



Program: Biology (BIO 101)

Assessment period: Fall 2021 – 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:

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
1. Recognize how the scientific method is utilized to explore	Student learning outcomes were assessed by using a 15 question	70% or > successful 69% or < unsuccessful	Fall 2021	Jefferson	# students tested = 46 # correct = 121 % correct = 88	<u>Observations/Changes</u> The students tested did meet the requirements for success for SLO 1.
				Shelby	# students tested = 67 # correct = 148 % correct = 74	

biological processes	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.	The percent is based upon the average of correctly answered questions related to SLO 1.		Pell City	# students tested = 25 # correct = 63 % correct = 84	The success rate for SLO 1 is 86% which is a slight increase from last year (84% mastery of SLO 1). For all sections, traditional and online, course materials were made available on the LMS throughout the semester. Use of hypothesis driven lab activities throughout the semester will help students recognize how the scientific method is utilized to understand all manner of biological processes. We will work to incorporate more hypothesis driven laboratory activities in the both the online lab simulations and the traditional in person labs.
			Spring 2022	Jefferson	# students tested = 58 # correct = 155 % correct = 89	
				Shelby	# students tested = 58 # correct = 152 % correct = 87	
				Pell City	# students tested = 31 # correct = 81 % correct = 87	
				Clanton	# students tested = 13 # correct = 30 % correct = 77	
			Summer 2022	Jefferson	# students tested = 24 # correct = 67 % correct = 93	
				Shelby	# students tested = 18 # correct = 126 % correct = 100	
				Pell City	# students tested = 30 # correct = 81 % correct = 90	
2. Recognize biological processes at the molecular, cellular and	Student learning outcomes were assessed by using a 15 question standardized	70% or > successful	Fall 2021	Jefferson	# students tested = 46 # correct = 257 % correct = 80	<u>Observations/Changes</u> The students tested did meet the
				Shelby	# students tested = 67 # correct = 319 % correct = 68	

organismal levels	multiple choice examination at the end of the semester. A total of seven questions (Q4-Q10) were used to assess SLO-2.	69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO 2.		Pell City	# students tested = 25 # correct = 155 % correct = 89	requirements for success for SLO 2. The success rate for SLO 2 is 82% which is a moderately lower than the previous year (90% SLO mastery). Students were provided access to course materials throughout the semester to study and use at home, but it may be that students used these resource materials in place of attending or watching lecture which could lead to a decrease in understanding. Biological processes are some of the most challenging and abstract concepts covered in BIO 101. For both the online and in person laboratory sections we will work to incorporate hands on laboratory activities that illustrate these biology processes.
			Spring 2022	Jefferson	# students tested = 58 # correct = 340 % correct = 84	
				Shelby	# students tested = 58 # correct = 344 % correct = 85	
				Pell City	# students tested = 31 # correct = 200 % correct = 92	
				Clanton	# students tested = 13 # correct = 46 % correct = 51	
			Summer 2022	Jefferson	# students tested = 24 # correct = 145 % correct = 86	
				Shelby	# students tested = 18 # correct = 126 % correct = 100	
				Pell City	# students tested = 30 # correct = 190 % correct = 90	
			Total Students Tested = 370 Total Annual Success Rate: 82%			
			Fall 2021	Jefferson	# students tested = 46 # correct = 170	<u>Observations/Changes</u>

<p>3. Demonstrate an ability to identify basic genetic and molecular biology principles.</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 five questions (Q11-Q15) 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"> <tr> <td></td> <td></td> <td>% correct = 74</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 67 # correct = 236 % correct = 70</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 25 # correct = 112 % correct = 90</td> </tr> <tr> <td>Spring 2022</td> <td>Jefferson</td> <td># students tested = 58 # correct = 239 % correct = 82</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 58 # correct = 250 % correct = 86</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 43 # correct = 156 % correct = 91</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 13 # correct = 37 % correct = 57</td> </tr> <tr> <td>Summer 2022</td> <td>Jefferson</td> <td># students tested = 24 # correct = 113 % correct = 94</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 18 # correct = 90 % correct = 100</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 30 # correct = 138 % correct = 92</td> </tr> </table>			% correct = 74		Shelby	# students tested = 67 # correct = 236 % correct = 70		Pell City	# students tested = 25 # correct = 112 % correct = 90	Spring 2022	Jefferson	# students tested = 58 # correct = 239 % correct = 82		Shelby	# students tested = 58 # correct = 250 % correct = 86		Pell City	# students tested = 43 # correct = 156 % correct = 91		Clanton	# students tested = 13 # correct = 37 % correct = 57	Summer 2022	Jefferson	# students tested = 24 # correct = 113 % correct = 94		Shelby	# students tested = 18 # correct = 90 % correct = 100		Pell City	# students tested = 30 # correct = 138 % correct = 92	<p>The students tested did meet the requirements for success for SLO 3.</p> <p>The success rate for SLO 3 is 84%. This cannot really be compared to last years SLO data because the competencies of the course were changed significantly at the system level and SLO 3 is a new learning objective.</p> <p>Students will be given an assignment that will allow them to practice Punnet Squares and Pedigrees in an effort to ensure mastery of basic genetic concepts.</p>
		% correct = 74																																
	Shelby	# students tested = 67 # correct = 236 % correct = 70																																
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<p>Plan submission date: September 23, 2022</p>			<p>Submitted by: Crystal Wheeler</p>																															

Total Students Tested = 370
Total Annual Success Rate: 84%

Appendix A: BIO 101 SLO Assessment

SLO1

1. The correct sequence of the scientific method is
 - a. observation, questions, hypothesis, experiments, results
 - b. questions, observations, hypothesis, results, experiments
 - c. observations, hypothesis, experiment, results, questions
 - d. observations, questions, hypotheses, results, experiments
 - e. observations, results, questions, experiments, hypotheses

2. In order to arrive at a solution to a problem, a scientist usually conducts one or more
 - a. Laws
 - b. Theories
 - c. Experiments
 - d. Principles

3. As a result of experimentation
 - a. More hypothesis may be developed
 - b. More questions may be asked
 - c. A new biological principle could emerge
 - d. Entire theories could be modified or discarded
 - e. All of the above

SLO2

4. The main difference between prokaryotes and eukaryotes is that
 - a. prokaryotes lack a nucleus, eukaryotes have a nucleus
 - b. eukaryotes lack a nucleus, prokaryotes have a nucleus
 - c. prokaryotes have cell walls, eukaryotes do not have cell walls
 - d. eukaryotes have a cell wall, prokaryotes do not have cell walls
 - e. none of the above

5. The building blocks of proteins are called
 - a. amino acids
 - b. nucleotides
 - c. fatty acids
 - d. triglycerides
 - e. peptides

6. Which of the following is part of the cell theory
 - a. The largest unit of life is the cell
 - b. Cells are only produced from other cells
 - c. Cells are all exactly the same
 - d. Cells fuse together to make new cells

7. "Double helix" describes the structure of
 - a. polysaccharides
 - b. fats
 - c. fibrous proteins
 - d. DNA
 - e. RNA

8. The first phase of cellular respiration is
 - a. the citric acid cycle.
 - b. glycolysis.

- c. the electron transport system.
- d. fermentation.

9. Plant cells differ from animal cells in that they have
- a. cell walls
 - b. nuclei
 - c. chloroplasts
 - d. a & b
 - e. a & c
10. "Phospholipid bilayer" describes the structure of
- a. ribosomes
 - b. mitochondria
 - c. chloroplast
 - d. smooth endoplasmic reticulum
 - e. plasma membrane

SLO 3

11. DNA and RNA are polymers composed of _____ monomers
- a. Nucleotide
 - b. Carbohydrate
 - c. Fatty acid
 - d. Amino acid
12. How is it that the cells in different body tissues are able to perform different functions?
- a. The cells exhibit different patterns of gene expression
 - b. Different chromosomes are inactivated in different cells
 - c. The cells contain different genes
 - d. The mutations that have accumulated in the cells of the different tissues control functions
13. After replication, _____.
- a. each new DNA double helix consists of two old strands

- b. each new DNA double helix consists of one old strand and one new strand
- c. each new DNA double helix consists of two new strands
- d. one new DNA double helix consists of two old strands and the other new DNA double helix consists of two new strands

14. In humans, the presence or absence of a widow's peak is a trait controlled by a single gene. What is the genotype of an individual who is heterozygous for a widow's peak?

- a. WW
- b. Ww
- c. ww
- d. Wa

15. Genotype refers to the _____ of an individual

- a. Recessive allele
- b. Dominant allele
- c. Actual physical appearance
- d. Genetic make up

16. Translation converts the information stored in _____ to _____.

- a. DNA; RNA
- b. RNA; a polypeptide
- c. DNA; a polypeptide
- d. RNA; DNA

Evidence for SLO 1, SLO2 and SLO 3, making instructional materials available to students online.

The screenshot shows a Blackboard course page for "BIO 101 - Introduction to Biology I (10580)". A purple banner at the top reads "Success: Module 4 Molecular Biology and Technology created." Below this, the "Content" area is visible with tabs for "Build Content", "Assessments", "Tools", and "Partner Content". A list of modules is displayed:

- Module 1 Process of Science, Life and the Cell
- Module 2 Cellular Function
- Module 3 Cell Division and Genetics
- Module 4 Molecular Biology and Technology

A left-hand navigation menu includes options like Home Page, Welcome - Start Here, Syllabus, and Course Management.

This screenshot shows the "Week 1 8/17-8/21" content area of the same course. The left navigation menu is expanded to show "Control Panel" options: Content Collection, Course Tools, Evaluation, and Grade Center. The main content area displays a list of folders:

- Readings
- PowerPoints
- Homework
- Labs
- Supplemental Information

At the top right, the course title "BIO 101 - Introduction to Biology I (10580)" and the current week "Week 1 8/17-8/21" are visible.

Evidence for SLO 1

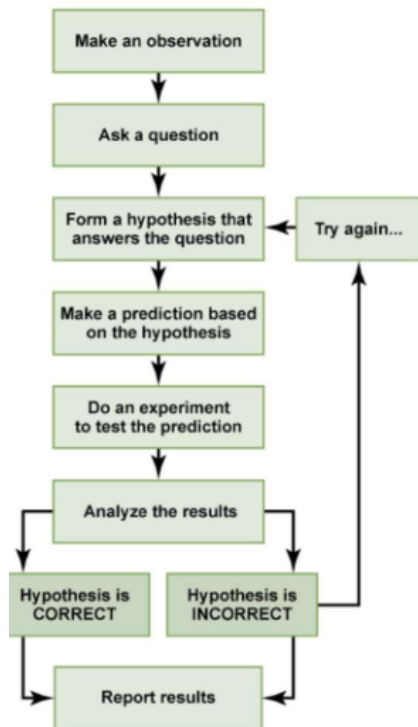
Scientific Method

(Adapted from <http://www.biologycorner.com/>)

Introduction

The scientific method is central to the study of biology: it is a process of acquiring and verifying information through experimentation. The general steps of the scientific method are depicted in the figure below. The hypothesis, or suggested explanation for the observation, is the basis for setting up

experiments. Good experimental design is essential to the scientific method. A few keys to good experimental design include effective use of controls, reproducibility, a large sample size, and multiple trials. In an experiment, in order to determine that any changes that occur are due to investigator manipulation only, there must be some basis for comparison. A **control group** is necessary to establish this basis of comparison. In the control group, everything is kept the same as the experimental group except for the **independent variable**. The experimental group is actually being experimented upon. For example, in a drug trial there will be a group that receives the drug (the experimental group) and a group that receives a placebo (the control group). The drug itself is considered the **independent variable** and any change(s) that occur because of the drug are considered the **dependent variable**. In order to ensure that it is only the drug causing changes, all other variables must be tightly controlled (such as diet, exercise, smoking, etc.). These are referred to as **controlled variables**.



The Scientific Method. *Biology*. OpenStax College.

Evidence for SLO 2

BIO 101 - Introduction to Biology I (20220)

- Home Page
- Welcome - Start Here
- Course Tour Video
- Syllabus
- Information
- Content
- Concepts of Biology
- Discussions
- Groups
- Tools
- Help

Course Management

Homework

Build Content ▾ Assessments ▾ Tools ▾ Partner Content ▾

1 **Week 2 Homework**

Please answer the following and submit answers on Blackboard.

1. What are the similarities and differences between prokaryotes and eukaryotes?
2. List the levels of organization and give an example at each level.
3. What are the three domains of life and how are they differentiated?
4. How are phylogenetic trees used?
5. What is a scientific theory? How is it different from a scientific law? Can scientific theories be changed?
6. Draw the basic structure of the atom in accordance with the conventions presented in the text showing the position of protons, neutrons, and electrons.
7. Why is it important to understand what atoms are and properties of their subatomic particles?
8. What is a chemical bond? What are the 3 types of chemical bonds? What is a hydrogen bond?
9. Identify the biologically significant elements by their chemical symbols, and summarize the main functions of each in living organisms.
10. Define chemical formulas, structural formulas, and equations.
11. Define the term electron orbital and relate orbitals to energy levels; relate the number of valence electrons to the chemical properties of the element.



Assessment Record

Program: Biology (BIO 102)

Assessment period: Fall 2021 – Summer 2022

Program or Department Mission:

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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:

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. Demonstrate knowledge of evolution in both plant of animal life.	<p>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.</p> <p>See Appendix A: BIO 102 SLO Assessment</p>	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO 1.	Fall 2021	Shelby	# students tested = 0 # correct = % correct =	<p>Observations/Changes</p> <p>The students tested did meet the requirements for success for SLO 1.</p> <p>The success rate for SLO 1 is 83% which is similar to last year (82% success)</p> <p>Students were provided access to course materials throughout the semester in both online and traditional sections.</p> <p>We will continue to make the lecture notes and study aids available to students online throughout the semester.</p> <p>We will also implement case studies on evolution in the course.</p>
				Pell City	# students tested = 31 # correct = 177 % correct = 82	
			Spring 2022	Jefferson	# students tested = 9 # correct = 47 % correct = 75	
				Shelby	# students tested = 0 # correct = % correct =	
				Pell City	# students tested =43 # correct =272 % correct = 90	
			Summer 2022	Shelby	# students tested = 20 # correct = 115 % correct = 82	
				Pell City	# students tested = 31 # correct = 169 % correct = 78	
			<p>Total Students Tested = 134 Total Annual Success Rate: 83%</p>			
2. Students will identify general characteristics, anatomy, and taxonomy of plant and animals.	Student learning outcomes were assessed by using a 25 question standardized multiple choice	70% or > successful 69% or < unsuccessful The percent is based upon the average of	Fall 2021	Jefferson	# students tested = 0 # correct = % correct =	<p>Observations/Changes Based on Previous Cycle (20/21)</p>
				Shelby	# students tested = 0 # correct = % correct =	

	<p>examination at the end of the semester. A total of 14 questions (Q8-Q21) were used to assess SLO 2.</p> <p>See Appendix A: BIO 102 SLO Assessment</p>	<p>correctly answered questions related to SLO 2.</p>	<table border="1"> <tr> <td></td> <td>Pell City</td> <td># students tested = 31 # correct = 377 % correct = 87</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 0 # correct = % correct =</td> </tr> <tr> <td>Spring 2022</td> <td>Jefferson</td> <td># students tested = 9 # correct =83 % correct = 66</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 0 # correct = % correct =</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 43 # correct = 511 % correct = 85</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 0 # correct = % correct =</td> </tr> <tr> <td>Summer 2022</td> <td>Jefferson</td> <td># students tested = 0 # correct = % correct =</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 20 # correct = 245 % correct = 88</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 31 # correct = 397 % correct = 91</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 0 # correct = % correct =</td> </tr> <tr> <td colspan="3"> <p>Total Students Tested = 134 Total Annual Success Rate: 83%</p> </td> </tr> </table>				Pell City	# students tested = 31 # correct = 377 % correct = 87		Clanton	# students tested = 0 # correct = % correct =	Spring 2022	Jefferson	# students tested = 9 # correct =83 % correct = 66		Shelby	# students tested = 0 # correct = % correct =		Pell City	# students tested = 43 # correct = 511 % correct = 85		Clanton	# students tested = 0 # correct = % correct =	Summer 2022	Jefferson	# students tested = 0 # correct = % correct =		Shelby	# students tested = 20 # correct = 245 % correct = 88		Pell City	# students tested = 31 # correct = 397 % correct = 91		Clanton	# students tested = 0 # correct = % correct =	<p>Total Students Tested = 134 Total Annual Success Rate: 83%</p>			<p>The students tested did meet the requirements for success for SLO 2.</p> <p>The success rate for SLO 2 is 83% which is a slight drop from last year (87% SLO 2 mastery).</p> <p>Students were provided access to materials throughout the semester via the LMS.</p> <p><u>Observations/Changes Based on Current Cycle (21/22)</u></p> <p>We will continue to make the instructional materials available to students online throughout the course.</p> <p>We will also work to include more species dissections in the traditional sections and virtual dissections in the online sections.</p>
	Pell City	# students tested = 31 # correct = 377 % correct = 87																																					
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<p>Total Students Tested = 134 Total Annual Success Rate: 83%</p>																																							
<p>3. Students will explain the interrelationships</p>	<p>Student learning outcomes were assessed by using a 25</p>	<p>70% or > successful 69% or < unsuccessful</p>	<table border="1"> <tr> <td>Fall 2021</td> <td>Jefferson</td> <td># students tested = 0 # correct = % correct =</td> </tr> </table>			Fall 2021	Jefferson	# students tested = 0 # correct = % correct =	<p><u>Observations/Changes Based on Previous Cycle (20/21)</u></p>																														
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<p>between the varied life forms on earth and identify the role of humans within ecological systems.</p>	<p>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>See Appendix A: BIO 102 SLO Assessment</p>	<p>The percent is based upon the average of correctly answered questions related to SLO 3.</p>		Shelby	# 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 81% which is a slight decrease from last year (88% SLO mastery).</p> <p><u>Observations/Changes Based on Current Cycle (21/22)</u></p> <p>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.</p>		
				Pell City	# students tested = 31 # correct = 114 % correct = 92			
				Clanton	# students tested = 0 # correct = % correct =			
			Spring 2022	Jefferson	# students tested = 9 # correct = 28 % correct = 91			
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				Pell City	# students tested = 43 # correct = 156 % correct = 91			
				Clanton	# students tested = 0 # correct = % correct =			
			Summer 2022	Jefferson	# students tested = 0 # correct = % correct =			
				Shelby	# students tested = 20 # correct = 73 % correct = 91			
				Pell City	# students tested = 31 # correct = 122 % correct = 91			
				Clanton	# students tested = 0 # correct = % correct =			
			<p>Total Students Tested = 134 Total Annual Success Rate: 81%</p>					

Plan submission date: September 23, 2022

Submitted by: Crystal Wheeler

Appendix A: BIO 102 SLO assessment

1. The idea that organisms with genetically determined characteristics that make them better suited for the environment will have more surviving offspring is
 - A. the inheritance of acquired characteristics.
 - B. the Hardy-Weinberg concept.
 - C. the theory of natural selection.
 - D. convergent evolution.

2. The fittest organism in a population is the
 - A. organism that successfully produces the most offspring.
 - B. strongest and fastest organism.
 - C. organism that lives longest.
 - D. most intelligent organism.

3. The theory of natural selection was proposed
 - A. independently by Wallace
 - B. jointly by Darwin and Wallace.
 - C. independently by Mendel.
 - D. jointly by Wallace and Lamarck.

4. A species is a group of organisms that
 - A. can produce fertile offspring when mated.
 - B. all live in the same geographic region.
 - C. always look the same in size and color.
 - D. All of these answers are true.

5. All of the genes shared by a population are its
 - A. gene frequency.
 - B. gene pool.
 - C. fitness.
 - D. gene flow.

6. For two types of organisms to belong to the same species, they must

- A. look alike.
- B. live in the same geographic region.
- C. be able to naturally produce fertile offspring.
- D. contain the same gene frequencies.

7. A situation in which a genetically distinct local population is established by a few colonizing individuals is known as

- A. fitness.
- B. gene pooling.
- C. genetic drift.
- D. the founder effect.

8. The style and the stigma are both parts of the*

- A. stamen.
- B. ovary.
- C. seed.
- D. pistil.

9. Gymnosperms

- A. are usually insect pollinated.
- B. are found above the timberline on mountains.
- C. are seed-bearing plants.
- D. have flowers

10. All plants

- A. have cell walls of cellulose.
- B. both gametophyte and sporophyte generations.
- C. cells with chloroplasts.
- D. All of the above are correct.

11. Xylem tissues transport

- A. organic molecules.
- B. sperm.
- C. water.
- D. eggs.

12. Plants with seeds inside a fruit

- A. produce pollen.
- B. are angiosperms.
- C. are flowering plants.
- D. All of the above are correct.

13. Alternation of generations means that a plant

- A. alternates between male and female stages.
- B. has one generation that has flowers and another that does not.
- C. has a sporophyte and a gametophyte stage in its life cycle.
- D. switches in its life cycle between above ground and below ground stages.

14. What is the difference between pollination and fertilization?

- A. Pollination is the movement of pollen from the male region of a plant to the female region. Fertilization is the union of a sperm and egg.
- B. Pollination is the movement of pollen from the female region of a plant to the male region. Fertilization is the union of a sperm and egg.
- C. Pollination is the same as fertilization.
- D. Fertilization is the movement of pollen from the male region of a plant to the female region. Pollination is the union of a sperm and egg.

15. This term is used to describe the fact that plants cycle between two different stages in their life, the diploid sporophyte and haploid gametophyte.

- A. tropism
- B. sporulation
- C. alternation of generations
- D. germination

16. An animal that feeds on living material but does not kill the animal it feeds on is a

- A. prey.
- B. host.
- C. parasite.
- D. predator.

17. An example of community is

- A. this class.
- B. the various kinds of plants, animals, and bacteria in a vacant lot.
- C. bees in a hive.
- D. the water, soil, and air in a farmer's field.

18. Which of the following is NOT a characteristic of most animals?

- A. They are heterotrophic.
- B. They have an extracellular matrix of proteins such as collagen.
- C. They have cell walls.
- D. They have a nervous system.

19. Which of the phyla of animals has the greatest number of species?

- A. Arthropoda
- B. Chordata
- C. Mollusca
- D. Annelida
- E. Nematoda

20. The primary organ of photosynthesis in a plant is the:

- A. Stomata
- B. Leaf
- C. Bark
- D. Stem
- E. Chlorophyll

21. The evaporation of water from the leaf of a plant is:

- A. Transpiration
- B. Totally prevented by the leaf's cuticle
- C. Hydrolysis
- D. Condensation
- E. Sublimation

22. If you were studying a species which has totally disappeared from the planet you would be studying:

- A. An endangered species
- B. An introduced species
- C. An extinct species
- D. A threatened species
- E. A keystone species

23. If you were studying variation among members of a population you would most likely be studying which of the following?

- A. Sustainable diversity
- B. Ecosystem diversity
- C. Landscape diversity
- D. Keystone diversity
- E. Genetic diversity

24. Species that influence the viability of a community, although their numbers may not be exceedingly high, are referred to as:

- A. Pioneer species
- B. Alien species
- C. Introduced species
- D. Nonnative species
- E. Keystone species

25. You are walking along a beach and find an organism which has an exoskeleton, five pairs of walking legs, and compound eyes. Based on this information the organism you found was:

- A. An arachnid
- B. An insect
- C. A centipede
- D. A crustacean
- E. A millipede

Evidence for SLO 1, SLO2, and SLO3, making the instructional materials available online.

The screenshot shows a web browser window displaying a Blackboard course outline. The browser's address bar shows the URL: `ate.blackboard.com/ultra/courses/_19854_1/cl/outline`. The page title is "Learning Modules". Below the title, there are navigation tabs: "Build Content", "Assessments", "Tools", and "Partner Content". The main content area lists three units, each with a book icon, a title, and a description:

- Unit 1 - Evolution** A+
Students.
Your first unit of study will cover what some consider to be a very controversial topic. I would like for each of you to take your time to gain an understanding of evolution in the context of foundational importance to the subject of biology, not a beliefs.
The learning module contains the chapter outlines as well as the material and links for the lab and case study assignments. Please remember that you are welcome to ask questions about any of the context.
- Unit 2 -Origins of Life** A+
Students.
This unit will cover topics that address how life began on earth (the scientific explanation) as well as animal diversity.
- Unit 3 -Plants** A+
Students.
This unit will cover the basics as they relate to evolution, structure, function, and physiology of plants. Make sure that you know your vocabulary and refer to your competencies as you move along through the chapters.

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ate.blackboard.com/ultra/courses/_17772_1/cl/outline

phy II (20052) Chapter Unit Material/Powerpoints:


Chapter Unit Material/Powerpoints!

Build Content Assessments Tools Partner Content

 **Unit 1 -Evolution** A+


Students.

Your first unit of study will cover what some consider to be a very controversial topic. I would like for each of you to take your time to gain an understanding of evolution in the context of foundational importance to the subject challenge to your religious beliefs. The learning module contains the chapter outlines as well as the material and links for the lab and case study assignments. Please remember that you are welcome to ask questions about any of the context.

 **Unit 2 -Origins of Life** A+

Students.

This unit will cover topics that address how life began on earth (the scientific explanation) as well as animal diversity.

 **Unit 3 -Plants** A+

Students.

This unit will cover the basics as they relate to evolution, structure, function, and physiology of plants. Make sure that you know your vocabulary and refer to your competencies as you move along through the chapters.

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Information

Build Content Assessments Tools Partner Content

-  [Course Syllabus: Spring 2021](#) A+
-  [Lecture/Exam/Virtual Labs Course Schedule!](#) A+
-  **REGISTERING FOR CONNECT/VIRTUAL LABS SITE(McGRAW HILL) THROUGH BLACKBOARD!**

Hello Class,
here is a video that instructs on how to Register for the Required Connect virtual labs platform for the course. I hope this helps. Let me know if you have any questions/issues.

Ms. Miller
-  [Written Instructions for Connect Registration!](#)
-  [Instructions for Purchasing & Registering for MasteringBiology for this course term!](#) A+
-  [Video Explanation for Applying the Hardy Weinberg Equation!](#)

Hi,
I hope this video helps any/all who may need further explanation on Hardy Weinberg equations.

Best,
Ms. S. Miller



Assessment Record

Program: Biology (BIO 103)

Assessment period: Fall 2021 – 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:

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																																	
<p>1. Demonstrate knowledge of the fundamental concepts and processes in biology including the scientific method, evolution, biological macromolecules and biochemistry</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 four questions (Q1 – Q4) were used to assess SLO1</p> <p>See Appendix A for SLO assessment questions</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO1</p>	<table border="1"> <thead> <tr> <th data-bbox="884 386 1052 418">Term</th> <th data-bbox="1052 386 1230 418">Location</th> <th data-bbox="1230 386 1623 418">Assessment Data</th> </tr> </thead> <tbody> <tr> <td data-bbox="884 386 1052 496">Fall 2021</td> <td data-bbox="1052 386 1230 496">Jefferson</td> <td data-bbox="1230 386 1623 496"># students tested = 53 # correct = 191 % correct = 90%</td> </tr> <tr> <td data-bbox="884 496 1052 607"></td> <td data-bbox="1052 496 1230 607">Shelby</td> <td data-bbox="1230 496 1623 607"># students tested = 52 # correct = 167 % correct = 80%</td> </tr> <tr> <td data-bbox="884 607 1052 717"></td> <td data-bbox="1052 607 1230 717">Clanton</td> <td data-bbox="1230 607 1623 717"># students tested = 19 # correct = 76 % correct = 100%</td> </tr> <tr> <td data-bbox="884 717 1052 828"></td> <td data-bbox="1052 717 1230 828">Pell City</td> <td data-bbox="1230 717 1623 828"># students tested = 20 # correct = 59 % correct = 74%</td> </tr> <tr> <td data-bbox="884 828 1052 938">Spring 2022</td> <td data-bbox="1052 828 1230 938">Jefferson</td> <td data-bbox="1230 828 1623 938"># students tested = 26 # correct = 96 % correct = 89%</td> </tr> <tr> <td data-bbox="884 938 1052 1049"></td> <td data-bbox="1052 938 1230 1049">Shelby</td> <td data-bbox="1230 938 1623 1049"># students tested = 14 # correct = 34 % correct = 61%</td> </tr> <tr> <td data-bbox="884 1049 1052 1159"></td> <td data-bbox="1052 1049 1230 1159">Clanton</td> <td data-bbox="1230 1049 1623 1159"># students tested = 25 # correct = 97 % correct = 97%</td> </tr> <tr> <td data-bbox="884 1159 1052 1269"></td> <td data-bbox="1052 1159 1230 1269">Pell City</td> <td data-bbox="1230 1159 1623 1269"># students tested = 18 # correct = 51 % correct = 56%</td> </tr> <tr> <td data-bbox="884 1269 1052 1380">Summer 2022</td> <td data-bbox="1052 1269 1230 1380">Jefferson</td> <td data-bbox="1230 1269 1623 1380"># students tested = 20 # correct = 73 % correct = 91%</td> </tr> <tr> <td data-bbox="884 1380 1052 1468"></td> <td data-bbox="1052 1380 1230 1468">Shelby</td> <td data-bbox="1230 1380 1623 1468"># students tested = 43 # correct = 138 % correct = 80%</td> </tr> </tbody> </table>			Term	Location	Assessment Data	Fall 2021	Jefferson	# students tested = 53 # correct = 191 % correct = 90%		Shelby	# students tested = 52 # correct = 167 % correct = 80%		Clanton	# students tested = 19 # correct = 76 % correct = 100%		Pell City	# students tested = 20 # correct = 59 % correct = 74%	Spring 2022	Jefferson	# students tested = 26 # correct = 96 % correct = 89%		Shelby	# students tested = 14 # correct = 34 % correct = 61%		Clanton	# students tested = 25 # correct = 97 % correct = 97%		Pell City	# students tested = 18 # correct = 51 % correct = 56%	Summer 2022	Jefferson	# students tested = 20 # correct = 73 % correct = 91%		Shelby	# students tested = 43 # correct = 138 % correct = 80%	<p>Observations/Changes</p> <p>As predicted learning outcomes fell uniformly with the transition from online to traditional classes. Although it should be noted that students still met the benchmark for success for SLO 1. We provided materials for students to access at home (see below additional materials BIO 103). It is unclear how many students used these resources and how effective they were. Continuous low stakes assessments throughout the semester on fundamental Biology concepts will be utilized to reinforce these important topics.</p>
Term	Location	Assessment Data																																					
Fall 2021	Jefferson	# students tested = 53 # correct = 191 % correct = 90%																																					
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	Clanton	# students tested = 8 # correct = 46 % correct = 82%																	
<p>Total Students Tested = 298 Total Annual Success Rate: 83%</p>																			
<p>2: 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 the end of the semester. A total of seven questions (Q5 – Q11) 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="877 945 1054 1057">Fall 2021</td> <td data-bbox="1054 945 1234 1057">Jefferson</td> <td data-bbox="1234 945 1621 1057"># students tested = 53 # correct = 300 % correct = 81%</td> </tr> <tr> <td data-bbox="877 1057 1054 1166"></td> <td data-bbox="1054 1057 1234 1166">Shelby</td> <td data-bbox="1234 1057 1621 1166"># students tested = 52 # correct = 216 % correct = 59%</td> </tr> <tr> <td data-bbox="877 1166 1054 1274"></td> <td data-bbox="1054 1166 1234 1274">Clanton</td> <td data-bbox="1234 1166 1621 1274"># students tested = 19 # correct = 127 % correct = 95%</td> </tr> <tr> <td data-bbox="877 1274 1054 1383"></td> <td data-bbox="1054 1274 1234 1383">Pell City</td> <td data-bbox="1234 1274 1621 1383"># students tested = 20 # correct = 86 % correct = 61%</td> </tr> <tr> <td data-bbox="877 1383 1054 1474">Spring 2022</td> <td data-bbox="1054 1383 1234 1474">Jefferson</td> <td data-bbox="1234 1383 1621 1474"># students tested = 26 # correct = 162</td> </tr> </table>	Fall 2021	Jefferson	# students tested = 53 # correct = 300 % correct = 81%		Shelby	# students tested = 52 # correct = 216 % correct = 59%		Clanton	# students tested = 19 # correct = 127 % correct = 95%		Pell City	# students tested = 20 # correct = 86 % correct = 61%	Spring 2022	Jefferson	# students tested = 26 # correct = 162	<p>Observations/Changes</p> <p>Student mastery of SLO 2 fell from 83% success to 69% success, just below the threshold of mastery. Molecular and cellular processes are challenging topics and we have worked to ensure students have access to course lectures and study</p>
Fall 2021	Jefferson	# students tested = 53 # correct = 300 % correct = 81%																	
	Shelby	# students tested = 52 # correct = 216 % correct = 59%																	
	Clanton	# students tested = 19 # correct = 127 % correct = 95%																	
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	See Appendix A for SLO assessment questions		<table border="1"> <tr> <td></td> <td></td> <td>% correct = 89%</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 14 # correct = 34 % correct = 24%</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 25 # correct = 162 % correct = 93%</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 18 # correct = 81 % correct = 64%</td> </tr> <tr> <td>Summer 2022</td> <td>Jefferson</td> <td># students tested = 20 # correct = 73 % correct = 91%</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 43 #correct = 196 % correct = 65%</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 8 # correct = 46 % correct = 82%</td> </tr> </table> <p>Total Students Tested = 298 Total Annual Success Rate: 69%</p>					% correct = 89%		Shelby	# students tested = 14 # correct = 34 % correct = 24%		Clanton	# students tested = 25 # correct = 162 % correct = 93%		Pell City	# students tested = 18 # correct = 81 % correct = 64%	Summer 2022	Jefferson	# students tested = 20 # correct = 73 % correct = 91%		Shelby	# students tested = 43 #correct = 196 % correct = 65%		Clanton	# students tested = 8 # correct = 46 % correct = 82%	<p>materials throughout the semester.</p> <p>Students respond well to hands on endeavors, and we are working to improve the laboratory experience for this course. Engaging labs that allow students to visualize molecular and cellular processes will be implemented.</p>
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<p>3: 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</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"> <tr> <td>Fall 2021</td> <td>Jefferson</td> <td># students tested = 53 # correct =125 % correct = 79%</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 52 # correct =76 % correct = 49%</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 19 # correct = 54 % correct = 95%</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 20 # correct = 28 % correct = 47%</td> </tr> </table>			Fall 2021	Jefferson	# students tested = 53 # correct =125 % correct = 79%		Shelby	# students tested = 52 # correct =76 % correct = 49%		Clanton	# students tested = 19 # correct = 54 % correct = 95%		Pell City	# students tested = 20 # correct = 28 % correct = 47%	<p>Observations/Changes</p> <p>SLO 3 assessment outcomes dropped from 86% to 72%. This final topic is often taught at the very end of the semester and is a bit disconnected from the material covered by SLO 1 and SLO 2. Lectures and study aids were</p>									
Fall 2021	Jefferson	# students tested = 53 # correct =125 % correct = 79%																									
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	<p>– Q14) was used to assess SLO3</p> <p>See Appendix A for SLO assessment questions</p>		<table border="1"> <tr> <td data-bbox="869 131 1056 250">Spring 2022</td> <td data-bbox="1056 131 1234 250">Jefferson</td> <td data-bbox="1234 131 1640 250"># students tested = 26 # correct = 73 % correct = 94%</td> </tr> <tr> <td data-bbox="869 250 1056 358"></td> <td data-bbox="1056 250 1234 358">Shelby</td> <td data-bbox="1234 250 1640 358"># students tested = 44 # correct = 101 % correct = 77%</td> </tr> <tr> <td data-bbox="869 358 1056 467"></td> <td data-bbox="1056 358 1234 467">Clanton</td> <td data-bbox="1234 358 1640 467"># students tested = 25 # correct = 71 % correct = 95%</td> </tr> <tr> <td data-bbox="869 467 1056 576"></td> <td data-bbox="1056 467 1234 576">Pell City</td> <td data-bbox="1234 467 1640 576"># students tested = 18 # correct = 30 % correct = 56%</td> </tr> <tr> <td data-bbox="869 576 1056 685">Summer 2022</td> <td data-bbox="1056 576 1234 685">Jefferson</td> <td data-bbox="1234 576 1640 685"># students tested = 20 # correct = 73 % correct = 91%</td> </tr> <tr> <td data-bbox="869 685 1056 794"></td> <td data-bbox="1056 685 1234 794">Shelby</td> <td data-bbox="1234 685 1640 794"># students tested = 43 # correct = 84 % correct = 65%</td> </tr> <tr> <td data-bbox="869 794 1056 902"></td> <td data-bbox="1056 794 1234 902">Clanton</td> <td data-bbox="1234 794 1640 902"># students tested = 8 # correct = 17 % correct = 71%</td> </tr> </table> <p>Total Students Tested = 298 Total Annual Success Rate: 72%</p>	Spring 2022	Jefferson	# students tested = 26 # correct = 73 % correct = 94%		Shelby	# students tested = 44 # correct = 101 % correct = 77%		Clanton	# students tested = 25 # correct = 71 % correct = 95%		Pell City	# students tested = 18 # correct = 30 % correct = 56%	Summer 2022	Jefferson	# students tested = 20 # correct = 73 % correct = 91%		Shelby	# students tested = 43 # correct = 84 % correct = 65%		Clanton	# students tested = 8 # correct = 17 % correct = 71%	<p>provided to students via the LMS.</p> <p>We will work to integrate the content of SLO 3 into the material covered earlier in the semester. We will also ensure that lab activities throughout the semester make use of these organisms to stress fundamental concepts.</p>
Spring 2022	Jefferson	# students tested = 26 # correct = 73 % correct = 94%																							
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Plan submission date:			Submitted by:																						

Appendix A: BIO 103 SLO Assessment

SLO 1

1. A hypothesis should always be ____.
 - A. correct
 - B. based on observation
 - C. previously proven
 - D. presented as at least three possible explanations

2. Scientist have determined the age of Earth by using a process involving _____.
 - A. radioactive decay
 - B. counting rock layers.
 - C. measuring incoming cosmic dust
 - D. studying the movement of the continents

3. In an atom protons would be found
 - A. in an orbital around the nucleus
 - B. in the nucleus
 - C. attached to electrons
 - D. it varies by element
 - E. bonds

4. The building blocks of proteins are ____.
 - A. amino acids
 - B. nucleotides
 - C. fatty acids
 - D. triglycerides
 - E. peptides

SLO 2

5. During aerobic respiration, the glucose molecule yields energy through a series of pathways. Which of the following is NOT one of these pathways?
- A. Kreb's cycle
 - B. Glycolysis
 - C. Electron Transport Chain
 - D. Calvin Cycle
6. In the Dark Reactions/Calvin Cycle _____ is used to build a chain of carbons to form a simple sugar.
- A. atmospheric oxygen
 - B. methane gas
 - C. carbon dioxide
 - D. amino acids
 - E. nucleic acids
7. While there are other differences between prokaryotes and eukaryotes, the most defining difference is the absence of _____ in prokaryotes.
- A. plasma membrane
 - B. DNA
 - C. cytoplasm
 - D. nucleus
8. "Phospholipid bilayer" best describes the structure of
- A. ribosomes
 - B. mitochondria
 - C. chloroplast
 - D. cytoplasm
 - E. plasma membrane
9. Mendel found that the ratio of the two phenotypes in the F₂ generation of a monohybrid cross is
- A. 1:2:1
 - B. 9:3:3:1
 - C. 3:1
 - D. 1:3:3:3
 - E. 1:2

10. The process in which mRNA directs the synthesis of proteins is known as

- A. transcription
- B. translation
- C. replication
- D. a & b

11. The chromosome number is reduced in half in

- A. mitosis
- B. meiosis
- C. neither a nor b
- D. both a & b

SLO 3

12. Bacteria reproduce asexually by _____.

- A. Binary fission
- B. Mitosis
- C. Meiosis
- D. Seeds

13. Protozoa differ from bacteria in that protozoa _____.

- A. Have a cell wall
- B. Have a nucleus
- C. Have a cell membrane
- D. Have ribosomes

14. A virus would be classified as being in what domain?

- A. Protista
- B. Eukaryotic
- C. Prokaryotic
- D. None of the above

SLO 1 Evidence: Committee Listings to help improve SLO assessment and analysis

BIO 101/102

Crystal Wheeler*

Julie Maharrey

Nic Kin

Zareen [Dodwad-Kahn](#)

Erin Arnold

BIO 103/104

Charles [Venglarik](#)*

Amanda Swindall

Stephanie Miller

Evan [Boitet](#)

Kelley Black

BIO 201/202

Amanda Swindall*

Zareen [Dodwad-Kahn](#)

Evan [Boitet](#)

Charles [Venglarik](#)

Crystal Wheeler

Julie Maharrey

BIO 220

Stephanie Miller*

Nic Kin

Kelley Black

Erin Arnold

SLO 2 Evidence: Labs on molecular and cellular processes

BIO 103

Lab #5—Understanding Cell Structure and Function

There are 2 types of cells: **prokaryotic** and **eukaryotic**.

I. Prokaryotic cells—do not have a true nucleus. The DNA is a single, round chromosome in bacteria and it is loose in the cytoplasm in an area called the **nucleoid region**. The chromosome is not surrounded by a nuclear membrane.

For our purposes, prokaryotic cells will be bacteria. Bacteria also contain **ribosomes** (used to make proteins), **plasmids** (small circular pieces of DNA, in the cytoplasm and separate from the chromosome, contain antibiotic resistance genes), and cytoplasm (the liquid portion inside the cell that hold everything in place), **plasma membrane** (made of a bilayer of phospholipids and proteins, surrounds the cytoplasm), and the **cell wall** (surrounds the plasma membrane, used for support and provides the shape of the bacterium). Food is stored inside **granules**.

Outside the bacteria there are **pilli** (used to attach to other bacteria and exchange **plasmids**) and **flagella** (used for motility). Some bacteria have a **capsule** (makes the bacterium **pathogenic** and **virulent**) that surrounds the cell wall. Pathogenic = causes disease; virulent = how bad is the disease. The more virulent a disease is, the more severe and dangerous the disease is.

Certain bacteria are able to generate their energy (ATP) through **photosynthesis**. These photosynthetic bacteria are called **cyanobacteria**, sometimes called **blue-green algae** although they are not algae. These are the largest bacteria. The pigments necessary to conduct photosynthesis are contained in **thylakoid membranes**.

Gelatinous sheaths (used to store necessary elements like calcium and magnesium) often surround cyanobacteria. These bacteria will use sunlight and CO₂ to produce O₂ and glucose. The glucose will then be broken down to form ATP for energy.

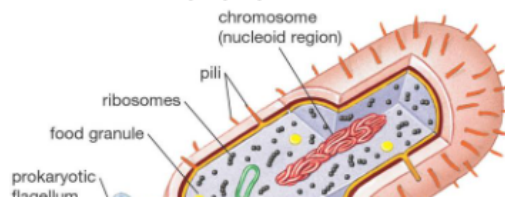
***Be able to identify the structures of a bacterial cell if shown a diagram.

Most bacteria can be identified as having one of 3 shapes: **coccus**, **rod**, or **spiral**.

Coccus—round, ball-like cells ○

Rod—oblong ○

Spiral—wavy or corkscrew ~~~~~



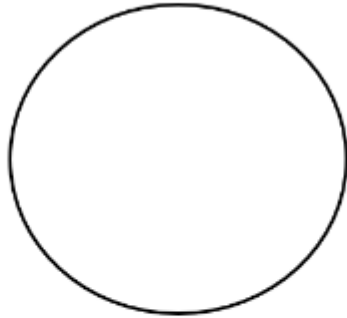
SLO 3 Evidence: Laboratory exercises with bacteria, fungi and viruses

BIO 103

Lab #12 Bacteria

Name: _____

Draw and color what your agar plate looks like.



Question 1: What surface did you swab? _____

Question 2: What are the 2 domains of bacteria? _____

Question 3: How are Archaeobacteria and Eubacteria different? _____

Gram Stain Procedure

--Prepare a smear on a slide:

Place a small drop of water on the slide before putting the bacteria on the slide.

Flame the loop and cool it on the agar where there is no bacteria.

Gently touch a colony and mix the bacteria in the water drop.

~~Air-dry the slides completely and heat fix. Heat fixing denatures the proteins on the~~



Assessment Record

Program: Biology (BIO 104S)

Assessment period: Fall 2021–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:

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.
1. The student can recognize components of community ecology and identify how biodiversity contributes to a stable ecosystem.

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence			Use of Results
<p>1. 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>See Appendix A: BIO 104 SLO assessment</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>	Fall 2021	Jefferson	<p># students tested = 24 # correct = 184 % correct = 85%</p>	<p>Observations/Changes</p> <p>The single traditional section (Shelby SP 22) underperformed. With such a small sample size, it is hard to know if class modality (traditional vs online) played a role in the discrepancy or if other factors (ie campus, student demographics, instructor) influenced the outcomes. Additional data are needed to determine the significance of online access. (We continued to provide online resources see below).</p> <p>The Department has formed four separate committees that are responsible for learning outcomes for each course sequence. The BIO 103/104S committee will 1) continue to offer online resources 2) encourage students to use online content and tools. 3) revise the SLO assessments based on the updated ACCS course</p>
			Spring 2022	Jefferson	<p># students tested = 20 # correct = 108 % correct = 91%</p>	
			Spring 2022	Shelby	<p># students tested = 15 # correct = 85 % correct = 63%</p>	
			Summer 2022	Jefferson	<p># students tested = 33 # correct = 265 % correct = 89%</p>	
			<p>Total Students Tested = 92 Total Annual Success Rate = 84%</p>			

						<p>descriptions for BIO 103/104 and measures of question discrimination. 4) share ideas on how to improve specific learning outcomes. The Shelby campus BIO 104S instructor (Dr Raymond), is now full-time and will be a part of the BIO 103/104S committee.</p>												
<p>2. 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>See Appendix A: BIO 104 SLO assessment</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>	<table border="1"> <tr> <td data-bbox="995 613 1121 716">Fall 2021</td> <td data-bbox="1121 613 1304 716">Jefferson</td> <td data-bbox="1304 613 1703 716"># students tested = 24 # correct = 124 % correct = 86%</td> </tr> <tr> <td data-bbox="995 716 1121 824">Spring 2022</td> <td data-bbox="1121 716 1304 824">Jefferson</td> <td data-bbox="1304 716 1703 824"># students tested = 20 # correct =108 % correct = 90%</td> </tr> <tr> <td data-bbox="995 824 1121 933">Spring 2022</td> <td data-bbox="1121 824 1304 933">Shelby</td> <td data-bbox="1304 824 1703 933"># students tested = 15 # correct = 51 % correct = 57%</td> </tr> <tr> <td data-bbox="995 933 1121 1040">Summer 2022</td> <td data-bbox="1121 933 1304 1040">Jefferson</td> <td data-bbox="1304 933 1703 1040"># students tested = 33 # correct =177 % correct = 89%</td> </tr> </table>	Fall 2021	Jefferson	# students tested = 24 # correct = 124 % correct = 86%	Spring 2022	Jefferson	# students tested = 20 # correct =108 % correct = 90%	Spring 2022	Shelby	# students tested = 15 # correct = 51 % correct = 57%	Summer 2022	Jefferson	# students tested = 33 # correct =177 % correct = 89%			<p>Observations/Changes</p> <p>As seen with SLO 1, The single traditional section (Shelby SP 22) underperformed. That said students across the board were successful in mastering this learning outcome.</p> <p>Both online and traditional courses will continue to engage in dissection. The online section requires students to pick up a dissection kit. Throughout the semester students perform video guided dissections and submit labeled photos for grading. It is possible that access to</p>
Fall 2021	Jefferson	# students tested = 24 # correct = 124 % correct = 86%																
Spring 2022	Jefferson	# students tested = 20 # correct =108 % correct = 90%																
Spring 2022	Shelby	# students tested = 15 # correct = 51 % correct = 57%																
Summer 2022	Jefferson	# students tested = 33 # correct =177 % correct = 89%																
<p>Total Students Tested = 92 Total Annual Success Rate = 83%</p>																		

[these videos throughout the semester benefits students.](#) Providing similar videos to students in a traditional course may help bridge the gap in the learning outcomes. We also plan to add labs using the iNaturalist app to identify plants, animals and fungi.

3. 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

See Appendix A: BIO 104 SLO assessment

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)

Fall 2021	Jefferson	# students tested = 24 # correct = 88 % correct = 73%
Spring 2022	Jefferson	# students tested = 20 # correct = 63 % correct = 63%
Spring 2022	Shelby	# students tested = 15 # correct = 37 % correct = 49%
Summer 2022	Jefferson	# students tested = 33 # correct = 118 % correct = 72%

Total Students Tested = 92
Total Annual Success Rate = 67%

Observations/ Based on Previous Cycle (20/21)

Learners did not meet the standard for this one objective. It is obvious that the traditional section offered at the Shelby campus in the Spring of 2022 fell way below the threshold of mastery for this learning objective.

Ecology is commonly the last topic covered in the course. At the Jefferson campus the instructor has worked to thread ecology content throughout the semester. We will continue to work to include this content throughout the semester. We also plan to add an additional lab modeling population growth using yeast.

Appendix A: BIO 104 SLO Assessment

- 1) In the Hardy-Weinberg formula, what does q^2 represent?
 - A) frequency of the a allele
 - B) frequency of the A allele
 - C) frequency of the aa genotype
 - D) frequency of the AA genotype

- 2) Disruptive selection
 - A) eliminates both extremes
 - B) eliminates one extreme type
 - C) favors heterozygotes
 - D) eliminates intermediate types

- 3) Natural selection always results in____.
 - A) a decrease in the size of a population
 - B) offspring better adapted to their parents' environment than were their parents
 - C) increased genetic variation
 - D) offspring better adapted to a future environment

- 4) Which of the following is NOT one of the 5 agents that underlie evolutionary change?
 - A) gene flow
 - B) mutation
 - C) genetic drift
 - D) random mating
 - E) selection

- 5) Which of the following is NOT a type of prezygotic isolating mechanism?
 - A) Temporal isolation
 - B) Ecological isolation
 - C) Prevention of gamete fusion
 - D) Hybrid sterility

- 6) Two populations of salamanders are separated by an impassable valley. The populations are:

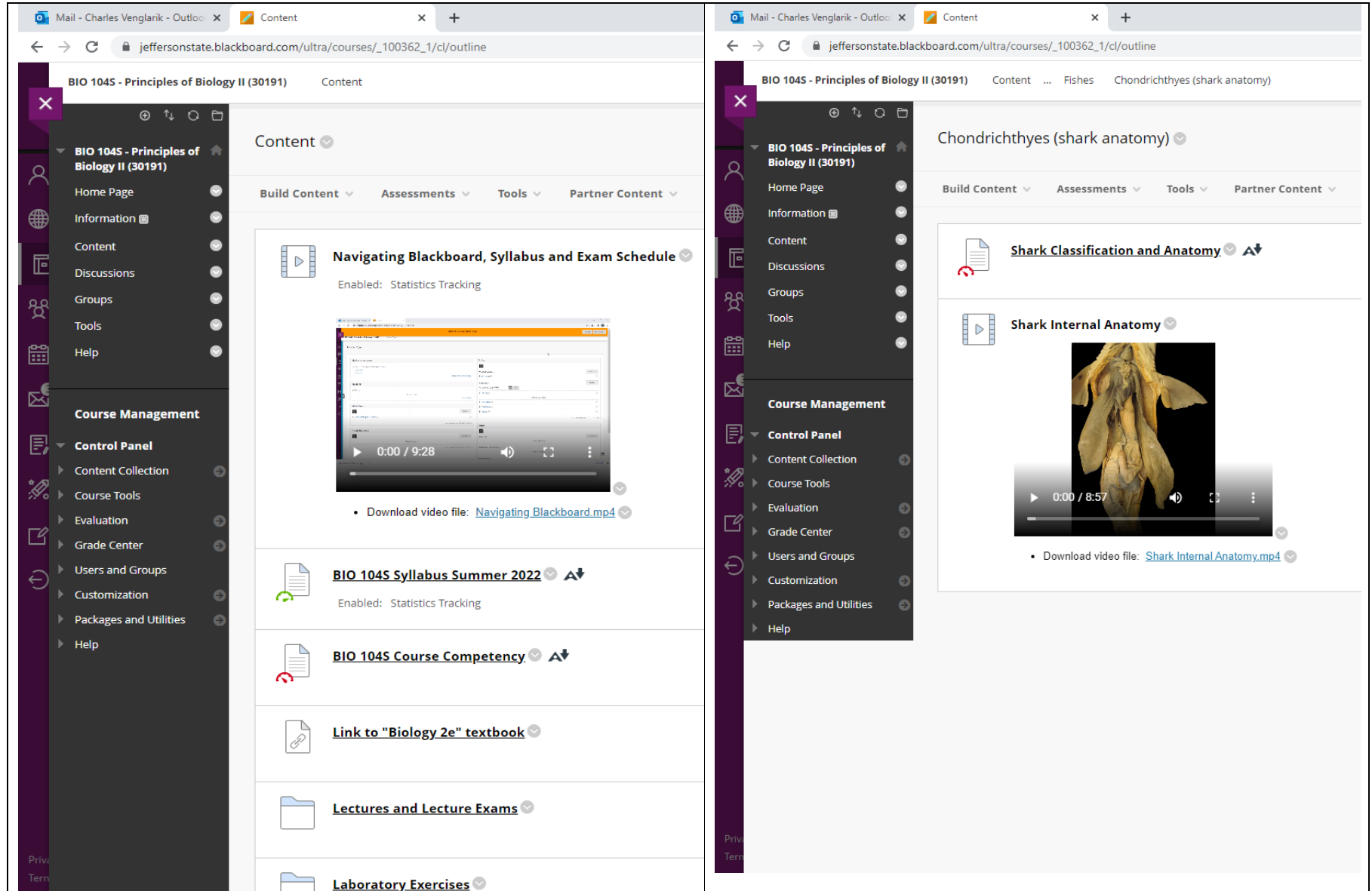
A) subspecies B) allopatric C) divergent D) sympatric E) founders

- 7) The embryonic tissue layer that will form the inner-most lining of the lungs and intestines is the_____.
A) Endoderm B) Transderm C) Mesoderm D) Ectoderm
- 8) The type of metazoan where the blastopore becomes the anus is the_____.
A) Protostome B) Deuterostome C) Zygote D) Bilateran
- 9) Malpighian tubules function as excretory organs in_____.
A) Arthropods B) Annelids C) Echinoderms D) Molluscs
- 10) Chordates possess all of the following characteristics some time during thier lives EXCEPT:
A) ventral nerve cord B) postanal tail
C) notocord D) pharyngeal slits
- 11) Mites and ticks belong to the order_____.
A) Diplopoda B) Araneae C) Acari D) Chilopoda
- 12) Amphibians likely evolved from
A) cartilagenous fisbes B) very primitive fishes
C) lobe-finned bony fishes D) ray-finned bony fishes
- 13) The term "habitat" is defined as:
A) The ecological role that a particular species plays in it's environment.
B) The environment where a specific individual is found.
C) The specific location of a community.
D) A major type of ecosystem that covers a large geographic region of the Earth.
- 14) A school of fishes provides an example of the_____pattern of dispersion.
A) Clumped B) uniform C) random D) clustered
- 15) Which of the following is true of the exponential growth model?
A) Growth is limited by the carrying capacity
B) There is an unlimited environment for growth
C) It has 3 phases: lag, log and plateau
D) All of the above are true

- 16) The size of a deer population in the wild depends on its _____ type relationships with other species.
- A) Parasite-host
 - B) Competition
 - C) Predator-prey
 - D) Herbivory
 - E) All of the above
- 17) Termites possess microorganisms in their gut that are able to digest cellulose from wood and break it down into simple sugars that feeds both organisms. This relationship may be described as _____.
- A) symbiotic
 - B) parasitic
 - C) mutualistic
 - D) A and C
- 18) Which of the following is a type of vascular plant?
- A) Anthrocerotophyta
 - B) Hepaticophyta
 - C) Bryophyta
 - D) Lycopphyta
- 19) The _____ serves primarily to transport water and minerals up from the plant's roots.
- A) rhizomes
 - B) xylem
 - C) phloem
 - D) stoma
- 20) Sporophytes are always _____.
- A) diploid
 - B) photosynthetic
 - C) nonphotosynthetic
 - D) haploid

Evidence for SLO 2

Selected screen shots of the BIO 104S Blackboard course shell:



Mail - Charles Venglarik - Outlook x Content x +

jeffersonstate.blackboard.com/ultra/courses/_100362_1/cl/outline


BIO 104S - Principles of Biology II (30191) Content ... Evolution, Genetic Equilibrium and Speciation Human Ev

Human Evolution - Fossil Evidence

Build Content Assessments Tools Partner Content

Illustrated "Hominin Family Tree" - for Reference

Hominin Skull Lab Lecture
Enabled: Statistics Tracking



Download video file: [hominin skulls 2.mp4](#)

List of Hominin Skulls to Identify

Hominin Skull Identification - Exercise
Availability: Item is hidden from students.
This is a short exercise to help you identify the replica hominin fossils th
It is fill-in-the-blank. It is timed and you will have 5 minutes to type in the
The answers should all be written in proper "Genus species" format with
Students may take this quiz as many times as they wish


Course Management
Control Panel
Content Collection
Course Tools
Evaluation
Grade Center
Users and Groups
Customization
Packages and Utilities
Help

Mail - Charles Venglarik - Outlook x Content x +

jeffersonstate.blackboard.com/ultra/courses/_100362_1/cl/outline

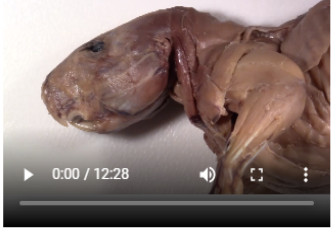
List of Skeletal Muscles for Exam 2

Separating Skeletal Muscles



Download video file: [Separating Skeletal Muscles.mp4](#)

Skeletal Muscles - Review



Download video file: [Skeletal Muscles - Review.mp4](#)

BIO 104S Lab Exercise Rat Skeletal Muscles - labeling exercise
This one has 29 fill-in-the-blanks!
You have 30 minutes and an unlimited number of attempts

Information
Content
Discussions
Groups
Tools
Help

Course Management
Control Panel
Content Collection
Course Tools
Evaluation
Grade Center
Users and Groups
Customization
Packages and Utilities
Help



Assessment Record

Program: Biology (BIO 201)

Assessment period: Fall 2021 – 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:

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: 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>	Fall 2021	Jefferson	# students tested = 85 # correct = 135 % correct = 79	<p>Observations/Changes</p> <p>Student performance for SLO 1 was successful at 81% this cycle. This is a decrease from the previous cycle of 86%, but still above the 70% benchmark for success. The Vocabulary incorporation and review throughout the semester has shown to be helpful in student learning and retention as measured by questions Q2 and Q3.</p> <p>Instructors continue to discuss, assign, and assess vocabulary proficiency throughout the semester. This is done by incorporating vocabulary discussion into instruction through lectures, assigned in homework</p>
				Shelby	# students tested = 143 # correct =229 % correct = 80	
				Clanton	# students tested = 24 # correct =47 % correct = 98	
				Pell City	# students tested = 61 # correct =94 % correct = 77	
			Spring 2022	Jefferson	# students tested = 70 # correct =112 % correct = 80	
				Shelby	# students tested = 42 # correct =70 % correct = 83	
				Clanton	# students tested = 16 # correct =23 % correct = 72	
				Pell City	# students tested = 33 # correct =48 % correct = 73	
			Summer 2022	Jefferson	# students tested =31 # correct =53 % correct =85	
				Shelby	# students tested = 54 # correct =98 % correct = 91	
				Pell City	# students tested = 10 # correct =15	

					% correct = 75	and assessed through periodic quizzes.
			Total Students Tested = 569 Total Annual Success Rate =81%			<p>A return to on-campus instruction and assessment may be in part why student performance decreased in some SLO areas as students readjust to the classroom setting post-pandemic. However, students are still meeting the 70% benchmark for success.</p>
<p>SLO 2: 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>	Fall 2021	Jefferson	# students tested = 85 # correct = 295 % correct = 87	<p>Observations/Changes</p> <p>Organ systems listed in the measured outcome are taught in both the lecture and lab settings. Additionally, students have access to lectures and lab content online throughout the course. Student success in this outcome is consistent with the previous cycle in meeting the 70% goal.</p>
				Shelby	# students tested = 143 # correct =455 % correct = 80	
				Clanton	# students tested =24 # correct =94 % correct = 98	
				Pell City	# students tested = 61 # correct =182 % correct = 75	
			Spring 2022	Jefferson	# students tested = 70 # correct =252 % correct = 90	
				Shelby	# students tested = 42 # correct =149 % correct = 89	
				Clanton	# students tested =16 # correct =43	

					% correct = 67	<p>The learning environment for this cycle has been characterized by a return to on-campus instruction. The instructional tools developed during the online instruction period due to Covid-19, such as instructional videos and online lecture and lab tools, have continued to be incorporated into instruction as students have returned to on-campus instruction. Access to online instructional materials may contribute to continued success in this cycle.</p>
			Pell City		# students tested = 33 # correct =89 % correct = 67	
			Summer 2022	Jefferson	# students tested = 31 # correct =114 % correct = 92	
				Shelby	# students tested = 54 # correct =190 % correct = 88	
				Pell City	# students tested = 10 # correct =36 % correct = 90	
			<p>Total Students Tested = 569 Total Annual Success Rate = 83%</p>			
SLO 3: Recognize the relationship between structural organization and function	Student learning outcomes were assessed by using a 16 question standardized multiple choice examination at	Correct responses by 70% of the students for each SLO will be defined as a successful outcome.	Fall 2021	Jefferson	# students tested = 85 # correct =233 % correct = 69	<p>Observations/Changes</p> <p>Faculty emphasized the relationship between structure and function throughout all body systems. Additionally, resources</p>
				Shelby	# students tested = 143 # correct =323 % correct = 56	
				Clanton	# students tested = 24 # correct =91 % correct = 95	

	the end of the semester. A total of 4 question (Q1, Q7, Q9, Q13) was used to assess SLO3			Pell City	# students tested = 61 # correct =129 % correct = 53	for lecture and lab were made available throughout the term. However, there was a decrease in proficiency as measured by SLO 3 as compared to the previous cycle. Due to student success being under the 70% benchmark in this SLO, instructors will supplement instruction on complementarity of structure and function through specific assignments and additional lab activities involving body systems covered in BIO 201. Faculty will continue to make course resources available online.
			Spring 2022	Jefferson	# students tested = 70 # correct =199 % correct = 71	
				Shelby	# students tested =42 # correct =119 % correct = 71	
				Clanton	# students tested = 16 # correct =31 % correct = 48	
				Pell City	# students tested = 33 # correct =67 % correct = 51	
			Summer 2022	Jefferson	# students tested = 31 # correct =93 % correct = 75	
				Shelby	# students tested = 54 # correct =176 % correct = 81	
				Pell City	# students tested =10 # correct =33 % correct = 83	
			Total Students Tested = 569 Total Annual Success Rate = 66%			
SLO 4: Define homeostasis and identify the role of homeostasis within and between appropriate systems	Student learning outcomes were assessed by using a 16 question standardized	Correct responses by 70% of the students for each SLO will be defined as a	Fall 2021	Jefferson	# students tested =85 # correct =160 % correct = 94	<u>Observations/Changes</u> This outcome measures student understanding of homeostasis, which is a cornerstone concept
				Shelby	# students tested = 143 # correct =262 % correct = 92	
				Clanton	# students tested = 24	

	<p>multiple choice examination at the end of the semester. A total of 2 questions (Q15 and Q16) were used to assess SLO4</p>	<p>successful outcome.</p>	<table border="1"> <tr> <td></td> <td></td> <td># correct =48 % correct = 100</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 61 # correct =107 % correct = 88</td> </tr> <tr> <td>Spring 2022</td> <td>Jefferson</td> <td># students tested = 70 # correct =133 % correct = 95</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested =42 # correct =78 % correct =93</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 16 # correct =24 % correct = 75</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 33 # correct =56 % correct = 85</td> </tr> <tr> <td>Summer 2022</td> <td>Jefferson</td> <td># students tested = 31 # correct =60 % correct = 97</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 54 # correct =102 % correct = 94</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 10 # correct =18 % correct = 90</td> </tr> </table> <p>Total Students Tested = 569 Total Annual Success Rate = 92%</p>					# correct =48 % correct = 100		Pell City	# students tested = 61 # correct =107 % correct = 88	Spring 2022	Jefferson	# students tested = 70 # correct =133 % correct = 95		Shelby	# students tested =42 # correct =78 % correct =93		Clanton	# students tested = 16 # correct =24 % correct = 75		Pell City	# students tested = 33 # correct =56 % correct = 85	Summer 2022	Jefferson	# students tested = 31 # correct =60 % correct = 97		Shelby	# students tested = 54 # correct =102 % correct = 94		Pell City	# students tested = 10 # correct =18 % correct = 90	<p>in this course. Instructors incorporate homeostasis concepts throughout the course. Lecture and lab material was made available online throughout the course. Student outcomes continue to reflect mastery of this concept as demonstrated by continued mastery at or above 70%.</p> <p>The concept of homeostasis will continue to be incorporated into lectures and lab instruction. Online lectures and lab instructional material will continue to be made available to students throughout the course.</p>
		# correct =48 % correct = 100																															
	Pell City	# students tested = 61 # correct =107 % correct = 88																															
Spring 2022	Jefferson	# students tested = 70 # correct =133 % correct = 95																															
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	Pell City	# students tested = 10 # correct =18 % correct = 90																															
<p>SLO 5: Identify the major structures of each system A.Integumentary System</p>	<p>Student learning outcomes were assessed by using a 16</p>	<p>Correct responses by 70% of the students for each SLO will</p>	<table border="1"> <tr> <td>Fall 2021</td> <td>Jefferson</td> <td># students tested = 85 # correct =293 % correct = 86</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 143 # correct =446</td> </tr> </table>			Fall 2021	Jefferson	# students tested = 85 # correct =293 % correct = 86		Shelby	# students tested = 143 # correct =446	<p>Observations/Changes</p> <p>Instructors taught and reviewed major structures of the organ</p>																					
Fall 2021	Jefferson	# students tested = 85 # correct =293 % correct = 86																															
	Shelby	# students tested = 143 # correct =446																															

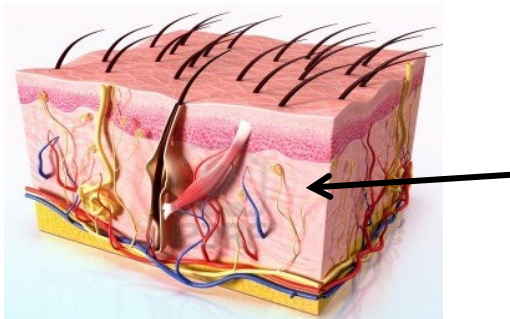
<p>B.Skeletal System C.Muscular System D.Nervous System</p>	<p>question standardized multiple choice examination at the end of the semester. A total of 4 questions (Q4, Q6, and Q10, Q12) were used to assess SLO5</p>	<p>be defined as a successful outcome.</p>	<table border="1"> <tr> <td></td> <td></td> <td>% correct = 78</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 24 # correct =93 % correct = 97</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 61 # correct =176 % correct = 72</td> </tr> <tr> <td>Spring 2022</td> <td>Jefferson</td> <td># students tested = 70 # correct =252 % correct = 90</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 42 # correct =140 % correct = 83</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 16 # correct =48 % correct = 75</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 33 # correct =92 % correct = 70</td> </tr> <tr> <td>Summer 2022</td> <td>Jefferson</td> <td># students tested =31 # correct =106 % correct =85</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 54 # correct =194 % correct = 90</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested =10 # correct =36 % correct = 90</td> </tr> </table> <p>Total Students Tested = 569 Total Annual Success Rate = 82%</p>			% correct = 78		Clanton	# students tested = 24 # correct =93 % correct = 97		Pell City	# students tested = 61 # correct =176 % correct = 72	Spring 2022	Jefferson	# students tested = 70 # correct =252 % correct = 90		Shelby	# students tested = 42 # correct =140 % correct = 83		Clanton	# students tested = 16 # correct =48 % correct = 75		Pell City	# students tested = 33 # correct =92 % correct = 70	Summer 2022	Jefferson	# students tested =31 # correct =106 % correct =85		Shelby	# students tested = 54 # correct =194 % correct = 90		Pell City	# students tested =10 # correct =36 % correct = 90	<p>systems listed in lecture and lab, with video and online instruction available throughout the course. Student mastery was met as scores reflected greater than 70% proficiency.</p> <p>Instructors will continue teach major structures of the organ systems listed. Online lectures and lab instructional material will continue to be made available to students throughout the course.</p>
		% correct = 78																																
	Clanton	# students tested = 24 # correct =93 % correct = 97																																
	Pell City	# students tested = 61 # correct =176 % correct = 72																																
Spring 2022	Jefferson	# students tested = 70 # correct =252 % correct = 90																																
	Shelby	# students tested = 42 # correct =140 % correct = 83																																
	Clanton	# students tested = 16 # correct =48 % correct = 75																																
	Pell City	# students tested = 33 # correct =92 % correct = 70																																
Summer 2022	Jefferson	# students tested =31 # correct =106 % correct =85																																
	Shelby	# students tested = 54 # correct =194 % correct = 90																																
	Pell City	# students tested =10 # correct =36 % correct = 90																																
<p>Plan submission date: September 23, 2022</p>			<p>Submitted by: Amanda Swindall and BIO 201/202 Committee</p>																															

Appendix A: BIO 201 SLO assessment

1. **(SLO3A)** _____ is a group of cells that are similar in structure and perform a common function.
 - a. Organ
 - b. Organelle
 - c. Tissue
 - d. System
 - e. Organism

2. **(SLO1A)** Based on what you know about anatomical terminology, the term subcutaneous means _____?
 - a. The study of the skin
 - b. Break down the skin
 - c. Below the skin
 - d. Around the skin

3. **(SLO1B)** The ear is _____ to the eye.
 - a. Superior
 - b. Medial
 - c. Inferior
 - d. Lateral
 - e. Anterior



4. **(SLO5A)** The arrow is pointing to the _____ layer of the skin.

- a. Hypodermis
- b. Dermis
- c. Epidermis
- d. Subcutaneous fat
- e. Areolar

5. **(SLO2A)** The cell that produces melanin is called
- a. Keratinocyte
 - b. Melanocyte

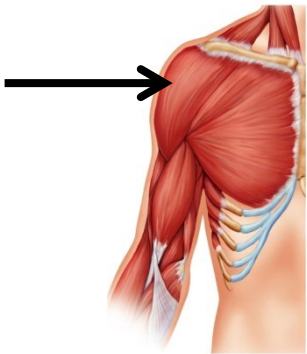


6. **(SLO5B)** The above bone is called the
- a. Femur
 - b. Humerus
 - c. Radius
 - d. Tibia
 - e. Fibula

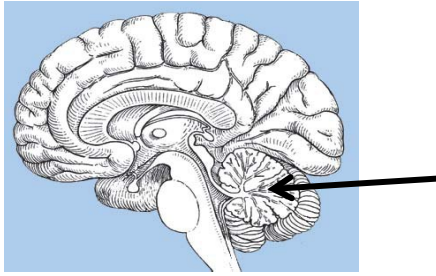
7. **(SLO3B)** In the sliding filament model of muscle contraction, the cross bridge cycle occurs when the myosin head binds to the active site on _____.
- a. Sarcoplasmic Reticulum
 - b. Actin
 - c. Sarcomere
 - d. Troponin
 - e. Calcium

8. **(SLO2B)** The cell type responsible for building bone is _____.
- a. Myocyte
 - b. Chondrocyte
 - c. Osteoclast
 - d. Osteoblast

9. (SLO3) The triceps brachii is the antagonist for the
- a. Orbicularis oculi
 - b. Palmaris longus
 - c. Soleus
 - d. Biceps brachii



10. (SLO5C) The muscle the arrow is pointing to is the
- a. Biceps femoris
 - b. Deltoid
 - c. Pectoralis minor
 - d. Biceps brachii
 - e. Trapezius
11. (SLO2C) The neurotransmitter released at the neuromuscular junction for skeletal muscle contraction is _____.
- a. Acetylcholine (ACh)
 - b. Dopamine
 - c. Acetylcholinesterase (AChE)
 - d. Myosin



12. (SLO5D) The arrow is pointing to which structure in the brain?
- Corpus callosum
 - Cerebellum
 - Midbrain
 - Pons
 - Thalamus
13. (SLO3C) The pelvic girdle lacks the mobility of the _____, but is far more stable due to the acetabulum and strong ligaments.
- Radius and ulna
 - Vertebral column
 - Pectoral girdle
 - Pubic bone
14. (SLO2D) There are ____ pairs of cranial nerves.
- 2
 - 7
 - 12
 - 31
15. (SLO4) _____ is the ability of the body to maintain stable internal conditions.
- Refraction
 - Regeneration
 - Maximum potential
 - Homeostasis
16. (SLO4) Which of the following is NOT one of the 3 parts of a feedback loop?
- Centriole
 - Effector
 - Control center
 - Receptor

e. Effector

Evidence for SLO 1

a. Vocabulary Quiz given to students

Name: _____

Quiz # 1

- | | |
|--------------------|-------------------------------------|
| __1. Ab- | A. <i>white</i> |
| __2. Af- | B. <i>Departing from, away from</i> |
| __3. Baro- | C. <i>cuckoo</i> |
| __4. Adeno- | D. <i>slow</i> |
| __5. Angi- | E. <i>crossing</i> |
| __6. capill | F. <i>hair</i> |
| __7. coccy- | G. <i>Preceding, before</i> |
| __8. Amphi- | H. <i>united</i> |
| __9. arthr- | I. <i>On both sides</i> |
| __10. Alb- | J. <i>Stand apart</i> |
| __11. Corni- | K. <i>gland</i> |
| __12. Brady- | L. <i>vessel</i> |
| __13. diastol- | M. <i>toward</i> |
| __14. Cort- | N. <i>joint</i> |
| __15. Ante- | O. <i>pressure</i> |
| __16. Chiasm- | P. <i>rib</i> |
| __17. dura- | Q. <i>bark</i> |
| __18. Commis- | R. <i>Bud, germ</i> |
| __19. Den-, denti- | S. <i>Open space</i> |
| __20. Cysto- | T. <i>cell</i> |
| __21. blast- | U. <i>horn</i> |
| __22. Cyto- | V. <i>crown</i> |
| __23. Cost- | W. <i>sac</i> |
| __24. Corona | X. <i>tooth</i> |
| __25. areola- | Y. <i>hard</i> |

b. Vocabulary list provided in blackboard, along with folder for accessing vocabulary quizzes, along with quiz example.



Vocabulary Master List

Enabled: Statistics Tracking

Attached Files: Vocab Master List.pdf (3.641 MB)

This is the Vocabulary Master List which covers both the prefixes and suffixes you will be responsible for learning this semester. Below is the guide to what prefixes/suffixes will be covered on which quiz. Please refer to your syllabus for dates of each quiz.

Quiz 1: prefixes: a- to -dys suffixes: -able to -dips

Quiz 2: prefixes: e- to oxy- suffixes: -ectomy to -ory

Quiz 3: prefixes: palli- to -zygo suffixes: -pathy to -zyme
(30 pts per quiz)



Vocabulary Quiz

All vocabulary quizzes can be found here.

Question Completion Status:

QUESTION 1

30 points

Save Answer

Match the following

- ▾ Ab-
- ▾ Acro-
- ▾ Adeno-
- ▾ Anastomos-
- ▾ Angi-
- ▾ Ante-
- ▾ Arthro-
- ▾ Brachi-
- ▾ Brady-
- ▾ Bucco-
- ▾ Caput-
- ▾ Cata-
- ▾ Chiasm-
- ▾ Chondr-
- ▾ Cili-
- ▾ Coel-
- ▾ Cost-
- ▾ Cyt-
- ▾ Decid-
- ▾ Dialys-
- ▾ Diure-
- ▾ Duc-
- ▾ -ac
- ▾ -algia
- ▾ -blast
- ▾ -ary
- ▾ -bryo
- ▾ -clast
- ▾ -dips
- ▾ cyan-

- A. referring to
- B. arm
- C. Falling off
- D. dry
- E. blue
- F. pain in a certain point
- G. slow
- H. come together
- I. bud
- J. vessel
- K. break
- L. cartilage
- M. joint
- N. small hair
- O. cheek
- P. head
- Q. crossing
- R. associated with
- S. extreme or extremity
- T. separate, break apart
- U. cell
- V. hollow
- W. urinate
- X. departing from
- Y. gland
- Z. down
- AA. rib
- AB. lead, draw
- AC. before
- AD. swollen

c. Calendar showing vocabulary assignments due (2/5, 2/19, 2/26) throughout course of several weeks in Spring 2022.

⚡ 5 assignments have had items removed as a result of ongoing content improvements. [Show assignments](#)

☰ 📅 💡 Tips [+ Create Assignment](#)

All Assignments

- 🔥 Ch. 01 Module 1: Sections 1.01-1.02 Dynamic Study Module 01/14/22
- 🔥 Ch. 01 Module 2: Sections 1.03-1.04 Dynamic Study Module 01/14/22
- Introduction to Mastering Anatomy and Physiology 01/14/22
- + Ex. 01: Pre-lab: Introduction to Anatomy and Physiology 01/15/22
- 🔥 Ch. 01 Module 3: Sections 1.05-1.06 Dynamic Study Module 01/19/22
- 🔥 Ch. 02 Module 1: Section 2.01-2.02 Dynamic Study Module 01/21/22
- 🔥 Ch. 02 Module 2: Section 2.03-2.04 Dynamic Study Module 01/21/22

February 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31 + Torso and Vi...	1	2 🔥 Ch. 05 Modul... 🔥 Ch. 05 Modul...	3	4 🔥 Ch. 05 Modul... 🔥 Ch. 05 Modul...	5 ● Vocab 3
6	7	8	9	10	11 🔥 Ch. 06 Modul... 🔥 Ch. 06 Modul...	12
13	14	15	16 🔥 Ch. 07 Modul...	17	18 🔥 Ch. 07 Modul...	19 + Skull Activi... ● Vocab 4
20	21	22	23 🔥 Ch. 07 Modul...	24	25 🔥 Ch. 07 Modul...	26 + Appendicular... ● Vocab 5
27	28	1	2 🔥 Ch. 07 Modul... 🔥 Ch. 07 Modul...	3	4 🔥 Ch. 08 Modul... 🔥 Ch. 08 Modul...	5 + Axial Skelet...
6	7	8	9	10	11 🔥 Ch. 09 Modul...	12

Evidence for SLO 2:

a. Syllabus showing Integumentary, Skeletal, Muscular, and Nervous systems to be covered in the course—both lecture and lab

Bio 201 Fall 2021 Lecture and Lab Schedule—SUBJECT TO CHANGE				
Date:	Lecture		Lecture	Lab Assignments
8/17	Classes start Thursday!	8/19	Course Policies	Intro to Mastering Anatomy Lab (10pts)
8/24	Intro To Anatomy (Ch1)	8/26	Anatomical Terminology (Ch1)	Microscope (10pts)
8/31	Histology (Ch4)	9/2	Chemistry (Ch 2) Part 1	Histology Activity (10 pts) Histology Practical (10pts)
9/7	Chemistry (Ch2) Part 2	9/9	Integumentary System (Ch5)	Torso and Viscera (10pts) Fetal Pig (10pts)
9/14	LECTURE EXAM #1	9/16	Bone Physiology Lecture (Ch6)	Torso and Pig Practical (10pt)
9/21	Skull Part 1 (Ch7)	9/23	Skull Part 2 (Ch7)	Skull Activity (10pt) Skull Practical (10 pts)
9/28	Appendicular Skeleton (Ch 7)	9/30	Appendicular Skeleton (Ch 7)	Appendicular Skeleton (10pts)
10/5	Axial Skeleton (Ch7)	10/7	Joints (Ch8)	Axial Skeleton (10pts)
10/12	LECTURE EXAM #2	10/14	Muscle Part 1 (Ch9)	Axial Skeleton Practical (10pts) Appendicular Skeleton Practical (10pts)
10/19	Muscles Part 2 (Ch 9)	10/21	Muscle Part 3(Ch9)	Muscles of Head and Neck (10pt) Muscles of Upper Limb (10pt)
10/26	Muscles part 4 (Ch9)	10/28	Muscles part 5(Ch9)	Muscles 1 Practical (10pt)
11/2	LECTURE EXAM #3	11/4	Neuro Part 1	Muscles of the Trunk (10pt)

				Muscles of the Lower Limb (10pt)
11/9	Neuro Part 2	11/11	College Closed	Muscles 2 Practical (10pt)
11/16	Neuro Part 3	11/18	Neuro Part 4	Brain and Nerves Lab (10pt) Brain and Nerves Practical (10pt)
11/22& 11/25	No Classes This Week—Thanksgiving			
11/30	Neuro Part 5	12/2	Neuro Part 6	Eye and Ear Lab (10pt)
12/7	Review for Final Exam	12/9	Final Exam 8:30-10:30	No lab

Course Schedule**Tentative and Subject to Change**

















Words written in BLUE are the online lectures you should watch.
 Words Written in Black are Exams
 Words written in GREEN are Lab Assignments and Lab Practicals

b. Screen shot of Blackboard course showing online resources available for Skeletal system unit on joints.

BIO 201 - Human Anatomy Physiology I (30944) Content Lecture Chapter 9 - Joints

Chapter 9 - Joints

Build Content Assessments Tools Partner Content

-  **Chapter 9 - Joints**  
Link to textbook
-  **Chapter 9 - Joints (lecture slides)** 
Attached Files:  joints Chap Ch9 OS.ppt   (11.73 MB)
-  **Chapter 9 - Joints (guided lecture notes)** 
Attached Files:  BIO 201 Chap 9 GLN.docx   (15.363 KB)
-  **Professor Dave Explains Joints**  
A great resource for this lecture and others

c. Screen shot of blackboard shell showing all content available for the course through exam folders. Also links to watch lectures online.

- Home Page
- Course Introduction-START HERE
- Course Materials
- Mastering A&P Homework
- My Grades
- Discussions
- Tools
- Help
- Announcements

Course Management

- Control Panel
- Content Collection
- Course Tools
- Evaluation
- Grade Center
- Users and Groups
- Customization
- Packages and Utilities
- Help

Course Materials

Build Content Assessments Tools Partner Content

[Online Lectures](#)

[Introductory Materials](#)

This folder includes all the handouts received the first class period including: syllabus and app information.

[Exam #1 Lectures](#)

All information covered on Exam 1 is in this folder. You will use these powerpoints to follow along with the Relay lectures.

[Exam #2 Lectures](#)

[Exam #3 Lectures](#)

[Final Exam Lectures](#)

[Lab Resources](#)

[Helpful Study Websites](#)

I have included a couple of links to excellent resources for help with topics we are covering in class.



- Home Page
- Course Introduction-START HERE
- Course Materials
- Mastering A&P Homework
- My Grades
- Discussions
- Tools
- Help
- Announcements
- Course Management**
- Control Panel
 - Content Collection
 - Course Tools
 - Evaluation
 - Grade Center
 - Users and Groups
 - Customization
 - Packages and Utilities
 - Help

Final Exam Lectures

Build Content Assessments Tools Partner Content

- Neuro Part 1**
Attached Files: Neuro Part 1-Nervous System Intro and Structures.ppt (2.566 MB)
- Neuro Part 2**
Attached Files: Neuro Part 2--Action Potentials and Neurotransmitters.ppt (2.143 MB)
- Neuro Part 3**
Attached Files: Neuro Part 3--Central Nervous System-Spring 2015.pptx (2.814 MB)
- Neuro Part 4**
Attached Files: Neuro Part 4--Peripheral Nervous System.ppt (2.919 MB)
- Cranial Nerves Fill-In for Peripheral nerves lecture**
Attached Files: Cranial Nerves Info Sheet.docx (1.336 MB)
You can print this out to fill in as you listen to Neuro Part 4-peripheral nervous system.
- Neuro Part 5**
Attached Files: Neuro Part 5-Autonomic Nervous System-Intro.ppt (666.5 KB)
- Neuro Part 6**



Evidence for SLO 3:

- a. Powerpoint slide discussing form and function of pelvic and pectoral girdles


7.4 The Pectoral Girdle

- **Pectoral girdle (shoulder girdle)** consists of **clavicles** (anteriorly) and **scapulae** (posteriorly)
 - Attach upper limbs to axial skeleton
 - Provide attachment sites for muscles that move upper limbs
 - Offer great degree of mobility because:
 - Scapulae are not attached to axial skeleton
 - Socket of shoulder joint is shallow and does not restrict movement

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- b. Online learning activity where students are asked to identify and discuss major organs and their functions.

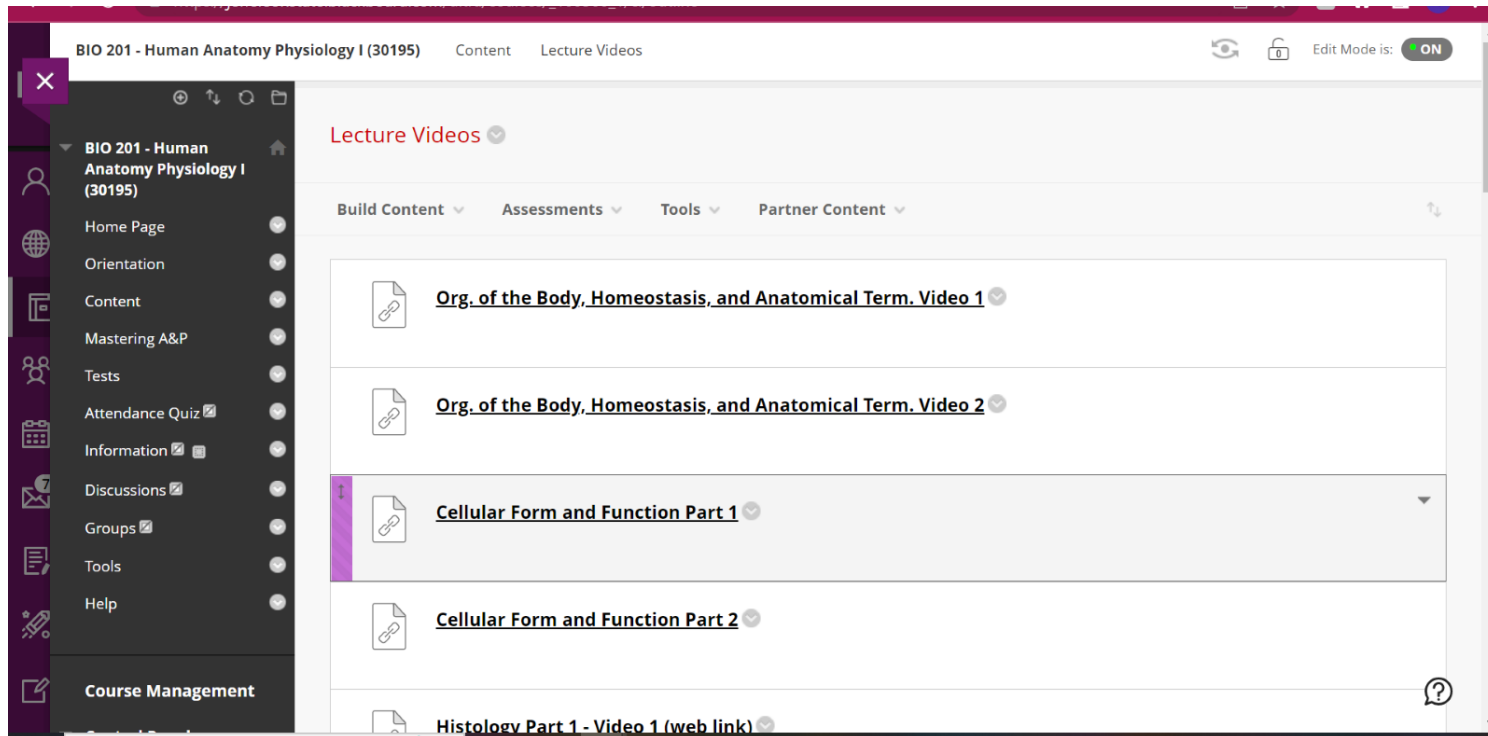


	Major Organs	Function(s)
System: 		
System:		



Evidence for SLO 4:

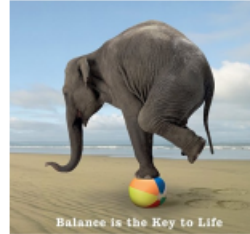
- a. Screen shot showing Blackboard shell with online videos discussing homeostasis.



- b. Slides showing homeostasis instruction

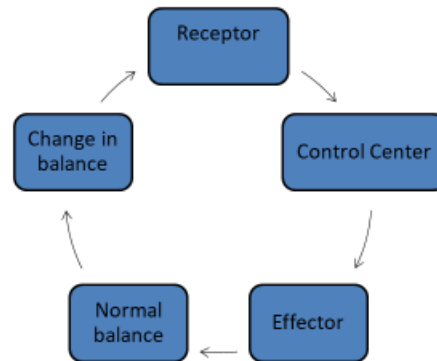
Homeostasis: What is that?

- The body's attempt to keep everything at "normal."
 - Normal temperature
 - Normal hydration levels
 - Normal blood sugar levels
- Every organ is involved in homeostasis.
- Communication between organ systems is accomplished mainly by the nervous and endocrine systems.



Components of Homeostasis

- Receptor: senses changes in system and tells control center.
- Control Center: receives message from receptor and tells effector to fix problem
- Effector: receives command from control center and acts to bring everything back to normal.



c. Case study examining homeostasis in muscle system

Overheated: A Case Study on Skeletal Muscle Physiology

"Time to scrub in," says Dr. Hodges. The appendectomy you are about to observe is your second surgical case in surgical technician school. The patient, David Sims, is an 18-year-old male who was healthy until two days ago when he began having severe abdominal pain, fever, and vomiting resulting in a diagnosis of appendicitis. David is in excellent health and has never had surgery before, so you anticipate the procedure to go smoothly.

Your instructor asked the anesthesiologist, Dr. Hodges, if you can observe her today during the procedure. "All of the patient's vital signs and lab work are within normal limits so we are good to go," says Dr. Hodges as David is brought into the operating room. You help get David ready by applying the heart monitor, oxygen saturation monitor, and blood pressure cuff. After David has been sedated, Dr. Hodges places a special tube down his esophagus to measure his core body temperature and another in his trachea (an endotracheal tube) to help him breathe during the procedure. While Dr. Hodges places the endotracheal tube, she comments, "His jaw muscles are a bit tight so it is very important to check and record his vital signs every 10 minutes. That is your job today while I monitor his respiratory status."

The case has been in progress for about 20 minutes when you notice David's heart rate jump up to 120bpm, setting off the ECG alarm on the monitor. You are concerned and ask, "Can he feel what is happening? His heart rate just went up." Dr. Hodges looks at you and asks, "What is his core temperature?" You show her the chart and see that David's temperature has gradually begun to rise and is now 101.8° F (38.8° C). Dr. Hodges' face turns serious and she says, "His exhaled carbon dioxide levels have also begun to rise. We need to get the malignant hyperthermia cart right away!"

David is now two days post-operative and is recovering in the Surgical Intensive Care Unit. You recall all of the activity that occurred to save his life by treating his malignant hyperthermia. You researched this condition and discovered that it is an inherited disease. While under general anesthesia, the affected person will experience a rapid rise in body temperature and severe muscle contractions. Dr. Hodges drops by to see David and says to you, "I was impressed how you handled yourself during a very stressful situation. Good job."

Short Answer Questions:

1. David's body temperature rises above normal during the surgery (hyperthermia). How does skeletal muscle tissue contribute to body temperature?
2. During malignant hyperthermia, there is an increased amount of calcium released into the sarcoplasm of skeletal muscle cells.
 - a. What organelle stores calcium in muscles cells?
 - b. Describe the events that must occur in the muscle cell before calcium is released from this organelle.
3. Jaw muscle contraction (masseter spasm) is one of the key physical findings seen in David's case of malignant hyperthermia. Explain how calcium functions to cause contraction of a skeletal muscle cell.
4. Malignant hyperthermia causes a hypermetabolic state in skeletal muscle, which is triggered by high demands for ATP during uncontrolled muscle contractions.
 - a. What is the role of ATP in cross bridge cycling?
 - b. What is the role of ATP in generating a resting membrane potential?
 - c. What is the role of ATP in maintaining calcium concentration gradients?
5. Dantrolene is the only drug available to treat malignant hyperthermia. It works by inhibiting calcium channels of the terminal cisterns of the sarcoplasmic reticulum. Explain how this inhibition helps to terminate skeletal muscle contraction. What effect would this have on David's body temperature?

Evidence for SLO 5:

a. Image showing a review of the parts of Integumentary System used in online homework modules:

WHAT YOU NEED TO KNOW

Apocrine sweat glands are believed to be the human equivalent of the sexual scent glands of an animal.

Apocrine sweat glands begin functioning at puberty under the influence of the male sex hormones (*androgens*) and play little role in maintaining a constant body temperature. Their precise function is not yet known, but they are activated by sympathetic nerve fibers during pain and stress. Because sexual foreplay increases their activity, and they enlarge and recede with the phases of a woman's menstrual cycle, they may be the human equivalent of other animals' sexual scent glands.

Sweat from eccrine sweat glands cools the body.

Sebaceous glands produce sebum, an oily secretion important for lubricating the skin and hairs.

Two important types of modified apocrine glands are:

- Ceruminous glands are modified apocrine glands found in the lining of the external ear canal. Their secretion mixes with sebum produced by nearby sebaceous glands to form a sticky, bitter substance called cerumen, or earwax, that is thought to deter insects and block entry of foreign material.
- Mammary glands are another type of specialized sweat gland; they secrete milk.

	ECCRINE SWEAT GLANDS	APOCRINE SWEAT GLANDS	SEBACEOUS GLANDS
Functions	<ul style="list-style-type: none">• Temperature control• Some antibacterial properties	May act as sexual scent glands	<ul style="list-style-type: none">• Lubricate skin and hair• Help prevent water loss• Antibacterial properties

b. Assignment where students must identify each muscle by drawing and labeling.

Anatomy Drawings

Unit 3 – The Muscular System

Studies have shown that drawing, labelling and coloring in anatomical structures can lead to a greater familiarity with the structures and therefore a better grade on exams. Each unit you will have a selection of structures that you must draw, color and label. You do not have to draw freehand – you may also trace from an image in your book or that you find online. But you CANNOT just print something out from the internet and turn it in for credit. Each drawing unit is worth 25 points

Draw, color, and label the muscles: Draw each grouping of muscles ARTICULATED– do not draw each individual muscle separately.

Head and Neck

Levator scapulae, Sternocleidomastoid, Epicranius, Temporalis, Masseter, Orbicularis oculi, Orbicularis oris, Zygomaticus major, Buccinators, Depressor labii inferioris, Levator labii superioris, Risorius, Mentalis, Depressor anguli oris

Shoulder, arm, and torso

Latissimus dorsi, Deltoid, Pectoralis major, Pectoralis minor, Supraspinatus, Infraspinatus, Subscapularis, Teres major, Teres minor, Biceps brachii, Triceps brachii, Brachialis, Trapezius, Rhomboid major, Rhomboid minor, Splenius capitis, Erector spinae

Trunk

Psoas major, Iliacus, Serratus anterior, Diaphragm, External intercostal, Internal intercostal, Transversus abdominis, Rectus abdominis, Linea alba

Forearm and hand

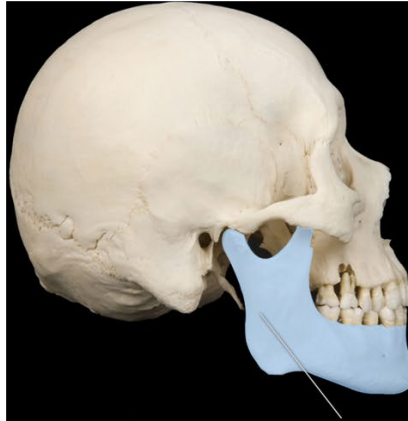
Brachioradialis, Pronator teres, Flexor carpi radialis, Palmaris longus, Flexor carpi ulnaris, Extensor carpi ulnaris, Extensor digitorum, Extensor carpi radialis brevis, Extensor carpi radialis longus

Hip and thigh

C. Quiz where students are asked to identify structures the skeletal system.

QUESTION 4

1 points Save Answer



Identify the highlighted bone.

QUESTION 5

1 points Save Answer



Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers

Save and Submit





Assessment Record

Program: Biology (BIO 202)

Assessment period: Fall 2021- 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:

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

					% correct = 99	Instructors will continue to provide online access to lecture and lab material along with teaching and reviewing important concepts pertaining to each body system throughout the course.
				Pell City	# students tested = 14 #correct = 57 % correct = 81	
Total Students Tested = 484 Total Annual Success Rate = 77%						
2: Define homeostasis and identify the role of homeostasis within and between appropriate systems.	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.	70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO2.	Fall 2021	Jefferson	# students tested =66 #correct = 129 % correct = 98	<u>Observations/Changes</u> The current cycle is lower than the previous year, which may be in part due to returning to campus for instructions and assessment. However, the 81% success rate for this cycle is still above the 70% benchmark. As homeostasis is a foundational concept for BIO 202, instructors have continued to highlight the importance of maintaining homeostasis among
				Shelby	# students tested = 75 #correct =113 % correct = 75	
				Pell City	# students tested = 12 #correct = 16 % correct = 67	
			Spring 2022	Jefferson	# students tested = 63 #correct = 108 % correct = 86	
				Shelby	# students tested = 67 #correct = 110 % correct = 82	
				Clanton	# students tested = 59 #correct = 87 % correct = 74	
				Pell City	# students tested = 45 #correct =59 % correct = 66	
			Summer 2022	Jefferson	# students tested = 23 #correct = 40 % correct = 87	

			<table border="1"> <tr> <td></td> <td>Shelby</td> <td># students tested = 41 #correct = 61 % correct = 74</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 19 #correct = 38 % correct = 100</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 14 #correct = 26 % correct = 93</td> </tr> </table> <p>Total Students Tested = 484 Total Annual Success Rate = 81%</p>		Shelby	# students tested = 41 #correct = 61 % correct = 74		Clanton	# students tested = 19 #correct = 38 % correct = 100		Pell City	# students tested = 14 #correct = 26 % correct = 93	<p>body systems throughout the semester. Online lectures and lab material are available for students to utilize at their convenience.</p> <p>The scores for this SLO were lower than the previous cycle while still being well within the range of success (>70%). We think this could be due to returning to on-campus instruction and therefore instructors will continue to supplement on-campus instruction with online materials available for lecture and lab. Additionally, instructors will continue to emphasize the importance of homeostasis across body systems discussed.</p>
	Shelby	# students tested = 41 #correct = 61 % correct = 74											
	Clanton	# students tested = 19 #correct = 38 % correct = 100											
	Pell City	# students tested = 14 #correct = 26 % correct = 93											
<p>3: Recognize the major structures of each system listed below.</p> <p>A. Endocrine System</p>	<p>Student learning outcomes were assessed by using a 12 question</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the</p>	<table border="1"> <tr> <td>Fall 2021</td> <td>Jefferson</td> <td># students tested =66 #correct = 316 % correct = 96</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 75 #correct = 296</td> </tr> </table>	Fall 2021	Jefferson	# students tested =66 #correct = 316 % correct = 96		Shelby	# students tested = 75 #correct = 296	<p><u>Observations/Changes</u></p> <p>Student success for SLO 3 was lower than the previous cycle, but</p>			
Fall 2021	Jefferson	# students tested =66 #correct = 316 % correct = 96											
	Shelby	# students tested = 75 #correct = 296											

<p>B. Cardiovascular System C. Lymphatic and Immune System D. Respiratory System E. Digestive System F. Urinary System G. Reproductive System</p>	<p>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>average of correctly answered questions related to SLO3.</p>	<table border="1"> <tr> <td></td> <td></td> <td>% correct = 75</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 12 #correct =44 % correct = 73</td> </tr> <tr> <td>Spring 2022</td> <td>Jefferson</td> <td># students tested = 63 #correct = 275 % correct = 87</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested =67 #correct = 283 % correct = 84</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 59 #correct = 165 % correct = 56</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 45 #correct = 137 % correct = 61</td> </tr> <tr> <td>Summer 2022</td> <td>Jefferson</td> <td># students tested = 23 #correct = 112 % correct = 97</td> </tr> <tr> <td></td> <td>Shelby</td> <td># students tested = 41 #correct = 162 % correct = 79</td> </tr> <tr> <td></td> <td>Clanton</td> <td># students tested = 19 #correct = 90 % correct = 95</td> </tr> <tr> <td></td> <td>Pell City</td> <td># students tested = 14 #correct = 56 % correct = 80</td> </tr> </table> <p>Total Students Tested = 484 Total Annual Success Rate = 80%</p>			% correct = 75		Pell City	# students tested = 12 #correct =44 % correct = 73	Spring 2022	Jefferson	# students tested = 63 #correct = 275 % correct = 87		Shelby	# students tested =67 #correct = 283 % correct = 84		Clanton	# students tested = 59 #correct = 165 % correct = 56		Pell City	# students tested = 45 #correct = 137 % correct = 61	Summer 2022	Jefferson	# students tested = 23 #correct = 112 % correct = 97		Shelby	# students tested = 41 #correct = 162 % correct = 79		Clanton	# students tested = 19 #correct = 90 % correct = 95		Pell City	# students tested = 14 #correct = 56 % correct = 80	<p>still above the 70% success marker. Therefore, instructors will continue to instruct students in lecture and lab activities to teach the body systems listed. Decreased success may be due in part to a return to campus instruction and assessment. Students are adjusting to being in the classroom again post pandemic.</p> <p>As student success in SLO 3 was above the 70% benchmark, instructors will continue to provide online materials for lecture and lab and cover these topics in both lecture and lab through on-campus and online instruction.</p>
		% correct = 75																																
	Pell City	# students tested = 12 #correct =44 % correct = 73																																
Spring 2022	Jefferson	# students tested = 63 #correct = 275 % correct = 87																																
	Shelby	# students tested =67 #correct = 283 % correct = 84																																
	Clanton	# students tested = 59 #correct = 165 % correct = 56																																
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Summer 2022	Jefferson	# students tested = 23 #correct = 112 % correct = 97																																
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	Clanton	# students tested = 19 #correct = 90 % correct = 95																																
	Pell City	# students tested = 14 #correct = 56 % correct = 80																																

Plan submission date: September 23, 2022

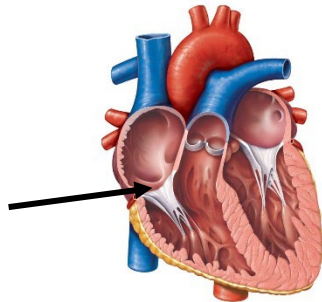
Submitted by: Amanda Swindall and BIO 201/202 Committee

Appendix 1: SLO assessment for BIO 202

1. **(SLO2)** Blood calcium homeostasis is maintained by
- A. Calcitonin and parathyroid hormone
 - B. Renin and aldosterone
 - C. Insulin and glycogen
 - D. Angiotensin I and Angiotensin II

2. **(SLO1A)** Increasing aldosterone increases
- A. Blood Calcium concentration
 - B. Metabolism
 - C. Lactation
 - D. Blood pressure

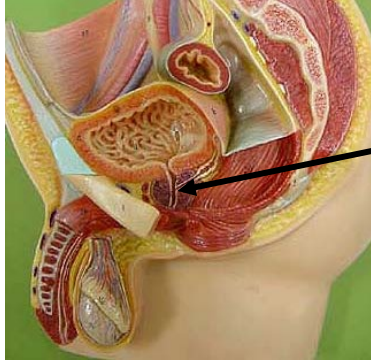
3. **(SLO 3B)** The arrow is pointing to the



- A. Bicuspid/Mitral valve
 - B. Tricuspid valve
 - C. Pulmonary semilunar valve
 - D. Aortic semilunar valve
4. **(SLO 1F)** Which of the following is highly reabsorbed in the kidney?
- A. Waste
 - B. Drugs

- C. Water
- D. Impossible to predict without more information

5. (SLO 3G) The arrow is pointing to the



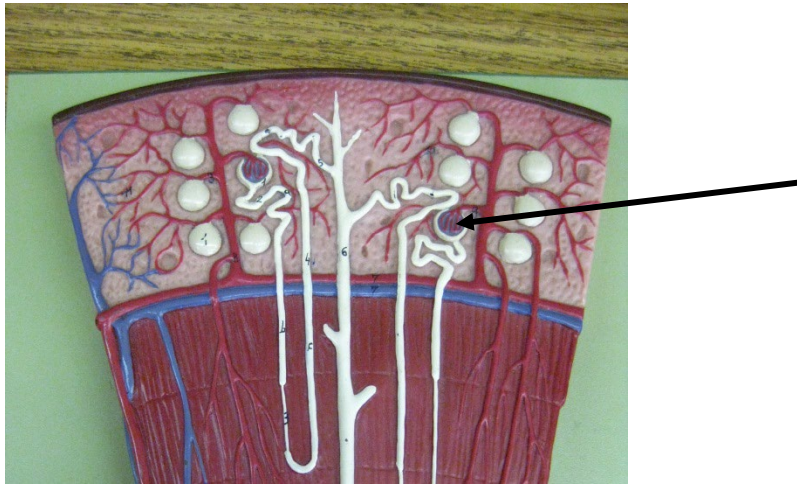
- A. Testes
 - B. Prostate
 - C. Urinary bladder
 - D. Epididymus
6. (SLO 2) The component of blood responsible for clotting is
- A. Erythrocytes
 - B. Platelets
 - C. Leukocytes
 - D. Hemoglobin
7. (SLO 1C) The type of cell responsible for specific immunity
- A. Neutrophil
 - B. Basophil
 - C. Lymphocyte
 - D. Macrophage
8. (SLO 1D) During inhalation, air travels from _____ atmospheric pressure to _____ intrapulmonary pressure.
- A. High; low

- B. Low; high
- C. Not enough information to determine

9. (SLO 3D) The right lung has ____ lobes

- A. 1
- B. 2
- C. 3
- D. 4

10. (SLO 3F) The arrow is pointing to the



- A. Renal cortex
- B. The glomerulus
- C. The nephron loop
- D. The collecting duct

11. (SLO 3E) Which part of the digestive tract has rugae?

- A. mouth
- B. esophagus
- C. stomach
- D. small intestines

E. large intestines

12. (SLO 1G) Gamete are produced in the

- A. Uterus and testes
- B. Ovaries and scrotum
- C. Scrotum and fallopian tubes
- D. Testes and ovaries

Evidence:

SLO 1:

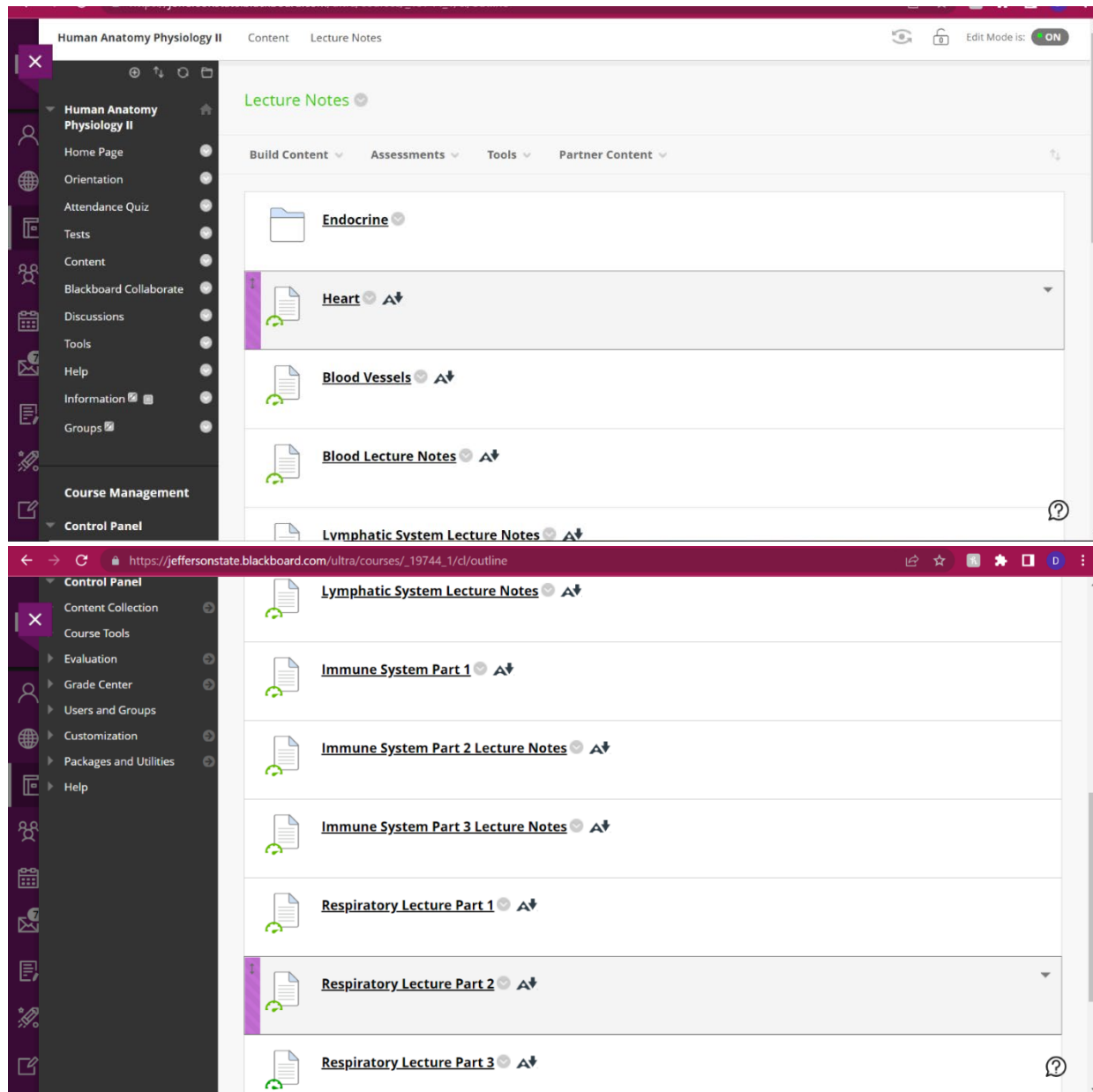
- a. Screenshot showing online lecture access for body systems.

The screenshot displays the Blackboard LMS interface for the course "BIO 202 - Human Anatomy Physiology II (20278)". The top navigation bar includes "Content", "Lecture Exam 4", and "Blood Vessels". A left-hand navigation menu lists various course management options such as "Home Page", "Information", "Content", "Discussions", "Groups", "Tools", and "Help". The main content area is titled "Blood Vessels" and features a sub-menu with "Build Content", "Assessments", "Tools", and "Partner Content". Two lecture videos are visible: "Lecture 20" and "Lecture 21".

Lecture 20 is titled "Blood Vessels - Arterial Resistance" and "Renin - Angiotensin - Aldosterone". The video frame shows a hand-drawn diagram on a whiteboard. The diagram illustrates the RAAS pathway: a decrease in blood pressure (BP) leads to sympathetic stimulation of the kidney, which releases renin. Renin converts Angiotensinogen (from the liver) into Angiotensin I. Angiotensin I is then converted to Angiotensin II in the lungs. Angiotensin II acts as a potent vasoconstrictor and stimulates the adrenal cortex to release aldosterone. Aldosterone causes the kidney to lose water and sodium (lose t^+), which increases resistance and raises BP. The diagram also notes that Angiotensin II causes vasoconstriction and that the adrenal cortex releases aldosterone.

Lecture 21 is titled "Capillary exchange: Filtration - Reabsorption". The video frame shows a diagram of a capillary bed. It labels "Arterial and hydrostatic pressure" at the top, "Interstitial fluid" on the left, and "Venous and oncotic pressure" at the bottom. The diagram illustrates the process of filtration and reabsorption across the capillary wall.

b. Screenshot showing lecture note availability in blackboard shell.



Evidence for SLO 2:

a. Notes showing homeostasis discussion in thyroid hormone lecture.

Thyroid Hormone (TH) (cont.)

- TH affects virtually every cell in body
- Enters target cell and binds to intracellular receptors within nucleus
 - Triggers **transcription** of various metabolic genes
- Effects of thyroid hormone include:
 - **Increases** basal metabolic rate and heat production
 - Referred to as **calorigenic effect**

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7

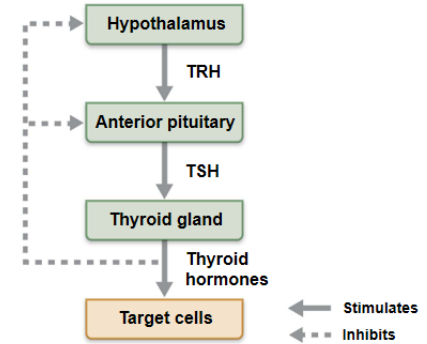
Thyroid Hormone (TH) (cont.)

- Regulates tissue growth and development
 - Critical for normal skeletal and nervous system development and reproductive capabilities
- Maintains blood pressure
 - Increases adrenergic receptors in blood vessels

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Figure 16.7 Regulation of thyroid hormone secretion.



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Clinical – Homeostatic Imbalance 16.4

- Hyposecretion of TH in adults can lead to **myxedema**
 - Symptoms include low metabolic rate, thick and/or dry skin, puffy eyes, feeling chilled, constipation, edema, mental sluggishness, lethargy
- If due to lack of iodine, a **goiter** may develop
 - Lack of iodine decreases TH levels, which triggers increased TSH secretion, triggering thyroid to synthesize more and more unusable thyroglobulin
 - Thyroid enlarges



(a)

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10

Clinical – Homeostatic Imbalance 16.4

- Hyposecretion in infants leads to **cretinism**
 - Symptoms include intellectual disabilities, short and disproportionately sized body, thick tongue and neck

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11

Clinical – Homeostatic Imbalance 16.4

- Hypersecretion of TH: most common type is **Graves' disease**
 - Autoimmune disease: body makes abnormal antibodies directed against thyroid follicular cells
 - Antibodies mimic TSH, stimulating TH release
 - Symptoms include elevated metabolic rate, sweating, rapid and irregular heartbeats, nervousness, and weight loss despite adequate food
 - *Exophthalmos* may result: eyes protrude as tissue behind eyes becomes edematous and fibrous



(b)

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12

b. Test Questions covering homeostatic mechanisms of blood sugar.

The image shows a screenshot of a Microsoft Word document. At the top, there is a ribbon with various tabs including Font, Paragraph, and Styles. The main body of the document contains a single paragraph of text. At the bottom of the page, there is a footer with the text 'BIO 202 Exam 1' on the left and '- 7 -' on the right.

60. Please describe the relationship between insulin and glucagon in regulating blood sugar levels. Make sure to include **1.** where these hormones are released from, **2.** where target cells for each of the hormones are, and **3.** what effect each has on blood sugar levels.

BIO 202 Exam 1

- 7 -

Evidence for SLO 3:

a. Screenshot of Blackboard showing heart structures videos and lists for lab.

The screenshot shows a Blackboard course page for 'BIO 202 - Human Anatomy Physiology II (20147)'. The breadcrumb trail is 'Course Materials > Heart Lab Folder > External Heart'. The page title is 'External Heart'. Below the title are navigation tabs: 'Build Content', 'Assessments', 'Tools', and 'Partner Content'. The main content area contains three items:

- External Heart Structures List**: Includes an attached file 'External Heart Structures.docx' (17.217 KB) and a description: 'Use this list to study for the external structures portion of External/Internal Heart structures practical.'
- External Heart Structures Video**: Description: 'This video walks through the PAL heart models with the external heart structures list. I would suggest using this IN ADDITION TO the PAL resource within Mastering A&P Study area.'
- External Heart Structures**: Description: 'Labs'

b. Screenshot of Blackboard showing content for identifying structures of the respiratory system.

The screenshot shows a Blackboard course page for 'BIO 202 - Human Anatomy Physiology II (20147)'. The breadcrumb trail is 'Course Materials > Lab Resources > Respiratory System Lab'. The page title is 'Respiratory System Lab'. Below the title is a navigation bar with 'Build Content', 'Assessments', 'Tools', and 'Partner Content'. The main content area lists five items:

- Respiratory List** (15,487 KB): Attached Files: Respiratory System List.docx. Description: Use this list along with Practice Anatomy Lab to study items for identification on the Respiratory System Practical.
- Respiratory System PP Images-Unlabeled** (1.305 MB): Attached Files: PAL3_Models_Respiratory_UL.ppt. Description: These are the images from the PAL without labels for you to practice.
- Respiratory Lab Assignment**: Labs
- Respiratory Lab Video**
- Respiratory Practical-SP22**

At the bottom left, there is a vertical sidebar with icons for user profile, search, calendar, and other tools. The text 'Private' and 'Terms' is partially visible at the bottom left corner.

c. Lab list of respiratory system structures for identification

Respiratory System Lab List

Structures of the Oral/Nasal Cavity:

Superior Concha
Middle Concha
Inferior Concha
Pharyngeal tonsil
Palantine tonsil
Lingual tonsil
Uvula
External nares
Internal Nares
Nasal cavity
Nasopharynx
Oropharynx
Soft palate

Sinuses:

Frontal Sinus
Sphenoidal sinus

Structures of the Larynx:

Larynx
Epiglottis
Vestibular fold

Trachea/Bronchus:

Trachea
Main Bronchus
Lobar Bronchus
Bronchioles
Alveoli

d. Screenshot of lab folder showing instructor videos covering GI Anatomy Lab.

BIO 202 - Human Anatomy Physiology II (20278) Content ... Laboratory Final GI Anatomy

BIO 202 - Human Anatomy Physiology II (20278)

- Home Page
- Information
- Content
- Discussions
- Groups
- Tools
- Help


Course Management

- Control Panel
 - Content Collection
 - Course Tools
 - Evaluation
 - Grade Center
 - Users and Groups
 - Customization
 - Packages and Utilities
 - Help

GI Anatomy

Build Content Assessments Tools Partner Content


GI Lab 2



0:00 / 11:16

Download video file: [GI lab 2.mp4](#)

GI Lab 3



0:00 / 8:10

Download video file: [GI lab 3.mp4](#)



Assessment Record

Program: Biology (BIO 220)

Assessment period: Fall 2021 - 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:

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
<p>SLO 1: Demonstrate an ability to identify the differences between prokaryotic and eukaryotic cells as well as the structure and function of microorganisms in various environments.</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 two questions (Q-1 and Q-2) were used to assess SLO-1. (see appendix A)</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-1.</p>	Fall 2021	Jefferson	#Students Tested = 31 #Correct = 45 %Correct = 73%	<p>Observations/Changes: Instructors will continue to provide students with materials they can access at home(via BlackBoard platform links). As a department we noticed that there was a significant decrease from last year's data(73%) but an equally significant increase from the previous 2 years' data(58%), students tested did not meet the requirements for success for SLO-1.</p> <p>We will, therefore, continue to emphasize the differences between prokaryotic and eukaryotic cells throughout the semester, by incorporating vocabulary throughout the semester in relation to cell type distinctions; as well, using assessment opportunities to reinforce the importance of these comparisons {See Item #1}</p> <p>We have also decided to replace questions two and</p>
				Shelby	#Students Tested = 42 # correct = 39 % correct = 46%	
				Clanton	#Students Tested= 27 # correct = 50 % correct = 93%	
				Pell City	#Students Tested = 18 # correct = 26 % correct = 72%	
			Spring 2022	Jefferson	#Students Tested = 33 # correct = 26 % correct = 39%	
			Summer 2022	Jefferson	#Students Tested = 18 # correct = 18 % correct = 50%	
				Shelby	#Students Tested = 32 # correct = 50 % correct = 78%	
				Clanton	#Students Tested = 18 # correct = 36 % correct = 100%	
			<p>Total Students Tested = 219 Total Annual Success Rate = 66% Fall 2021</p>			

						<p>three of the SLO assessment; students across the testing pool have trouble with these(in yearly meeting).</p>
<p>SLO 2: 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 - Q5) were used to assess SLO-2. (See appendix A)</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-2.</p>	Fall 2021	Jefferson	#Students Tested = 31 #Correct = 80 %Correct = 86%	<p>Observations/Changes: Instructors will continue to provide students with materials they can access at home(via BlackBoard platform links). {See Image C}. As a department we noticed that students did meet the requirements for success for SLO-2; the rate is a slight increase from last year (80%), but significant over the previous 2 year rate (71%).</p> <p>In working to illustrate how the metabolic and genetic pathways correlate to material covered in lab, this year students used a combination of virtual labs (Connect site) and case studies to strengthen their understanding of the relevance of these pathways. It will be interesting to note the year ahead, as all Micro course lab components</p>
				Shelby	#Students Tested = 42 # correct = 84 % correct = 67%	
				Clanton	#Students Tested= 27 # correct = 79 % correct = 98%	
				Pell City	#Students Tested = 18 # correct = 41 % correct = 76%	
			Spring 2022	Jefferson	#Students Tested = 33 # correct = 75 % correct = 76%	
			Summer 2022	Jefferson	#Students Tested = 18 # correct = 45 % correct = 83%	
				Shelby	#Students Tested = 32 # correct = 86 % correct = 90%	
				Clanton	#Students Tested = 18 # correct = 54 % correct = 100%	

			Total Students Tested = 219 Total Annual Success Rate = 83% Fall 2021			are expected to be in-house, hand delivered.
<p>SLO 3: 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.</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 two questions (Q6-Q7) were used to assess SLO-3. (See appendix A)</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-3.</p>	Fall 2021	Jefferson	#Students Tested = 31 #Correct = 61 %Correct = 98%	<p>Observations/Changes: Instructors will continue to provide students with materials they can access at home(via BlackBoard platform links). As a department we noticed that students tested did meet the requirements for success for SLO-3; however, the rate is a slight decrease when compared with data from last year (92%); and slightly higher than 2 years' prior data (89%).</p> <p>Instructors continue to emphasize content related to infectious diseases during lecture and lab and by providing supplement resources students could access at home.</p>
				Shelby	#Students Tested = 42 # correct = 74 % correct = 88%	
				Clanton	#Students Tested= 27 # correct = 51 % correct = 94%	
				Pell City	#Students Tested = 18 # correct = 29 % correct = 81%	
			Spring 2022	Jefferson	#Students Tested = 33 # correct = 60 % correct = 91%	
			Summer 2022	Jefferson	#Students Tested = 18 # correct = 31 % correct = 86%	
				Shelby	#Students Tested = 32 # correct = 57 % correct = 89%	
				Clanton	#Students Tested = 18 # correct = 36 % correct = 100%	

			Total Students Tested = 219 Total Annual Success Rate = 91%			
<p>SLO 4: Recognize proper laboratory technique and protocols including aseptic technique, media selection, slide preparation, and microscopy.</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 6 questions (Q8 - Q13) were used to assess SLO-4</p>	<p>70% or > successful 69% or < unsuccessful The percent is based upon the average of correctly answered questions related to SLO-4</p>	Fall 2021	Jefferson	#Students Tested = 31 #Correct = 165 %Correct = 89%	<p>Observations/Changes: Instructors will continue to provide students with materials they can access at home(via BlackBoard platform links). As a department we noticed students tested met the requirements for success for SLO-4; the rate for is consistent with last 2 years rate of success, with only slight increases(83 and 81% respectively). Instructors will continue to emphasize the proper laboratory techniques and protocols throughout the semester. Just a note, we have managed to keep our success stable, and reinforce key concepts of student learning to correlate to material covered in lab; this year students used a combination of virtual labs(Connect site) and in-person experimentation to strengthen their understanding of the relevance of these pathways. It will be</p>
				Shelby	#Students Tested = 42 # correct = 187 % correct = 74%	
				Clanton	#Students Tested= 27 # correct = 154 % correct = 95%	
				Pell City	#Students Tested = 18 # correct = 90 % correct = 83%	
			Spring 2022	Jefferson	#Students Tested = 33 # correct = 124 % correct = 63%	
			Summer 2022	Jefferson	#Students Tested = 18 # correct = 85 % correct = 79%	
				Shelby	#Students Tested = 32 # correct = 171 % correct = 89%	
				Clanton	#Students Tested = 18 # correct = 102 % correct = 94%	
			Total Students Tested = 219 Total Annual Success Rate = 82%			

				<p>interesting to note student learning in this area in the year ahead, as most or all Micro course lab components are expected to be in-house, hands-on completion. In the case of OER delivery, instructors have made use of virtual labs and/or at home lab kits to ensure a laboratory component.</p> <p>This data suggests we can meet our learning objectives with these approaches if continued.</p>
Plan submission date: 2021-2022 Year			Submitted by: Stephanie Miller	

Appendix A: BIO 220 SLO assessment

SLO 1

1. One of the main differences between Prokaryotic and Eukaryotic cells is _____
 - a. Cell Membrane
 - b. Membrane bound organelles
 - c. Flagella
 - d. Cell Wall
 - e. All of the above

2. The organelle responsible for cell motility?
 - a. Cilia
 - b. Fimbriae
 - c. Flagellum
 - d. Pili
 - e. All of the above

SLO 2

3. Which pathway is NOT involved in aerobic respiration?
 - a. Krebs Cycle
 - b. Glycolysis
 - c. TCA cycle
 - d. Electron Transport

4. The process of going from DNA to RNA is called _____?
 - a. Transcription
 - b. Translation
 - c. Replication
 - d. All of the above
 - e. None of the above

5. _____ is used for storing hereditary information, _____ is used for directly making protein.
 - a. RNA, RNA
 - b. RNA, DNA
 - c. DNA, DNA

- d. DNA, RNA
- e. DNA, protein

SLO 3

- 6. What are microbes that cause diseases in all humans called?
 - a. Normal Flora
 - b. Transient Flora
 - c. Pathogens
 - d. Opportunistic Pathogens
 - e. None of the above

- 7. The destruction of all microbial growth, including endospores, is called _____.
 - a. Sanitation
 - b. Disinfection
 - c. Sterilization
 - d. All of the above
 - e. None of the above

SLO 4

- 8. When inoculating an agar slant from a broth, what should be used?
 - a. Inoculating Loop
 - b. Inoculating Needle
 - c. Inoculating Spatula
 - d. Inoculating Dropper
 - e. None of the above

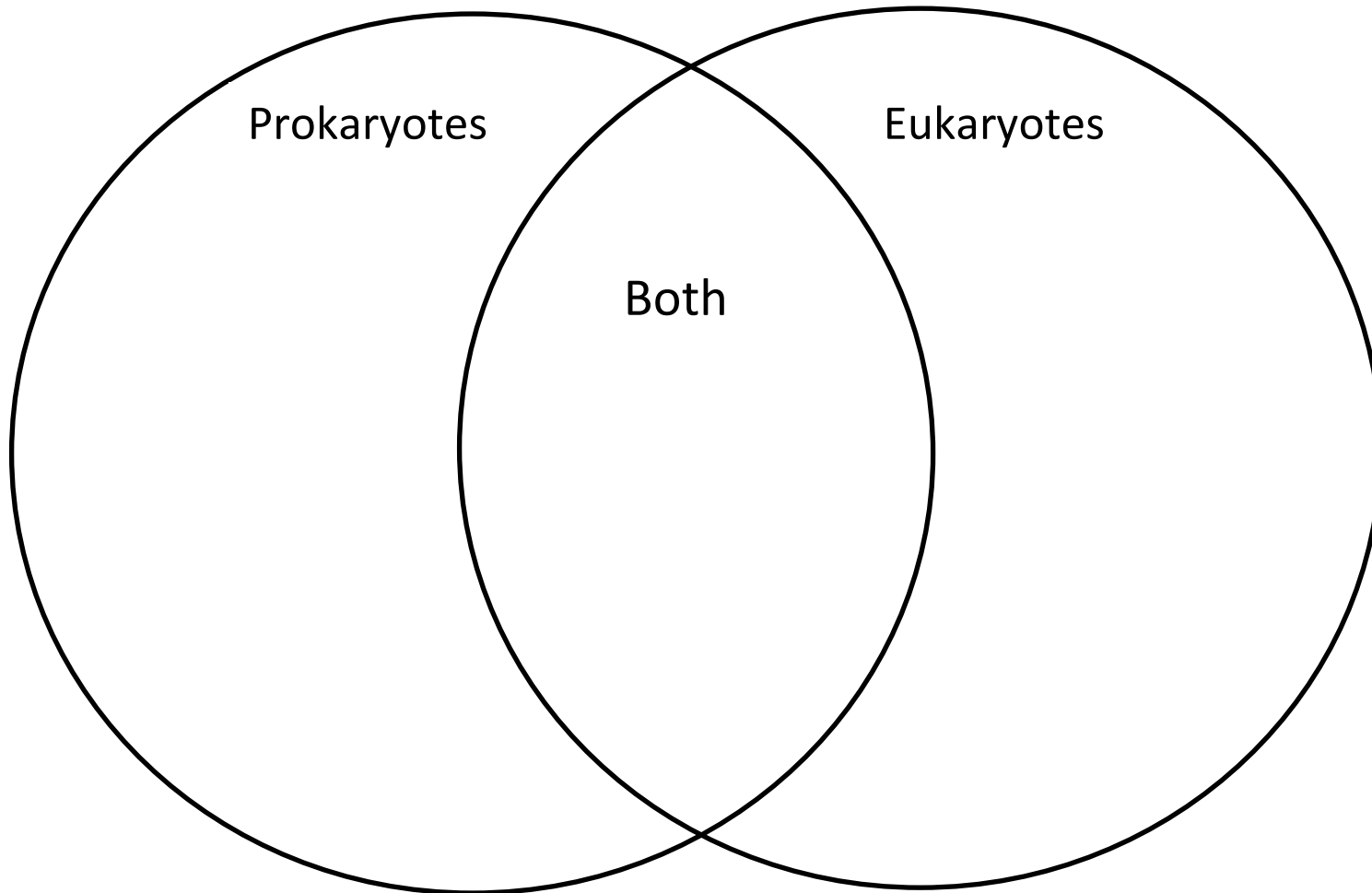
- 9. When inoculating a new growth media from a pure bacterial culture, the biggest concern is _____?
 - a. Not transferring enough bacteria
 - b. Transferring too much bacteria
 - c. Contamination
 - d. All of the above

10. Please select the correct order for the Gram Stain technique.
 - a. Crystal Violet, Alcohol, Iodine, Safranin
 - b. Crystal Violet, Iodine, Alcohol, Safranin
 - c. Safranin, Iodine, Crystal Violet, Alcohol
 - d. Safranin, Iodine, Alcohol, Crystal Violet
 - e. Iodine, Crystal Violet, Safranin, Alcohol
11. After performing a Gram Stain, what color and shape would Gram positive cocci bacteria be?
 - a. Pink circles
 - b. Purple circles
 - c. Pink rods
 - d. Purple rods
12. If you wanted to isolate a single colony of bacteria from a liquid broth culture, what technique would you use?
 - a. Streak plate
 - b. Filtration
 - c. Slant
 - d. Broth
13. What type of growth media will allow all microbes to grow, but will also allow for the ability to see differences between microbes.
 - a. General Growth Media (Nutrient Agar)
 - b. Selective Media
 - c. Differential Media
 - d. Selective and Differential Media

SLO 1: Used on instructor assessment multiple times in the semester

BONUS 5pts

Use the Venn diagram to show the similarities and differences between components found in eukaryotes and prokaryotes



SLO 2: Case Studies in Course Blackboard Shell

The screenshot displays a web browser window with the Blackboard course shell for 'jeffersonstate.blackboard.com/ultra/courses/_17952_1/cl/outline'. The browser's address bar shows the URL and various tabs. The Blackboard interface includes a top navigation bar with 'Build Content', 'Assessments', 'Tools', and 'Partner Content'. A left-hand navigation menu lists various course components like 'Home Page', 'Syllabus Participation Quiz!', 'Announcements!', 'Email/Course Messages', 'Information', 'Content', 'Assessments: Quizzes/Exams', 'Assignments Portal: Case Studies!', 'Discussions', 'Groups', 'Tools', 'Help', 'McGraw Hill Connect Chapters: Extra Credit!', 'Course Management', 'Control Panel', 'Content Collection', 'Course Tools', 'Evaluation', 'Grade Center', and 'Users and Groups'. The main content area lists several assignments:

- Case Study #1!**
Availability: Item is hidden from students. It was last available on Feb 1, 2022 10:00 AM.
Attached Files: Clinical Case Study #1 Micro Post Spring 2021.docx (14.445 KB)
Hello Class:
This is your first Case Study for the semester. Remember to use a number of Sources, that you must cite and to answer in Full Complete Sentence format for full credit. The assignment is due by 10:00 a.m. Friday, January 28th. Thanks.
- Case Study #2!**
Availability: Item is hidden from students. It was last available on Feb 18, 2022 10:00 AM.
Attached Files: Case Study #2 for OL BIO 220 Sum 2021 (2).docx (14.583 KB)
Hello,
Remember to Answer in Completed Sentences; write answer content by adding some of your own words and Use proper, Full Resources/References identification. Happy Searching..
- What is the case Hybrid Case Study num 3 Blackboard post**
Availability: Item is hidden from students.
- Case Study #3!**
Attached Files: What is the case Hybrid Case Study num 3 Blackboard post(3).doc (27.5 KB)
- Lab Reports!**
Availability: Item is hidden from students. It was last available on Apr 8, 2022 11:30 PM.

At the bottom of the page, there are two document thumbnails for 'Lecture_Lab_Sche....docx' and a 'Show all' button. The Windows taskbar at the very bottom shows the search bar, task view, and system tray with the date 9/23/2022 and time 1:03 PM.

SLO 3: All materials available throughout the semester for student use and review

The screenshot displays a web browser window with a Blackboard course page. The browser's address bar shows the URL: jeffersonstate.blackboard.com/ultra/courses/_17842_1/c/outline. The page title is "BIO 220 - General Microbiology (20145) Course Materials".

On the left side, there is a dark navigation sidebar with the following menu items:

- BIO 220 - General Microbiology (20145)
- Home Page
- Course Introduction-START HERE
- Course Materials
- Announcements
- Discussions
- Groups
- Tools
- Help
- My Grades
- Course Management
- Control Panel
 - Content Collection
 - Course Tools
 - Evaluation
 - Grade Center
 - Users and Groups
 - Customization
 - Packages and Utilities
 - Help

The main content area is titled "Course Materials" and features a sub-menu with "Build Content", "Assessments", "Tools", and "Partner Content". Below this, a list of course materials is displayed, each with a folder icon and a dropdown arrow:

- Online Lectures
- Intro Stuff
- Exam #1 Lectures
- Exam #2 Lectures
- Exam #3 Lectures
- Exam #4 Lectures
- Final Exam Lectures
- Lab Assignments

The Windows taskbar at the bottom shows the search bar with the text "Type here to search", several application icons, and the system tray with the date and time: "1:30 PM 9/21/2022".

SLO 4: Virtual Labs and Support Materials

The screenshot shows a web browser window displaying a Blackboard course page. The browser's address bar shows the URL: jeffersonstate.blackboard.com/ultra/courses/_17842_1/c/outline. The page title is "BIO 220 - General Microbiology (20145) Course Materials Exam #3 Lectures". A notification at the top right indicates "Student Preview mode is ON" with "Settings" and "Exit Preview" buttons. A left-hand navigation menu lists various course options: Home Page, Course Introduction-START HERE, Course Materials, Announcements, Discussions, Groups, Tools, Help, and My Grades. The main content area is titled "Exam #3 Lectures" and contains a list of seven items, each with a document icon and a title:

- Bacterial Genetics Comparison Chart**
Attached Files: [Table of replication.transcription.translation \(1\).doc](#) (26.5 KB)
- Bacterial Genetics Part 1**
Attached Files: [Genetics-DNA-Replication-Swindall.pptx](#) (3.201 MB)
- Bacterial Genetics Part 2**
Attached Files: [Bacterial Genetics Part 2-Final.ppt](#) (11.709 MB)
- Bacterial Genetics-Part 3**
Attached Files: [Mutations and gene transfer.pptx](#) (2.424 MB)
- Bacterial Genetics part 4-Operons**
Attached Files: [Bacterial Genetics Part 5-Operons.ppt](#) (4.589 MB)
- Lac Operon Lecture--Youtube**
Watch this lecture up to the 11 15 timepoint.
- Lac Operon Class Discussion-Swindall**
This is a recording of me going over this information in a class meeting. Please review this info to prepare for you Exam 3.

The Windows taskbar at the bottom shows the search bar, taskbar icons for various applications, and the system tray with the date and time: 1:32 PM, 9/21/2022.