BIO205 Human Physiology and Anatomy II with Lab

Credit Hours: 4

Contact Hours: This is a 4-credit course, offered in accelerated format. It includes a lab component. 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 10-25 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, cardiovascular and reproductive functions and special senses.

Course Overview:

BIO205 is the second of a two course sequence which 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 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.

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.
- Live Classroom: Although participation is not required, Live Classroom sessions are held during 4. There is one session.
- Lab Exercises: Assignments are due Sunday at 11:59 p.m. MT.

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<tr>
<th>Week #</th>
<th>Readings</th>
<th>Assignments</th>
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<tr>
<td>1</td>
<td>Review Chapters 1 – 24 in Anatomy &amp; Physiology</td>
<td>Discussion (25 points)</td>
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<td>Opening Exercise (0 points)</td>
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<td>Mastery Exercise (10 points)</td>
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<td>Critical Thinking (80 points)</td>
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<td>3</td>
<td>Chapters 28 &amp; 29 in Anatomy &amp; Physiology</td>
<td>Discussion (25 points)</td>
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<td>Module</td>
<td>Assignments/Projects</td>
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| 4      | Chapter 27, 30, 31, 32, 33, & 34 in *Anatomy & Physiology*  
| 5      | Chapter 35, 36, & 37 in *Anatomy & Physiology*  
| 6      | Chapter 38, 39, 40, & 41 in *Anatomy & Physiology* | (25 points) | (0 points) | (10 points) | (25 points) |
| 7      | Chapter 42, 43, & 44 in *Anatomy & Physiology* | (25 points) | (0 points) | (10 points) | (25 points) |
| 8      | Chapter 45, 46, 47, & 48 in *Anatomy & Physiology* | (25 points) | Lab Exercise (25 points) | Final Exam (225 points) |

**Assignment Details**

This course includes the following assignments/projects:

**Module 1**

**Critical Thinking: (80 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: Essay: Homeostasis, Building Block of Human Function**

Write a one or two page (500-1000 word) paper that discusses the following topic:
Homeostasis is the basis of human functioning, managing the interactions between the structure and function of the body at each organizational level. The inability of the body to maintain homeostasis leads to disease and, ultimately, to death. Write a paper that describes how the body strives to maintain homeostasis. In your discussion, identify the levels of control and explain the role of homeostatic control mechanisms, including how a negative feedback loop differs from a positive feedback loop. Provide specific examples to support your discussion.

**Essay Requirements:**

- Your essay should be cohesive and well-organized.
- Be at least one or two 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 and reference page.
- Follow the CSU-Global Guide to Writing and APA Requirements.

**Option 2: Essay: Cells, Basic Units of Human Life**

Write a one or two page (500-1000 word) paper that discusses the following topic:

The cell is the basic unit of life, providing the foundation for the organization of the body and its ability to maintain homeostasis. In your paper, explain the concept of cell membrane transport, including a discussion on membranous and non-membranous structures. Also, clarify the difference between passive transport processes and active transport processes, and provide specific examples of each to support your explanations.

**Essay Requirements:**

- Your essay should be cohesive and well-organized.
- Be at least one or two 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 and reference page.
- Follow the CSU-Global Guide to Writing and APA Requirements.

**Module 2**

**Critical Thinking: (80 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: Essay: The Role of the Pancreas in the Homeostasis of Blood Glucose**

Write a one or two page (500-1000 word) paper that discusses the following topic:

The pancreas is a single gland that functions as an exocrine and an endocrine gland. The purpose of this paper is to explain the role of the pancreas in controlling the homeostasis of glucose in the blood. In your paper, provide a brief overview of the anatomy of the pancreas. Then discuss how the pancreas controls glucose levels in the blood, including a description to the three hormones involved 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 what health behaviors are necessary to reverse this trend.

**Essay Requirements:**

- Your essay should be cohesive and well-organized.
- Be at least one or two pages in length, double spaced.
Option 2: Essay: The Role of the Pituitary Gland in the Regulation of Other Hormones

Write a one or two page (500-1000 word) paper that discusses the following topic:

The pituitary gland consists of two separate glands: the anterior pituitary gland and the posterior pituitary gland. The purpose of this paper is to explain the role of the pituitary gland in the regulation of other hormones in the body. In your paper, provide a brief overview of the anatomy of the pituitary gland. Describe the hormones that are released from each gland, explaining what triggers the release of hormones, identifying characteristics that they have in common, and classifying which hormones are considered to be 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 essay should be cohesive and well-organized.
- Be at least one or two 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 and reference page.
- Follow the CSU-Global Guide to Writing and APA Requirements.
1. In your own words, name and describe the three layers of the heart. Identify the type of tissue that each layer is made of and the function of each layer.
2. In Video 2, this substance can be seen on the outside of the heart. (Also see image in assignment prompt in Module 3 Materials folder.) What is the name of this tissue?
3. In your own words, describe the appearance of the major blood vessels: vena cava, aorta, pulmonary artery and pulmonary vein. What is the color of these vessels? If the myocardium of the heart and blood vessels are made of muscle, why do they look so different?
4. How does the myocardium of the atria compare to the size of the ventricles? What are the reasons for the differences between the atria and ventricles?
5. In your own words, compare and contrast the appearance of the semilunar and atrioventricular valves. What is the function of valves, and why is there a difference between the two?
6. Discuss the ventricles. In Video 2, how does the narrator differentiate the right ventricle from the left ventricle? How does the size of the right ventricle compare with the size of the left ventricle? What are the reasons for the differences between the two?
7. Describe the appearance of the coronary arteries. What is the function of the coronary arteries?
8. Trace a drop of blood through the cardiac cycle, beginning with blood entering the right side of the heart.
9. Summarize your impressions of this dissection. In what ways has this dissection supported what you have learned in Module 3?
10. What questions do you have regarding the anatomy of the heart?

Upon completion of your responses, please submit them to your instructor for grading.

Module 4

Lab Exercise: Antigens and Blood Typing (25 points)

Please follow these instructions to complete your online lab for this module:

1. Copy and paste the following 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

1. In what year did Karl Landsteiner discover ABO human blood groups?
2. Later, in 1940, Landsteiner discovered another blood group. What was the name of that blood group system?
3. According to Tutorial 1, how many blood types are there?
4. To determine blood type, you need to know what antigens are present. What antibodies are contained in the three types of reagents?
5. After mixing the reagent with the blood samples, what does agglutination of the sample indicate?
6. Describe what happens when blood agglutinates.
7. 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?
8. Explain what happens if a person receives the wrong blood in a transfusion?
9. What does the term compatible blood mean in relationship to blood transfusions?
10. What happens in emergencies when there is not time for blood typing?

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 three 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 “You’re bloody wrong. Try again.” Try again by clicking the drop of blood with an X in the center on the right. You can continue to try until you receive the message 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 which will take you back to the game types.
10. Select the middle game, 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 your Formal Lab Report are in the lab instructions in the Module 4 Materials folder. Upon completion, submit both your Readiness Questions and Formal Lab Report for grading.

Mid-Term Exam (150 points)

The Mid-Term Exam is available in the Module 4 Materials folder in Schoology.

Module 5

Lab Exercise: Dissection of the Lungs (25 points)

Lungs are complex structures with many parts that are difficult to visualize. This lab demonstrates a virtual dissection of a set of animal lungs – both similar in structure to human lungs. Cow lungs are also acceptable for dissection but are larger than other animal lungs.
If you have access to animal lungs or are able to purchase them, it is highly recommended that you do so. (Information about places where these items are available can be obtained from your instructor.) Lungs and heart together, called a “pluck,” can sometimes be purchased from a butcher, as long as you can prove that you are a student. You can dissect the lungs you have acquired as you view the videos, or after watching the videos as a review of what you have learned.

For an actual dissection, you will need:

- animal specimen – pig, sheep, or cow lungs
- dissection tray (I use an old cookie tray)
- dissection tools – scalpel or scissors, dull probes or pencils
- a large syringe (a straw can be used instead of a syringe)
- disposable gloves (not essential but recommended)

The following are videos of a lung dissection. The first video is narrated with basic terminology so that 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)
https://www.youtube.com/watch?v=9xhxALk9gm8

Video 2: Heart & Lung Dissection (11:52)
https://www.youtube.com/watch?v=WacRsVn2ygU

Upon completion of the lab, draft your Formal Lab Report and submit the report to your instructor for grading. The required outline and structure for your Formal Lab Report can be found in the lab instructions in the Module 5 Materials folder.

Module 6

Critical Thinking: (80 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: Essay: The Use of Nutrients through Digestion and Absorption

Write a one or two page (500-1000 word) paper that discusses the following topic:

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 understanding of the body’s ability to utilize nutrients through the processes of digestion and absorption. To do so, trace a bite of food from the mouth through the digestive tract, identifying the name and function of the organs in the digestive tract, and the accessory organs of digestion. Differentiate between mechanical digestion and chemical digestion, including a discussion on the role of enzymes and hormones in the digestive process. Summarize your information by comparing and contrasting the digestion and absorption of carbohydrates, fats, and proteins.

Essay Requirements:

- Your essay should be cohesive and well-organized.
- Be at least one or two 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 and reference page.
- Follow the CSU-Global Guide to Writing and APA Requirements.
Option 2: Essay: Contrasting Metabolism and Digestion (80 points)

Write a one or two page (500-1000 word) paper that discusses the following topic:

Digestion and metabolism are two body processes that can easily be confused. The purpose of this paper is to demonstrate understanding of the importance of metabolism and how this process differs from digestion. Explore the metabolism of carbohydrates by discussing the two types of metabolism and explaining why energy in nutrient molecules must be transferred to ATP. In your discussion, discuss the mechanism that maintains homeostasis of blood glucose concentration. Also, provide an overview of lipid metabolism and protein metabolism. Summarize your information by discussing basal metabolic rate and total metabolic weight and factors that influence each.

Essay Requirements:
- Your essay should be cohesive and well-organized.
- Be at least one or two 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 and reference page.
- Follow the CSU-Global Guide to Writing and APA Requirements.

Module 7

Lab Exercise: Urinalysis Lab (25 points)

View the Module 7 Lab Exercise presentation and complete the lab as instructed. Then complete the Worksheet for Urinalysis (UA) Lab and submit it to your instructor for grading. (Note: Both the Lab Exercise presentation and the required worksheet are available in the lab instructions in the Module 7 Materials folder.)

Module 8

Lab Exercise: DNA Extraction (25 points)

View the Module 8 Lab Exercise presentation and complete the lab as instructed. Upon completion of the lab, please complete your Formal Lab Report. (Note: The Lab Exercise presentation and the required outline and structure for your Formal Lab Report are available in the lab instructions in the Module 8 Materials folder.)

Final Exam (225 Points)

The Final Exam is available in the Module 8 Materials folder in Schoology.
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 on your course’s Assignments page.

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.

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<tr>
<th>Grade</th>
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