Credit Hours: 3
Contact Hours: This is a 3-credit course, offered in accelerated format. This means that 16 weeks of material is covered in 8 weeks. The exact number of hours per week that you can expect to spend on each course will vary based upon the weekly coursework, as well as your study style and preferences. You should plan to spend 14-20 hours per week in each course reading material, interacting on the discussion boards, writing papers, completing projects, and doing research.

COURSE DESCRIPTION AND OUTCOMES

Course Description:
This course continues a study of the structure and function of the human body, started in Anatomy and Physiology I. Topics include endocrine systems, respiration, digestion, metabolism, excretion, fluid-electrolyte balance, and cardiovascular and reproductive functions and special senses. This course fulfills a general education Natural and Physical Science requirement.

Course Overview:
BIO205 is the second of a two-course sequence that covers the endocrine, cardiovascular, circulatory, respiratory, digestive, urinary, and reproductive systems. At the conclusion of this course, the student will demonstrate a basic knowledge of the structure and the function of all body systems, as well as an understanding of the role of homeostasis in maintaining an environment compatible with life.

Course Learning Outcomes:
1. Apply concepts learned in Anatomy and Physiology I, including homeostasis, organization of the body, and the integumentary, skeletal, muscular, nervous, and sensory systems to the concepts introduced in this course.
2. Recognize the interrelationship between the anatomical structures and physiological principles of the cardiovascular, circulatory, respiratory, digestive, endocrine, excretory, and reproductive systems.
3. Formulate a working vocabulary associated with human anatomy and physiology in order to communicate related concepts appropriately.
4. Evaluate issues related to anatomy and physiology from an evidence-based perspective.
5. Demonstrate laboratory procedures used to examine anatomical structures and evaluate physiological functions of each organ system.
6. Correlate knowledge of anatomy and physiology to real-world situations, including healthy lifestyle decisions and homeostatic imbalances.

COLORADO GTPATHWAYS COURSE

Colorado Guaranteed Transfer (GT) Pathways Course: The Colorado Commission on Higher Education has approved BIO205 Human Anatomy and Physiology II with Lab for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT-SC1 category. For transferring students, successful completion with a minimum C−grade guarantees transfer and application of credit in this GT Pathways category. For more information on the
The table in Appendix A details the specific alignment of Course Learning Outcomes and Assessments to gtPathways Content and Criteria requirements.

### Participation & Attendance

Prompt and consistent attendance in your online courses is essential for your success at CSU-Global Campus. Failure to verify your attendance within the first 7 days of this course may result in your withdrawal. If for some reason you would like to drop a course, please contact your advisor.

Online classes have deadlines, assignments, and participation requirements just like on-campus classes. Budget your time carefully and keep an open line of communication with your instructor. If you are having technical problems, problems with your assignments, or other problems that are impeding your progress, let your instructor know as soon as possible.

### Course Materials

Textbook Information is located in the CSU-Global Booklist on the Student Portal.

### Course Schedule

Due Dates
The Academic Week at CSU-Global begins on Monday and ends the following Sunday.

- **Discussion Boards:** The original post must be completed by Thursday at 11:59 p.m. MT and Peer Responses posted by Sunday 11:59 p.m. MT. Late posts may not be awarded points.
- **Opening Exercises:** Take the opening exercise before reading each week’s content to see which areas you will need to focus on. You may take these exercises as many times as you need. The opening exercises will not affect your final grade.
- **Mastery Exercises:** Students may access and retake mastery exercises through the last day of class until they achieve the scores they desire.
- **Critical Thinking:** Assignments are due Sunday at 11:59 p.m. MT.
- **Lab Exercises:** Assignments are due Sunday at 11:59 p.m. MT.

### Weekly Reading and Assignment Details

**Module 1**

**Readings**
- Review Chapters 1 – 24 in Anatomy & Physiology

**Opening Exercise (0 points)**

**Discussion (25 points)**

**Mastery Exercise (10 points)**

**Critical Thinking (20 points)**
Choose one of the following two assignments to complete this week. Do not do both assignments. Identify your assignment choice in the title of your submission.
**Option #1: Lab Safety Paper**
Lab safety is a critical element when you are performing labs at home. Watch one of the following videos about lab safety:

The Hands-On Labs safety video: https://www.youtube.com/watch?v=V56DLUDImDk
The Crash Course safety video: https://www.youtube.com/watch?v=VRWRmIEHr3A

While these videos cover lab safety for the general laboratory, much of the material also applies to labs performed at home. In your paper, discuss the following:

- Highlight five important lab safety tips that apply to home experiments and explain why they are important.
- Based on the information in the video you watch, discuss where you plan to perform your labs at home and why you think it is the best place. A picture would be nice here!
- Describe what you will wear to perform your labs. A picture would be nice here as well!
- Discuss any safety issues that may arise in your home, such as kids or pets interfering with labs, as well as any measures you will take to prevent issues from arising.

**Essay Requirements:**

- Your essay should be 1-2 pages long.
- Include a title page.
- Follow the CSU-Global Guide to Writing and APA.

**Option #2: Lab Safety Video Critique**
Lab safety is a critical element when you are performing labs at home. Watch the following video depicting a comical take on improper lab behaviors: https://www.youtube.com/watch?v=V-fNpaOX0-g

- While this covers lab safety for the general laboratory, much of the material also applies to labs performed at home. Write a paper critiquing five safety measures covered in the video by answering the following questions for each one:
- What is the safety tip and how is it portrayed in the video?
- How does it apply to labs at home?
- Then address the following points in your paper:
- Based on the information in the video, discuss where you plan to perform your labs at home and explain why you think it is the best place. A picture would be nice here!
- What will you wear when you perform your labs? A picture would be nice here as well!
- Discuss any safety issues that may arise in your home, such as kids or pets interfering with labs, as well as any measures you will take to prevent these issues from arising.

**Essay Requirements:**

- Your essay should be 1-2 pages long.
- Include a title page.
- Follow the CSU-Global Guide to Writing and APA.

**Lab Exercise (40 points)**
**Homeostasis Lab**
The first lab will cover a topic integral to all of anatomy and physiology—homeostasis. This was covered in the first half of the class, and will be critical for this second half as well, so a solid understanding of homeostasis is important.

**Equipment**
Before beginning the experiment, gather the following items:

- Hand-held mirror or phone with a camera so you can see your face
- Timer or stopwatch
- Pen
- Paper to record data, preferably with a table ready for data entry

**Procedure**
This lab explores how the body reacts to exercise and then returns to a normal state afterwards. Four pieces of data will be gathered: breathing rate, heart rate, perspiration, and how flushed you become while exercising. These will be recorded at four different levels of exercise and at a cool down phase, where you will gather data three more times. Choose your own exercises if you wish, but make sure the level of intensity increases. Here is a suggested way to increment intensity: completely sedentary, walking slowly, walking fast, and jogging.

Before you begin, make a hypothesis regarding the data you will collect. What do you think will happen as you begin exercising and then during your cool down? How will your breathing rate, heart rate, perspiration, and level of redness change?

Each exercise will be performed for three minutes, followed by gathering data while still performing the exercise. Prepare a data table ahead of time to record your results. Make sure the stopwatch and mirror are close. Then begin:

1. Perform your first activity—sitting—for three minutes.
2. Start the timer and count the number of breaths you take in 20 seconds. Record your data.
3. Find your pulse below your wrist (not using your thumb) and re-start the timer (holding the timer with your other hand).
5. View yourself in the mirror and record your level of perspiration and how flushed you are. A descriptive scale is fine; just make sure the differences mean something to you.
6. Repeat steps 1-5 for the next three levels of exercise.
7. Have a seat and repeat steps 1-5 three more times, for a total of seven rounds of data collection.

**Create a Report or Presentation**
Use the following outline to describe the data from your lab in a report or presentation. Label each portion of the lab as described below.

**Introduction:** Start with a broad discussion of homeostasis; then narrow your focus to the question(s) that you are trying to answer. What exactly are you trying to answer here? Include any observations or background information about homeostasis that may pertain to the lab. Conclude the introduction with a hypothesis—a statement that reflects what you believe the outcome of this lab will be.

**Material List:** Identify all items that you used and the exact quantities, as applicable. This may be a very short section.
**Methods**: Describe how you conducted the experiment, including any safety precautions you took while performing the lab. Be sure to include any changes that you made to the original instructions. Did you use different exercises? This should be a short, paraphrased version of the methods from the lab. Do not copy from the lab; Turnitin will highlight it as plagiarism.

**Results/Data**: Create a table or figure that reflects/compares the results of your experiment.

**Discussion**: Review your results and determine if your experiment supports or refutes your hypothesis. Explain why. Then expand your discussion; address why and how your body creates the changes you observed as you increased your level of activity and describe how it returned to a normal state. Be specific and give details.

**Conclusion**: End with a section describing a topic from the lab that you found particularly intriguing; identify errors that may have impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

**Requirements**:

- If you are doing the report, it should be 4-5 pages long, not including the title page. If you are doing the presentation, it should include at least 10 slides.
- Reference at least two journal articles.
- Include a title page, or title slide for the presentation, and references at the end.
- Follow the CSU-Global Guide to Writing and APA.

**Module 2**

**Readings**

- Chapters 25 & 26 in *Anatomy & Physiology*

**Opening Exercise (0 points)**

**Discussion (25 points)**

**Mastery Exercise (10 points)**

**Critical Thinking (35 points)**

Choose one of the following two assignments to complete this week. Do not do both assignments. Identify your assignment choice in the title of your submission.

**Option #1: The Role of the Pancreas in the Homeostasis of Blood Glucose**

The pancreas is a single gland that functions as both an exocrine and an endocrine gland. The purpose of this paper is to detail the role of the pancreas in controlling the homeostasis of glucose in the blood. In your essay, provide a brief overview of the anatomy of the pancreas. Then discuss how the pancreas controls glucose levels in the blood, including a description of the three hormones involved in this process and their effects.
Summarize your information by discussing how obesity and diets high in sugar are contributing to the rise in type 2 diabetes mellitus in this country, and describe which health behaviors are necessary to reverse this trend.

Essay Requirements:

- Your cohesive and well-organized essay should be at least 1-2 pages in length, double spaced.
- Include at least one scholarly reference in addition to the course textbook. The CSU-Global Library is a good place to find these references.
- Include a title page and a references page.
- Follow the CSU-Global Guide to Writing and APA.

Option #2: The Role of the Pituitary Gland in the Regulation of Other Hormones

The pituitary gland consists of two separate glands: the anterior pituitary and the posterior pituitary. The purpose of this paper is to detail the role of the pituitary gland in the regulation of other hormones in the body. In your essay, provide a brief overview of the anatomy of the pituitary gland. Describe the hormones that are released from each gland; explain what triggers the release of hormones; identify characteristics that they have in common; and classify which hormones are considered tropic hormones. Summarize your information by explaining why the pituitary gland is commonly referred to as the “master gland,” and in what sense this may be misleading and incorrect.

Essay Requirements:

- Your cohesive and well-organized essay should be at least 1-2 pages in length, double spaced.
- Include at least one scholarly reference in addition to the course textbook. The CSU-Global Library is a good place to find these references.
- Include a title page and a references page.
- Follow the CSU-Global Guide to Writing and APA.

Lab Exercise (30 points)
Tissues and Hormones of the Endocrine System

This is a Hands-On Labs exercise that explores what the tissues of the endocrine system look like at low-, medium-, and high-power magnification. The tissues include the pituitary gland, the thyroid gland, the adrenal gland, the pancreas, the ovary, and the testis. Images with different tissues and structures are provided for you to label. You will also assess the differences between tropic and non-tropic hormones, and then write a lab report or create a presentation.

Procedure

Complete both exercises in the Hands-On Labs experiment about the endocrine system by labeling images and filling in tables. You do not need to submit the Lab Report Assistant. Instead, write up a lab report or create a presentation.

Create a Report or Presentation

Use the following outline to describe the data from your lab in a report or presentation. Label each portion of the lab as described below.
**Introduction:** Start with a broad discussion of the topic. Why is this topic of interest? What will you learn? Discuss specific items that this lab explores. What are you comparing and what are some differences you expect to see?

**Material List:** Identify all items that you used and the exact quantities, as applicable.

**Methods:** Describe how you conducted the experiment, including any safety precautions you took while performing the lab. Be sure to include any changes that you made to the original instructions. This should be a short, paraphrased version of the methods from the lab. Do not copy from the lab; Turnitin will highlight it as plagiarism.

**Results/Data:** Insert all images and tables from the lab here, including a brief statement about each one.

**Discussion:** Review what you observed, including a brief discussion about every tissue examined. What differences did you notice as you explored the magnified tissues? What types of hormones do the tissues secrete and where do they act? What do they do? What other differences or interesting characteristics did you notice while performing this lab?

**Conclusion:** End with a section describing what was particularly interesting to you in this lab; identify errors that may have impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

**Requirements:**

- If you are doing the report, it should be 4-5 pages long, not including the title page. If you are doing the presentation, it should include about 10 slides.
- Reference at least two journal articles.
- Include a title page, or title slide for the presentation, and references at the end.
- Follow the CSU-Global Guide to Writing and APA.

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**Module 3**

**Readings**

- Chapters 28 & 29 in *Anatomy & Physiology*

**Opening Exercise (0 points)**

**Discussion (25 points)**

**Mastery Exercise (10 points)**

**Critical Thinking (35 points)**

Choose one of the following two assignments to complete this week. Do not do both assignments. Identify your assignment choice in the title of your submission.

**Option #1: Differences in Hearts**

Each person has a unique set of circumstances that lead to a unique heart, but there are some trends where we see consistent similarities. For example, how does a runner’s heart perform differently from that of the average non-runner? How do infant hearts work differently from adult hearts? Is there a difference in male and female hearts? Pick any two groups of people that interest you (they do not have to be one of the groups just mentioned) to compare for this assignment.

Address the following points in your paper:
• Describe the function of the heart.
• Trace the flow of blood through the heart to the rest of the body.
• Describe what a healthy heart sounds like; what a healthy heart rate is; and what a healthy blood pressure is.
• Compare and contrast heart sounds, heart rate, and blood pressure in the two groups of focus for your paper.
• Are the sounds, heart rate, and blood pressure in these groups of people healthy, or is there a problem? Explain.
• What was most interesting about comparing these two groups?

Essay Requirements:

• Your cohesive and well-organized essay should be at least 1-2 pages in length, double spaced.
• Include at least one scholarly reference in addition to the course textbook. The CSU-Global Library is a good place to find these references.
• Include a title page and a references page.
• Follow the CSU-Global Guide to Writing and APA.

Option #2: The Impact of Different Lifestyles on the Heart

Lifestyles and addictions affect the heart, such as smoking, alcoholism, drugs, sedentary behaviors, and vegetarianism. In this essay, explore the impact of a lifestyle on the heart. It can be something perceived as negative or positive, and it does not have to be one mentioned above.

Address the following points in your paper:

• Describe the function of the heart.
• Trace the flow of blood through the heart to the rest of the body.
• Describe what a healthy heart sounds like; what a healthy heart rate is; and what a healthy blood pressure is.
• Describe the lifestyle or addiction chosen and how it affects the heart. Does blood pressure or heart rate change? Why?
• What lasting problems or benefits could occur?
• Are other organs affected as well?

• Essay Requirements:

• Your cohesive and well-organized essay should be at least 1-2 pages in length, double spaced.
• Include at least one scholarly reference in addition to the course textbook. The CSU-Global Library is a good place to find these references.
• Include a title page and a references page.
• Follow the CSU-Global Guide to Writing and APA.

Lab Exercise (50 points)
An Examination of the Heart: From the Micro to the Macro Level
This is a Hands-On Labs exercise that explores the heart. Here you will view the cells in the heart, veins, and arteries at low, medium, and high magnification. You will trace the flow of blood through the heart. You will also complete a full dissection of a sheep heart.

Procedure
Complete all three exercises in the Hands-On Labs experiment about the cardiovascular system by labeling images and filling in tables. You do not need to submit the Lab Report Assistant.

Create a Report or Presentation
Use the following outline to describe the data from your lab in a report or presentation. Label each portion of the lab as described below.

Introduction: Start with a broad discussion of the heart. Why is this topic of interest to you? What will you learn? Conclude the introduction with a statement about specific items the lab is exploring. What are you comparing and what are some differences you expect to see?

Material List: Identify all items that you used and the exact quantities, as applicable.

Methods: Describe how you conducted the experiment, including any safety precautions you took while performing the lab. Be sure to include any changes that you made to the original instructions. This should be a short, paraphrased version of the methods from the lab. Do not copy from the lab; Turnitin will highlight it as plagiarism.

Results/Data: Insert all images and tables from the lab here, including a brief statement about each one.

Discussion: Review what you observed. What differences did you notice as you explored the magnified tissues? How are veins and arteries different? What are some things you noticed about the sheep heart? Are there differences between the right and left sides? Why might this be? What other differences or interesting characteristics did you notice while performing this lab?

Conclusion: End with a section describing what was particularly interesting to you; identify errors that may have impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

Requirements:

- If you are doing the report, it should be 4-5 pages long, not including the title page. If you are doing the presentation, it should include at least 10 slides.
- Reference at least two journal articles.
- Include a title page, or title slide for the presentation, and references at the end.
- Follow the CSU-Global Guide to Writing and APA.

Module 4
Readings
- Chapters 27, 30, 31, 32, 33, & 34 in Anatomy & Physiology

Opening Exercise (0 points)

Discussion (25 points)

Mastery Exercise (10 points)

Lab Exercise (30 points)
Antigens and Blood Typing

In this lab, you will complete a simulation about a car crash and the importance of proper blood typing for blood transfusions. Follow these instructions to complete your online lab for this module:

1. Click on the following link, or copy and paste the link into your browser:
   http://www.nobelprize.org/educational/medicine/bloodtypinggame/gamev2/index.html
2. Then click “proceed” at the bottom right of the screen.
3. On the screen that says “Select Game Type,” click “Quick Game – Random Patients” on the left.
4. The next screen should say “Car Crash Victims.” Click “Main Menu” on the top right.
5. On the Main Menu screen, read three brief tutorials on the left and answer the questions below. (Note: After reading the tutorial, click “BACK,” which is in small print on the right side of the burgundy blood typing logo at the top of the page.)

Lab Exercise Readiness Questions

- In what year did Karl Landsteiner discover ABO human blood groups?
- Later, in 1940, Landsteiner discovered another blood group. What is the name of that blood group system?
- According to Tutorial 1, how many blood types are there? To determine blood type, you need to know which antigens are present. Which antibodies are contained in the three types of reagents?
- After mixing the reagent with the blood samples, what does agglutination of the sample indicate? Describe what happens when blood agglutinates.
- If a person has lost blood due to an injury or surgery, or has anemia, what is the most commonly transfused part of the blood?
- Explain what happens if a person receives the wrong blood in a transfusion?
- What does the term “compatible blood” mean in relationship to blood transfusions?
- What happens in emergencies when there is no time for blood typing?

When you write your report or presentation after completing the lab, integrate the answers to these questions in your introduction and discussion where they would be appropriate.

Then proceed with the rest of the lab:

6. Now that you are familiar with how the game is played, click “Start Playing” on the right.
7. The first screen will ask you to select a patient. Since you will test all three patients, select any one of the patients.
8. Follow the instructions in the call-outs to draw blood, and drop blood into all three of the test tubes. You will then choose the patient’s blood type and Rh factor:

   If you are incorrect, you will get a message that says, “You’re bloody wrong. Try again.” Try again by clicking on the drop of blood with an X in the center on the right. You can continue to try until you receive the message that says, “You’re bloody right.”

   After you identify the blood type correctly, click on the drop of blood with the X in the center. This will take you to “Blood Transfusion,” where you will select the compatible blood for the patient’s transfusion. Note that on the bottom left, it states the number of blood bags required.
An arrow on the right side of the blood bags will allow you to access additional compatible samples.

9. Continue to play this game until you are able to save the lives of your three patients. Click “Back,” which is at the very top right hand corner of the page. This will take you to a screen that returns you to the game types.

10. Select the middle game, called Mission Based Game. Register for the game using your CSU-Global email address. Play each of the six missions at least one time. When completed, list the following information:

- Number of blood-typed patients
- Number of administered blood bags
- Number of treated patients

11. After completing this lab, draft your Formal Lab Report. The required outline and structure for this report are below.

Create a Report or Presentation
Use the following outline to describe the data from your lab in a report or presentation. Label each portion of the lab as described below.

**Introduction:** Start with a broad discussion about blood and its importance, and narrow your focus to the topic of the lab. Be sure to describe the ABO blood types and the Rh factor. Discussion of some of the readiness questions would also be appropriate here. Conclude the introduction with a statement that reflects what you expect to observe during this lab.

**Material List:** Identify all items that you used and the exact quantities, as applicable. This may be a very short section.

**Methods:** Describe how you conducted the experiment, including any safety precautions you took while performing the lab. Be sure to include any changes that you made to the original instructions. This should be a short, paraphrased version of the methods from the lab. Do not copy from the lab; Turnitin will highlight it as plagiarism.

**Results/Data:** Create a table or figure that reflects/compares the results of your experiment.

**Discussion:** Review your results and discuss whether they were expected. Explain why. Bring in relevant details to expand on the topic. Discuss why proper blood types are important for persons involved in an accident. Do you know your blood type or the blood type of your family members? Discussion of some of the readiness questions would also be appropriate here.

**Conclusion:** End with a section describing something that intrigued you about the lab; identify errors that may have impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

**Requirements:**
• If you are doing the report, it should be 3-4 pages long, not including the title page. If you are doing the presentation, it should include at least 7-8 slides.
• Reference at least two journal articles.
• Include a title page, or a title slide for the presentation, and references at the end.
• Follow the CSU-Global Guide to Writing and APA.

Midterm Exam (100 points)

Module 5

Readings
• Chapters 35, 36, & 37 in Anatomy & Physiology

Opening Exercise (0 points)

Discussion (25 points)

Mastery Exercise (10 points)

Critical Thinking (55 points)
Choose one of the following two assignments to complete this week. Do not do both assignments. Identify your assignment choice in the title of your submission.

Option #1: Gas Laws and Respiration

Respiration involves the exchange of gas across a semipermeable membrane, from a liquid medium into air that is housed in a chamber—the lungs. There are five laws related to gas that are particularly important for respiration: Boyle’s Law, Charles’s Law, Dalton’s Law, Henry’s Law, and Fick’s Law. Write a paper that addresses all of the following points for each law:

• Explain the law.
• Describe why it is important for respiration.
• Provide an example of the application of this law.
• Include a discussion of how these laws interact to create a working respiratory system.

Essay Requirements:

• Your cohesive and well-organized essay should be at least 3-4 pages in length, double spaced.
• Include at least two scholarly references in addition to the course textbook. The CSU-Global Library is a good place to find these references.
• Include a title page and a references page.
• Follow the CSU-Global Guide to Writing and APA.

Option #2: The Relationship between the Respiratory System and the Circulatory System

The circulatory system is intimately linked to the respiratory system by the exchange of gas between them. Write a paper discussing this link. Be sure to address the following points:

• Explain the exchange of oxygen and carbon dioxide between the lungs and blood.
• What role does Fick’s Law play in gas exchange?
• Describe the impact of temperature, pH, BPG, and PCO2 on oxygen loading.
• It has been suggested that loading the body with extra oxygen just before, or during, exercise can enhance performance. Explain how this concept works. Do you think it is
possible to enhance performance by oxygen loading just before exercise? Why or why not? Would it be safe?

Essay Requirements:

- Your cohesive and well-organized essay should be at least 3-4 pages in length, double spaced.
- Include at least two scholarly references in addition to the course textbook. The CSU-Global Library is a good place to find these references.
- Include a title page and a references page.
- Follow the CSU-Global Guide to Writing and APA.

Lab Exercise (40 points)
Respiration at Rest versus Exercising

This is a Hands-On Labs experiment that explores the differences in respiration at rest and during exercise. Before you start, watch the following videos to become more familiar with the lungs. The first video is narrated using basic terminology, so it is easier for the viewer to understand. The second video is more extensive, showing more structures of the lungs, including the diaphragm. This video also shows the placement of the liver and reviews the structures of the heart.

Video 1: What’s inside the lungs? Lung Dissection At-Bristol Science Centre (4:30)

Video 2: Heart & Lung Dissection (11:52)

Procedure
Follow the procedures detailed in the Respiratory Physiology experiment from Hands-On labs. During the lab, you will breathe into a balloon while you are resting to record how much air is in a single exhalation at rest. You will then exercise for a bit and assess how much air you exhale when you are active. Be sure to follow the instructions in the lab to complete the experiment. Record your data and calculate your tidal volume, minute ventilation, forced vital capacity, and total lung volume. When you are done, write a report or create a presentation. You do not need to submit the Lab Report Assistant for grading.

Create a Report or Presentation
Use the following outline to describe the data from your lab in a report or presentation. Label each portion of the lab as described below.

Introduction: Start with a broad discussion of the lungs, and then narrow your focus to the question(s) that you are trying to answer. Include any observations or background information about the lungs that may pertain to the lab. Conclude the introduction with a hypothesis—a statement that reflects what you believe the outcome of this lab will be. What are you comparing and what do you expect will happen?

Material List: Identify all items that you used and the exact quantities, as applicable. This may be a very short section.

Methods: Describe how you conducted the experiment, including any safety precautions you took while performing the lab. Be sure to include any changes that you made to the original instructions. Did you use different exercises? This should be a short, paraphrased version of the methods from the lab. Do not copy from the lab; Turnitin will highlight it as plagiarism.
**Results/Data:** Create a table or a figure that reflects/compares the results of your experiment.

**Discussion:** Review your results and determine if your experiment supports or refutes your hypothesis. Explain why. Then expand your discussion to address why and how your body creates the changes you observed as you increased your level of activity. Be specific and give details. What impact would changes to your lifestyle, such as increasing or decreasing your regular level of activity, have on the values you calculated?

**Conclusion:** End with a section describing something that intrigued you about the lab; identify errors that may have impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

**Requirements:**
- If you are doing the report, it should be 4-5 pages long, not including the title page. If you are doing the presentation, it should include at least 10 slides.
- Reference at least two journal articles.
- Include a title page, or title slide for the presentation, and references at the end.
- Follow the CSU-Global Guide to Writing and APA.

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**Module 6**

**Readings**
- Chapters 38, 39, 40, & 41 in *Anatomy & Physiology*

**Opening Exercise (0 points)**

**Discussion (25 points)**

**Mastery Exercise (10 points)**

**Critical Thinking (45 points)**
Choose one of the following two assignments to complete this week. Do not do both assignments. Identify your assignment choice in the title of your submission.

**Option #1: Tracking a Bolus of Food**

The digestive system is designed to process food into molecules that can be absorbed and utilized by the cells of the body. The purpose of this paper is to demonstrate an understanding of the body’s ability to utilize nutrients through the processes of digestion and absorption. To do so, write a paper that follows a bite of food from the mouth through the digestive tract. Address the following points in your paper:
- Identify the names and functions of the different regions of the digestive tract, and the accessory organs of digestion.
- Differentiate between mechanical digestion and chemical digestion, including a discussion of the roles of enzymes and hormones in the digestive process.
- Describe the roles of the sympathetic and parasympathetic nervous systems in digestion.
- Summarize your information by comparing and contrasting the digestion and absorption of carbohydrates, fats, and proteins.

**Essay Requirements:**
- Your cohesive and well-organized essay should be at least 3-4 pages in length, double spaced.
Option #2: The Impact of Removing a Portion of the Digestive Tract

A treatment that was once popular for morbid obesity was intestinal bypass surgery, a procedure that removes fairly long portions of the jejunum and ileum. Write a paper about intestinal bypass surgery addressing the following points:

- What is morbid obesity and why did this procedure help individuals lose weight?
- Is movement in the section of the digestive tract that was removed controlled by the sympathetic or parasympathetic nervous system?
- Does digestion and absorption of carbohydrates, fats, and proteins still work the same way after intestinal bypass surgery?
- Are all enzymes and hormones involved in the digestive process still necessary without these portions of the digestive tract? Explain.
- What are some of the risks associated with intestinal bypass surgery?
- What procedures are now utilized for treating morbid obesity, and how does their effect on the body differ from intestinal bypass surgery?

Essay Requirements:

- Your cohesive and well-organized essay should be at least 3-4 pages in length, double spaced.
- Include at least two scholarly references in addition to the course textbook. The CSU-Global Library is a good place to find these references.
- Include a title page and a references page.
- Follow the CSU-Global Guide to Writing and APA.

Lab Exercise (40 points)

Daily Calorie Intake and Expenditure

This is a Hands-On Labs experiment that explores nutrition, consumption, and expenditure of calories that you consume every day.

Procedure

Follow the instructions for Exercises 1 and 2 in the Nutrition and Metabolism experiment. You will be calculating your daily calorie requirements, and then tracking the food you consume for a single day to assess how many calories you eat. Use the data recorded and your calculations to write a report or prepare a presentation. You do not need to submit the Lab Report Assistant.

Create a Report or Presentation

Use the following outline to describe the data from your lab in a report or presentation. Label each portion of the lab as described below.

Introduction: Start with a broad discussion of nutrition and calories, and then narrow your focus to the question(s) that you are trying to answer. What questions could you answer after performing this lab? Conclude the introduction with a hypothesis—a statement that reflects what you believe the outcome of this lab will be.
**Material List:** Identify all items that you used and the exact quantities, as applicable. This may be a very short section.

**Methods:** Describe how you conducted the experiment, including any safety precautions you took while performing the lab. Be sure to include any changes that you made to the original instructions. This should be a short, paraphrased version of the methods from the lab. Do not copy from the lab; Turnitin will highlight it as plagiarism.

**Results/Data:** Create a table or a figure that reflects/compares the results of your experiment.

**Discussion:** Review your results and determine if your experiment supports or refutes your hypothesis. Explain why. Then expand your discussion to address other topics related to activity levels. Does age affect any of the values calculated? What impact do vitamins and minerals have on metabolism? How are they depleted, and how do we replace them? Will you try to make any changes to the food you eat, or to your regular level of activity, after this lab?

**Conclusion:** End with a section describing something that intrigued you about the lab; identify errors that may have impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

**Requirements:**
- If you are doing the report, it should be 4-5 pages long, not including the title page. If you are doing the presentation, it should include at least 10 slides.
- Reference at least two journal articles.
- Include a title page, or title slide for the presentation, and references at the end.
- Follow the CSU-Global Guide to Writing and APA.

**Module 7**

**Readings**
- Chapters 42, 43, & 44 in *Anatomy & Physiology*

**Opening Exercise (0 points)**

**Discussion (25 points)**

**Mastery Exercise (10 points)**

**Lab Exercise (40 points)**

**Urinalysis**

This is a Hands-On Labs exercise that explores the characteristics of urine and what can cause those characteristics to change. You will be doing a visual inspection of urine and testing it with urinalysis test strips to assess the concentration of various compounds that may be present.

**Procedure**

Follow the directions for the Urinalysis experiment. Perform both parts: fasting and drinking distilled water. Record the data from the visual inspection and from the test strips in tables. Use that data to write a report, following the directions below for submission. You do not need to submit the Lab Report Assistant.

**Create a Report or Presentation**
Use the following outline to describe the data from your lab in a report or presentation. Label each portion of the lab as described below.

**Introduction:** Start with a broad discussion of urine formation, and then narrow your focus to the question(s) that you are trying to answer. Conclude the introduction with a hypothesis—a statement that reflects what you believe the outcome of this lab will be. It’s a good idea to include a discussion of how you think each characteristic of urine tested will change between the fasting and distilled water consumption parts.

**Material List:** Identify all items that you used and the exact quantities, as applicable. This may be a very short section.

**Methods:** Describe how you conducted the experiment, including any safety precautions you took while performing the lab. Be sure to include any changes that you made to the original instructions. Did you use different exercises? This should be a short, paraphrased version of the methods from the lab. Do not copy from the lab; Turnitin will highlight it as plagiarism.

**Results/Data:** Create a table or a figure that reflects/comparies the results of your experiment.

**Discussion:** Review your results and determine if your experiment supports or refutes your hypothesis. Explain why. Then expand your discussion to address why and how your body creates the changes you observed as you increased the level of hydration. What effect does fasting have on the results? Be specific and give details.

**Conclusion:** End with a section describing something that really intrigued you; identify errors that may have impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

**Requirements:**

- If you are doing the report, it should be 4-5 pages long, not including the title page. If you are doing the presentation, it should include at least 10 slides.
- Reference at least two journal articles.
- Include a title page, or title slide for the presentation, and references at the end.
- Follow the CSU-Global Guide to Writing and APA.

**Module 8**

**Readings**
- Chapters 45, 46, 47, & 48 in *Anatomy & Physiology*

**Opening Exercise (0 points)**

**Discussion (25 points)**

**Mastery Exercise (10 points)**

**Lab Exercise (30 points)**

**DNA Extraction**

Your DNA contains all the genes that regulate the appearance and functions of your body. They control everything from the color of your hair to metabolism. Not all genes work independently. Some interact with other genes, and some genes also influence more than one trait. The body has an amazingly
complex orchestration of systems that work together for its proper functioning. DNA provides the
instructions that allow these systems to all work together.

What does DNA look like though? A small chain of macromolecules wrapped in a helix may be what is
depicted in a textbook, but have you ever seen it yourself?

In this week’s lab, DNA will be extracted from strawberries and from one other item of your choice,
following the procedures indicated. Before completing the lab, write a hypothesis about what you think
you will see. Which item, the strawberries or the other item of your choice, do you think will provide the
most DNA? Why?

Create a Report or Presentation
Use the following outline to describe the data from your lab in a report or presentation. Label each
portion of the lab as described below.

Introduction: Start with a broad discussion of DNA, such as the importance of DNA, what it does, and
how it is inherited, and then narrow your focus to the question(s) that you are trying to answer. What
questions could you answer with the data you are collecting? Conclude the introduction with your
hypothesis about what you will see and how it will differ between the items you are testing.

Material List: Identify all items that you used and the exact quantities, as applicable. Was the amount of
strawberries different from that of your other item? This may be a very short section.

Methods: Describe how you conducted the experiment, including any safety precautions you took while
performing the lab. Be sure to include any changes that you made to the original instructions.
Paraphrase the instructions given in the presentation in your own words, or Turnitin will highlight it as
plagiarism.

Results/Data: Create a table or a figure that reflects/comparisons the results of your experiment.

Discussion: Review your results and determine if your experiment supports or refutes your hypothesis.
Explain why. Bring in relevant details to expand on the focus of the lab. A discussion of the importance
of properly functioning DNA would be appropriate here, with examples of genetic diseases that can
occur through mutations and their impacts on individuals. Issues in fetal development caused by genetic
changes would also be appropriate to discuss.

Conclusion: End with a section describing something that intrigued you; identify errors that may have
impacted your results, or note errors in the lab itself; and provide recommendations for future labs.

Requirements:
• If you are doing the report, it should be 2-3 pages long, not including the title page. If you
are doing the presentation, it should include at least 5-7 slides.
• Reference at least two journal articles.
• Include a title page, or title slide for the presentation, and references at the end.
• Follow the CSU-Global Guide to Writing and APA.

Final Exam (150 points)
COURSE POLICIES

Course Grading

20% Discussion Participation
0% Opening Exercises
6% Mastery Exercises
19% Critical Thinking Assignments
30% Lab Exercises
25% Exams

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<tr>
<td>A</td>
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<tr>
<td>A-</td>
<td>90.0 – 94.9</td>
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<tr>
<td>B+</td>
<td>86.7 – 89.9</td>
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<tr>
<td>B</td>
<td>83.3 – 86.6</td>
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<tr>
<td>B-</td>
<td>80.0 – 83.2</td>
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<tr>
<td>C+</td>
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<td>70.0 – 74.9</td>
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<td>D</td>
<td>60.0 – 69.9</td>
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<td>F</td>
<td>59.9 or below</td>
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IN-CLASSROOM POLICIES

For information on late work and incomplete grade policies, please refer to our In-Classroom Student Policies and Guidelines or the Academic Catalog for comprehensive documentation of CSU-Global institutional policies.

Academic Integrity
Students must assume responsibility for maintaining honesty in all work submitted for credit and in any other work designated by the instructor of the course. Academic dishonesty includes cheating, fabrication, facilitating academic dishonesty, plagiarism, reusing/re-purposing your own work (see CSU-Global Guide to Writing and APA Requirements for percentage of repurposed work that can be used in an assignment), unauthorized possession of academic materials, and unauthorized collaboration. The CSU-Global Library provides information on how students can avoid plagiarism by understanding what it is and how to use the Library and Internet resources.

Citing Sources with APA Style
All students are expected to follow the CSU-Global Guide to Writing and APA Requirements when citing in APA (based on the APA Style Manual, 6th edition) for all assignments. For details on CSU-Global APA style, please review the APA resources within the CSU-Global Library under the “APA Guide & Resources” link. A link to this document should also be provided within most assignment descriptions in your course.

Disability Services Statement
CSU–Global is committed to providing reasonable accommodations for all persons with disabilities. Any student with a documented disability requesting academic accommodations should contact the Disability Resource Coordinator at 720-279-0650 and/or email ada@CSUGlobal.edu for additional information to coordinate reasonable accommodations for students with documented disabilities.

Netiquette
Respect the diversity of opinions among the instructor and classmates and engage with them in a courteous, respectful, and professional manner. All posts and classroom communication must be conducted in accordance with the student code of conduct. Think before you push the Send button. Did you say just what you meant? How will the person on the other end read the words?

Maintain an environment free of harassment, stalking, threats, abuse, insults or humiliation toward the instructor and classmates. This includes, but is not limited to, demeaning written or oral comments of an ethnic, religious, age, disability, sexist (or sexual orientation), or racist nature; and the unwanted sexual advances or intimidations by email, or on discussion boards and other postings within or connected to the online classroom. If you have concerns about something that has been said, please let your instructor know.