. Course material will continue to be made available online throughout the term.	
<p>SLO 2: Students will be able to identify and recognize the distinct characteristics of the systems listed below</p> <p>A. Integumentary System</p> <p>B. Skeletal System</p> <p>C. Muscular System</p> <p>D. Nervous System</p>	<p>Student learning outcomes were assessed by using a 16 question standardized multiple choice examination at the end of the semester. A total of 7 questions (Q5, Q8, Q11, and Q14) were used to assess SLO2</p>	<p>Correct responses by 70% of the students for each SLO will be defined as a successful outcome.</p>		Jefferson	# students tested = 633 # correct = 1922 % correct = 77%	<p>The students tested did meet the requirement for success with SLO 2.</p> <p>The success rate for SLO 2 is 80%, which is an improvement over the 75% success rate for SLO in the previous 3-year review.</p> <p>An effective change throughout this 3-year review was making course material online throughout the term,</p>
				Shelby	# students tested =889 # correct =2948 % correct = 82%	
				Clanton	# students tested = 238 # correct =710 % correct = 75%	
				Pell City	# students tested = 337 # correct =1126 % correct = 83%	
			<p>Total Students Tested =2097</p> <p>Total Annual Success Rate = 80%</p>			

				<p>which we think may have contributed to student success in all SLOs measured.</p> <p>Instruction on each body system was incorporated into lecture and lab throughout the term, while working to emphasize specific characteristics and functions of the systems listed.</p> <p>The body systems listed in SLO 2 will continue to be taught in both the lecture and the lab settings. Course material will continue to be made available online throughout the term.</p>						
SLO 3: Students will recognize the relationship between structural organization and function	Student learning outcomes were assessed by using a 16 question standardized multiple choice	Correct responses by 70% of the students for each SLO will be defined as a successful	<table border="1"> <tr> <td></td> <td>Jefferson</td> <td># students tested = 633 # correct = 1938 % correct = 85%</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 889 # correct = 2464 % correct = 69%</td> </tr> </table>		Jefferson	# students tested = 633 # correct = 1938 % correct = 85%		Shelby	# students tested = 889 # correct = 2464 % correct = 69%	<p>The students tested did meet the requirement for success in SLO 3.</p> <p>The success rate for</p>
	Jefferson	# students tested = 633 # correct = 1938 % correct = 85%								
	Shelby	# students tested = 889 # correct = 2464 % correct = 69%								

	<p>examination at the end of the semester. A total of 4 question (Q1, Q7, Q9, Q13) was used to assess SLO3</p>	<p>outcome.</p>	<table border="1"> <tr> <td data-bbox="886 139 1060 245"></td> <td data-bbox="1060 139 1241 245">Clanton</td> <td data-bbox="1241 139 1625 245"># students tested = 238 # correct =751 % correct = 79%</td> </tr> <tr> <td data-bbox="886 245 1060 349"></td> <td data-bbox="1060 245 1241 349">Pell City</td> <td data-bbox="1241 245 1625 349"># students tested = 337 # correct =908 % correct = 68%</td> </tr> </table>		Clanton	# students tested = 238 # correct =751 % correct = 79%		Pell City	# students tested = 337 # correct =908 % correct = 68%	<p>SLO 3 was 75%, which is a marked increase from 57% in the last 3-year review.</p> <p>An effective change throughout this 3-year review was making course material online throughout the term, which we think may have contributed to student success in all SLOs measured.</p> <p>Along with online instructional materials, instructors worked to highlight and focus student attention on the relationship between structure and function in both lecture and lab settings.</p> <p>In the future, course material will continue to be made available online throughout the term. Instructors will continue to stress the importance of the structure-function</p>
	Clanton	# students tested = 238 # correct =751 % correct = 79%								
	Pell City	# students tested = 337 # correct =908 % correct = 68%								
<p>Total Students Tested = 2097 Total Annual Success Rate = 75%</p>										

						relationship in the body systems covered in the course.												
SLO 4: Student will define homeostasis and identify the role of homeostasis within and between appropriate systems	Student learning outcomes were assessed by using a 16 question standardized multiple choice examination at the end of the semester. A total of 2 questions (Q15 and Q16) were used to assess SLO4	Correct responses by 70% of the students for each SLO will be defined as a successful outcome.	<table border="1" data-bbox="890 285 1638 721"> <tr> <td data-bbox="890 285 1062 396"></td> <td data-bbox="1062 285 1241 396">Jefferson</td> <td data-bbox="1241 285 1638 396"># students tested = 633 # correct = 1160 % correct = 94%</td> </tr> <tr> <td data-bbox="890 396 1062 506"></td> <td data-bbox="1062 396 1241 506">Shelby</td> <td data-bbox="1241 396 1638 506"># students tested =889 # correct =1632 % correct = 92%</td> </tr> <tr> <td data-bbox="890 506 1062 615"></td> <td data-bbox="1062 506 1241 615">Clanton</td> <td data-bbox="1241 506 1638 615"># students tested = 238 # correct =425 % correct = 90%</td> </tr> <tr> <td data-bbox="890 615 1062 721"></td> <td data-bbox="1062 615 1241 721">Pell City</td> <td data-bbox="1241 615 1638 721"># students tested = 337 # correct =557 % correct = 83%</td> </tr> </table> <p data-bbox="890 760 1285 824">Total Students Tested = 2097 Total Annual Success Rate = 91%</p>				Jefferson	# students tested = 633 # correct = 1160 % correct = 94%		Shelby	# students tested =889 # correct =1632 % correct = 92%		Clanton	# students tested = 238 # correct =425 % correct = 90%		Pell City	# students tested = 337 # correct =557 % correct = 83%	<p data-bbox="1663 285 1932 441">The students tested did meet the requirements for success in SLO 4.</p> <p data-bbox="1663 480 1932 675">The success rate for SLO 4 is 91%, which is an improvement over the previous 3-year review of 85%.</p> <p data-bbox="1663 714 1932 1065">An effective change throughout this 3-year review was making course material online throughout the term, which we think may have contributed to student success in all SLOs measured.</p> <p data-bbox="1663 1104 1932 1422">Additionally, instructors worked to emphasize the importance of homeostasis within and between body systems throughout the term.</p>
	Jefferson	# students tested = 633 # correct = 1160 % correct = 94%																
	Shelby	# students tested =889 # correct =1632 % correct = 92%																
	Clanton	# students tested = 238 # correct =425 % correct = 90%																
	Pell City	# students tested = 337 # correct =557 % correct = 83%																

				<p>We will continue to emphasize the importance of homeostasis among body systems in lecture and lab. Also, course material will continue to be made available online throughout the term.</p>												
<p>SLO 5: Students will identify the major structures of each system A.Integumentary System B.Skeletal System C.Muscular System D.Nervous System</p>	<p>Student learning outcomes were assessed by using a 16 question standardized multiple choice examination at the end of the semester. A total of 4 questions (Q4, Q6, and Q10, Q12) were used to assess SLO5</p>	<p>Correct responses by 70% of the students for each SLO will be defined as a successful outcome.</p>	<table border="1" data-bbox="888 576 1635 1008"> <tr> <td data-bbox="888 576 1060 683"></td> <td data-bbox="1060 576 1241 683">Jefferson</td> <td data-bbox="1241 576 1635 683"># students tested = 633 # correct = 2126 % correct = 85%</td> </tr> <tr> <td data-bbox="888 683 1060 790"></td> <td data-bbox="1060 683 1241 790">Shelby</td> <td data-bbox="1241 683 1635 790"># students tested =889 # correct =2771 % correct = 81%</td> </tr> <tr> <td data-bbox="888 790 1060 898"></td> <td data-bbox="1060 790 1241 898">Clanton</td> <td data-bbox="1241 790 1635 898"># students tested = 238 # correct =835 % correct = 88%</td> </tr> <tr> <td data-bbox="888 898 1060 1008"></td> <td data-bbox="1060 898 1241 1008">Pell City</td> <td data-bbox="1241 898 1635 1008"># students tested = 337 # correct =1064 % correct = 79%</td> </tr> </table> <p data-bbox="888 1047 1287 1112">Total Students Tested = 2097 Total Annual Success Rate = 83%</p>		Jefferson	# students tested = 633 # correct = 2126 % correct = 85%		Shelby	# students tested =889 # correct =2771 % correct = 81%		Clanton	# students tested = 238 # correct =835 % correct = 88%		Pell City	# students tested = 337 # correct =1064 % correct = 79%	<p>The students tested did meet the requirements for success for SLO 5.</p> <p>The success rate for SLO 5 is 83%, as compared to 79% from the previous 3-year review. This shows an increase in student success over the previous review term.</p> <p>An effective change throughout this 3-year review was making course material online throughout the term, which we think may have contributed to student success in all</p>
	Jefferson	# students tested = 633 # correct = 2126 % correct = 85%														
	Shelby	# students tested =889 # correct =2771 % correct = 81%														
	Clanton	# students tested = 238 # correct =835 % correct = 88%														
	Pell City	# students tested = 337 # correct =1064 % correct = 79%														

				<p>SLOs measured.</p> <p>Also, instructors worked to teach and review the major structures of the systems listed. Instructors continued to stress the structure-function relationship within each body system in lecture and lab.</p> <p>We will continue to instruct students in the body systems listed, including major structures and structure-function relationships within each system. Course material will continue to be made available online throughout the term.</p>
Plan submission date:			Submitted by:	



Assessment Record

Program: Biology (BIO 202)

Assessment period: Fall 2019- Summer 2022

Program or Department Mission:

Program or Department Mission:

The mission of the Biology Department is consistent with the mission of Jefferson State Community College. The department provides biology courses appropriate for students majoring in both science and non-science disciplines. Our teaching aims to help prepare students for their future professions both inside and outside of the scientific field and also to be a more informed member of their community, able to make responsible decisions in biological matters.

Course Student Learning Outcomes & Assessment Plan

Biology 202 Course Level Assessment Rubric:

General Education Objective

The student will demonstrate ability to apply reasoning and logic to assess ideas and situations, support positions, draw conclusions, and solve problems

The student will demonstrate understanding of mathematical concepts and scientific principles, and ability to use computers

Department Level Student Learning Outcomes

1. Students will understand the principles and processes that are fundamental to life.
2. Students will understand the fundamental principles of biology at the elemental, cellular, molecular, and organism levels.
3. Students will receive the appropriate Biological knowledge to support a career within the Scientific, Medical, or Health and Fitness community
4. Students will understand principles of human biology that relate to health and fitness

Course Level Student Learning Outcomes Assessed

1. Students will define and describe the systems listed below.
 - A. Endocrine System
 - B. Cardiovascular System
 - C. Lymphatic and Immune System
 - D. Respiratory System
 - E. Digestive System
 - F. Urinary System
 - G. Reproductive System
2. Students will define homeostasis and identify the role of homeostasis within and between appropriate systems.
3. Students will be able to recognize the major structures of each system listed below.
 - A. Endocrine System
 - B. Cardiovascular System
 - C. Lymphatic and Immune System
 - D. Respiratory System
 - E. Digestive System
 - F. Urinary System
 - G. Reproductive System

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence		Use of Results
1: Students will define and describe the systems listed below. <ol style="list-style-type: none"> A. Endocrine System B. Cardiovascular System C. Lymphatic and Immune System D. Respiratory System E. Digestive System F. Urinary System 	Student learning outcomes were assessed by using a 12 question standardized multiple choice examination at the end of the semester. A total of five questions (Q2,	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO 1.	Jefferson Shelby Pell City Clanton	# students tested = 461 # correct = 1848 % correct = 80% # students tested = 772 # correct = 2789 % correct = 72% # students tested =177 # correct = 606 % correct = 68% # students tested =266 # correct = 911 % correct = 68%	The students tested did meet the requirements for success for SLO 1. The success rate for SLO 1 was 73% over the three-year period. This represents and

<p>G. Reproductive System</p>	<p>Q4, Q7, Q8, Q12) were used to assess SLO1.</p>		<p>Total Students Tested = 1676 Total Success Rate = 73%</p>		<p>increase from 61% over the previous 3-year program review. Concerted efforts were made over this current review period to incorporate case studies to facilitate a complete understanding of the various organ systems.</p> <p>We will continue to reinforce the various organ systems in both lecture and lab.</p>								
<p>2: Students will define homeostasis and identify the role of homeostasis within and between appropriate systems.</p>	<p>Student learning outcomes were assessed by using a 12 question standardized multiple choice examination at the end of the semester. A total of 2 questions (Q1 and Q6) were used to assess SLO2.</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO2.</p>	<table border="1"> <tr> <td data-bbox="953 889 1138 1000">Jefferson</td> <td data-bbox="1138 889 1530 1000"># students tested = 461 # correct = 820 % correct = 89%</td> </tr> <tr> <td data-bbox="953 1000 1138 1110">Shelby</td> <td data-bbox="1138 1000 1530 1110"># students tested = 772 # correct = 1279 % correct = 83%</td> </tr> <tr> <td data-bbox="953 1110 1138 1221">Pell City</td> <td data-bbox="1138 1110 1530 1221"># students tested =177 # correct = 247 % correct = 70%</td> </tr> <tr> <td data-bbox="953 1221 1138 1325">Clanton</td> <td data-bbox="1138 1221 1530 1325"># students tested =266 # correct = 338 % correct = 64%</td> </tr> </table> <p>Total Students Tested = 1676 Total Success Rate = 80%</p>		Jefferson	# students tested = 461 # correct = 820 % correct = 89%	Shelby	# students tested = 772 # correct = 1279 % correct = 83%	Pell City	# students tested =177 # correct = 247 % correct = 70%	Clanton	# students tested =266 # correct = 338 % correct = 64%	<p>The students tested did meet the requirements for success for SLO 2.</p> <p>The success rate for SLO 2 is 80% which is consistent with the data collected during the previous program review period. Homeostasis is stressed in both</p>
Jefferson	# students tested = 461 # correct = 820 % correct = 89%												
Shelby	# students tested = 772 # correct = 1279 % correct = 83%												
Pell City	# students tested =177 # correct = 247 % correct = 70%												
Clanton	# students tested =266 # correct = 338 % correct = 64%												

					<p>201 and 202 and throughout every chapter. This is an underlying theme across all sections taught.</p> <p>We will continue to stress the importance of homeostasis in each chapter and with each organ system.</p>								
<p>3: Students will be able to recognize the major structures of each system listed below.</p> <ul style="list-style-type: none"> A. Endocrine System B. Cardiovascular System C. Lymphatic and Immune System D. Respiratory System E. Digestive System F. Urinary System G. Reproductive System 	<p>Student learning outcomes were assessed by using a 12 question standardized multiple choice examination at the end of the semester. A total of 5 questions (Q3, Q5 and Q9-Q11) were used to assess SLO3.</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO3.</p>	<table border="1" data-bbox="961 634 1533 1068"> <tr> <td data-bbox="961 634 1138 743">Jefferson</td> <td data-bbox="1138 634 1533 743"># students tested = 461 # correct = 2051 % correct = 89%</td> </tr> <tr> <td data-bbox="961 743 1138 852">Shelby</td> <td data-bbox="1138 743 1533 852"># students tested = 772 # correct = 3248 % correct = 84%</td> </tr> <tr> <td data-bbox="961 852 1138 961">Pell City</td> <td data-bbox="1138 852 1533 961"># students tested =177 # correct = 653 % correct = 70%</td> </tr> <tr> <td data-bbox="961 961 1138 1068">Clanton</td> <td data-bbox="1138 961 1533 1068"># students tested =266 # correct = 1051 % correct = 79%</td> </tr> </table> <p data-bbox="961 1112 1344 1177">Total Students Tested = 1676 Total Success Rate = 84%</p>		Jefferson	# students tested = 461 # correct = 2051 % correct = 89%	Shelby	# students tested = 772 # correct = 3248 % correct = 84%	Pell City	# students tested =177 # correct = 653 % correct = 70%	Clanton	# students tested =266 # correct = 1051 % correct = 79%	<p>The students tested did meet the requirements for success for SLO 3.</p> <p>The success rate for SLO 3 is 84% which is an increase from the 75% success rate reported in the previous 3-year program review. Efforts have been made across the campuses to increase the quality and number of models in BIO 202.</p>
Jefferson	# students tested = 461 # correct = 2051 % correct = 89%												
Shelby	# students tested = 772 # correct = 3248 % correct = 84%												
Pell City	# students tested =177 # correct = 653 % correct = 70%												
Clanton	# students tested =266 # correct = 1051 % correct = 79%												

				We will continue to teach organ system identification in the lab.



Assessment Record

Program: Biology (BIO 220)

Assessment period: Fall 2019- Summer 2022

Program or Department Mission:

The mission of the Biology Department is consistent with the mission of Jefferson State Community College. The department provides biology courses appropriate for students majoring in both science and non-science disciplines. Our teaching aims to help prepare students for their future professions both inside and outside of the scientific field and also to be a more informed member of their community, able to make responsible decisions in biological matters.

Course Student Outcomes & Assessment Plan

Biology 220 Course Level Assessment Rubric:

General Education Objective

The student will demonstrate ability to apply reasoning and logic to assess ideas and situations, support positions, draw conclusions, and solve problems

The student will demonstrate understanding of mathematical concepts and scientific principles, and ability to use computers

Department Level Student Learning Outcomes

1. Students will understand the principles and processes that are fundamental to life.

2. Students will understand the fundamental principles of biology at the elemental, cellular, molecular, and organism levels.
3. Students will receive the appropriate Biological knowledge to support a career within the Scientific, Medical, or Health and Fitness community
4. Students will understand principles of human biology that relate to health and fitness

Course Level Student Learning Outcomes Assessed

1. Students will be able to identify the differences between prokaryotic and eukaryotic cells as well as the structure and function of microorganisms in various environments.
2. Students will recognize the metabolic and genetic pathways in microorganisms as well as the clinical and industrial applications of these properties.
3. Students will be able to identify the relationship between microorganism infection and disease, interactions with the host immune system, and various methods for controlling the growth and dissemination of microorganisms.
4. Students will be able to recognize proper laboratory technique and protocols including aseptic technique, media selection, slide preparation, and microscopy.

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence		Use of Results
1. Students will be able to identify the differences between prokaryotic and eukaryotic cells as well as the structure and function of microorganisms in various environments.	Student learning outcomes were assessed by using a 13 question standardized multiple choice examination at the end of the semester. A total of two questions (Q1 and Q2) were used to assess SLO-1.	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-1.	Jefferson	# students tested = 296 # correct = 352 % correct = 60%	The students tested did not meet the requirements for success for SLO 1. The success rate for SLO 1 was 67%. Though it was a significant increase from the previous three year program review (57%) it did not meet the projected mark. It should be noted again that students are not required
			Shelby	# students tested = 519 # correct = 631 % correct = 61%	
			Pell City	# students tested =49 # correct = 75 % correct = 77%	
			Clanton	# students tested =211 # correct = 390 % correct = 92%	

			<p>Total Students Tested = 1075 Total Success Rate = 67%</p>		<p>to take BIO 103 as a prerequisite for BIO 220 and are therefore lacking foundational knowledge in biology.</p> <p>We will continue to emphasize the differences between prokaryotic and eukaryotic cells throughout the semester. As noted previously, some instructors also administer quizzes on comparing the two cell types; where others provide worksheets. Instructors will continue to provide students with materials that they can access at home (via Platform links).</p> <p>We will also continue to work to provide the students with a fundamental knowledge of foundational biology.</p>	
<p>2. Students will recognize the metabolic and genetic pathways in microorganisms as well as the clinical and industrial applications of these properties.</p>	<p>Student learning outcomes were assessed by using a 13 question standardized multiple choice examination at the end of the semester. A total of three questions (Q3 -</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-2.</p>	<p>Jefferson</p>	<p># students tested = 296 # correct = 688 % correct = 78%</p>	<p>The students tested did meet the requirements for success for SLO 2.</p> <p>The success rate for SLO 2 was 77% which was consistent with the data from the previous 3 year</p>	
			<p>Shelby</p>	<p># students tested = 519 # correct = 1132 % correct = 73%</p>		
			<p>Pell City</p>	<p># students tested =49 # correct = 106 % correct = 72%</p>		

	Q5) were used to assess SLO-2.		<table border="1" data-bbox="1031 136 1602 245"> <tr> <td data-bbox="1031 136 1209 245">Clanton</td> <td data-bbox="1209 136 1602 245"># students tested =211 # correct = 591 % correct = 93%</td> </tr> </table> <p data-bbox="1031 285 1602 354">Total Students Tested = 1075 Total Success Rate = 78%</p>	Clanton	# students tested =211 # correct = 591 % correct = 93%	<p data-bbox="1629 136 1944 172">program review.</p> <p data-bbox="1629 212 1944 880">Instructors will continue to provide students with materials they can access at home (via Blackboard platform links). We will also continue to illustrate how the metabolic and genetic pathways relate to the activities at hand during laboratory exercises. During this review time frame, some instructors made use of virtual labs to strengthen students understanding of these concepts. We will encourage use of these virtual resources as pre-lab exercises.</p>						
Clanton	# students tested =211 # correct = 591 % correct = 93%											
3. Students will be able to identify the relationship between microorganism infection and disease, interactions with the host immune system, and various methods for controlling the growth and dissemination of microorganisms.	Student learning outcomes were assessed by using a 13 question standardized multiple choice examination at the end of the semester. A total of two questions (Q6 and Q7) were used to assess SLO-3.	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-3.	<table border="1" data-bbox="1031 886 1602 1320"> <tr> <td data-bbox="1031 886 1209 995">Jefferson</td> <td data-bbox="1209 886 1602 995"># students tested = 296 # correct = 543 % correct = 92%</td> </tr> <tr> <td data-bbox="1031 995 1209 1104">Shelby</td> <td data-bbox="1209 995 1602 1104"># students tested = 519 # correct = 933 % correct = 90%</td> </tr> <tr> <td data-bbox="1031 1104 1209 1213">Pell City</td> <td data-bbox="1209 1104 1602 1213"># students tested =49 # correct = 83 % correct = 85%</td> </tr> <tr> <td data-bbox="1031 1213 1209 1320">Clanton</td> <td data-bbox="1209 1213 1602 1320"># students tested =211 # correct = 394 % correct = 93%</td> </tr> </table> <p data-bbox="1031 1360 1602 1429">Total Students Tested = 1075 Total Success Rate = 91%</p>	Jefferson	# students tested = 296 # correct = 543 % correct = 92%	Shelby	# students tested = 519 # correct = 933 % correct = 90%	Pell City	# students tested =49 # correct = 83 % correct = 85%	Clanton	# students tested =211 # correct = 394 % correct = 93%	<p data-bbox="1629 886 1944 987">The students tested did meet the requirements for success for SLO 3.</p> <p data-bbox="1629 1027 1944 1203">The success rate for SLO 3 was 89% which is consistent with the previous three year program review.</p> <p data-bbox="1629 1243 1944 1451">We will continue to emphasize content related to infectious diseases during lecture and lab sessions. Instructors will also</p>
Jefferson	# students tested = 296 # correct = 543 % correct = 92%											
Shelby	# students tested = 519 # correct = 933 % correct = 90%											
Pell City	# students tested =49 # correct = 83 % correct = 85%											
Clanton	# students tested =211 # correct = 394 % correct = 93%											

				continue to provide students with materials they can access at home (via Blackboard platform links).	
4. Students will be able to recognize proper laboratory technique and protocols including aseptic technique, media selection, slide preparation, and microscopy.	Student learning outcomes were assessed by using a 13 question standardized multiple choice examination at the end of the semester. A total of 6 questions (Q8 – Q13) were used to assess SLO-4.	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-4.	Jefferson	# students tested = 296 # correct = 1321 % correct = 74%	The students tested did meet the requirements for success for SLO 4. The success rate for SLO 4 was 84% which was significantly lower than the success rate during the previous 3 year program review. SLO4 is concerned primarily with laboratory content, and it should be noted that more than half the review time we were unable to host in person labs due to the COIVD19 pandemic. Instructors made use of a variety of resources, including virtual labs and at home lab kits to ensure we did meet our laboratory learning objectives during the shutdown. We will continue to emphasize the proper laboratory techniques and protocols throughout the semester.
			Shelby	# students tested = 519 # correct = 2408 % correct = 77%	
			Pell City	# students tested =49 # correct = 248 % correct = 84%	
			Clanton	# students tested =211 # correct = 1201 % correct = 95%	
			Total Students Tested = 1075 Total Success Rate = 71%		

