COURSE INFORMATION

COURSE TITLE
BIO106—Basic Anatomy and Physiology

COURSE DESCRIPTION
Focuses on basic knowledge of body structures and function, and provides a foundation for understanding deviations from normal and disease conditions. This course is designed for individuals interested in health care and is directly applicable to the Practical Nursing Program, Paramedic Program and the Medical Office Technology program.

CREDIT HOURS
4

SUGGESTED PREREQUISITE KNOWLEDGE
None

CCCOnline Course Policies
The CCCOnline Course Policies page contains information about the student’s role in the classroom, grading policies, and rights and responsibilities.
**COURSE MATERIALS**

All course reading material is available online and linked within the course site. You do not need to purchase any additional materials.

**MINIMUM COMPUTER REQUIREMENTS**

To complete this course, you will need **regular** access to a computer from which you can access the internet and use email. In order to ensure that your course functions properly, you must **run the System Check**. This is a critical step, and taking the time to do it now will eliminate a tremendous amount of frustration for you later. To run the System Check, select *Tools* in the course NavBar, and then select *System Check*.

As a part of the course assignments, you will be required to create a brief video. You are provided the YuJa video editing and upload software in D2L, you will be required to provide a camera to record the video. There are multiple ways to create your video.

You may use:

- A smartphone device that has a camera (Consider having a friend or family member record you). If you use a smartphone, the YouTube app is an easy way to record and have your video already uploaded.
- An iPad or a tablet
- A webcam that is built into your computer (Most new computers come with a built-in camera.)
- A handheld Flip video camera (Make sure you know how to get the files onto your computer if you go this route.)
- If you do not own a video camera, see if you can borrow one from a friend for the day.
Course Competencies and Outcomes

Student Competencies

The competencies you will demonstrate in this course are as follows:

A. Demonstrate knowledge and describe the function of the Periodic Table of the Elements, organic compounds and electrolytes.
B. Discuss the structure and function of cellular organelles, cells, tissues and membranes in the body.
C. Demonstrate the ability to use the correct terminology for the anatomical regions, cavities, and planes of the human body.
D. Discuss the three layers of the skin with respect to tissue type, function, and substructures.
E. Classify burns based on the amount of skin damage they produce.
F. List and describe the components of the skeletal system.
G. List and describe the various types of joints and describe the major types of joint movement.
H. Be able to name major muscles, locate them in the body, and tell the function of each.
I. List the divisions and structures of the nervous system and describe the characteristics of each.
J. Define and discuss the structure and general function of the special senses.
K. List the major types of general senses and briefly describe each.
L. Compare the means by which the nervous and endocrine systems regulate body functions.
M. Describe the location and function of the endocrine glands in the human body.
N. Diagram and discuss homeostasis and negative feedback.
O. Describe the development, structure and function of blood and its components.
P. Describe some diagnostic blood tests and the normal values for the tests, and give examples of disorders that produce abnormal test values.
Q. Describe the structure and function of the heart and its conduction system.
R. Describe the structure and function of the arteries, capillaries, and veins.
S. Locate the major veins and arteries of the body.
T. Describe the structures and functions of the lymphatic system, lymph and immune functions.
U. Describe the anatomy and functions of the respiratory passages beginning at the nose and ending with the alveoli.

V. Explain how alterations in blood carbon dioxide levels, blood pH, and blood oxygen levels affect respiration.

W. List the organs of the digestive system and describe the structure of each.

X. Name the major digestive enzymes, the function of each, and where it is secreted.

Y. List the structures that make up the urinary system and describe the overall functions it performs.

Z. Discuss the major factors influencing fluid and electrolyte balance.

AA. Discuss the structure and function of the major organs of the male and female reproductive system.

BB. List the hormones that influence the male and female reproductive system and describe their functions.

CC. List the major events of fetal development sequentially from the fertilized egg through birth.

The module outcomes that will permit you to demonstrate course competencies are:

Module 1

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Compare and contrast anatomy and physiology as ways of studying the human body.</td>
<td>All</td>
</tr>
<tr>
<td>2 Describe body planes, regions, cavities, and directional terms using medical (anatomical) language.</td>
<td>C</td>
</tr>
<tr>
<td>3 Describe chemical bonds, electrolytes, pH, and inorganic and organic molecules, as well as their importance in the body.</td>
<td>A</td>
</tr>
<tr>
<td>4 Identify elements and abbreviations on the periodic table of the elements.</td>
<td>A</td>
</tr>
<tr>
<td>5 Describe cellular structure and function, and illustrate mitosis.</td>
<td>B</td>
</tr>
<tr>
<td>6 Differentiate between the functions of the four tissue types.</td>
<td>B</td>
</tr>
<tr>
<td>7 Explain homeostasis, negative feedback, and positive feedback, and provide examples.</td>
<td>N</td>
</tr>
<tr>
<td>8 Describe the layers of the skin and the functions of structures found in each layer.</td>
<td>D</td>
</tr>
<tr>
<td>9 Identify burns based on the amount of damage produced.</td>
<td>E</td>
</tr>
<tr>
<td>10 Describe the three most common types of skin cancer, and identify which cell gives rise to each.</td>
<td>B, D</td>
</tr>
<tr>
<td>11 Demonstrate concepts of anatomy and physiology in real-world Applications.</td>
<td>All</td>
</tr>
<tr>
<td>12 Recall important terminology related to chemistry, cells, tissues, and the integumentary system.</td>
<td>A, B, C, D, E, F, N</td>
</tr>
</tbody>
</table>
Module 2

Outcomes Competencies
1 Locate and describe bones of the human skeleton. F
2 Explain the functions of bone tissue. F
3 Describe the structure and function of main joints of the body. G
4 Locate and describe major muscles of the human body. H
5 Compare the types of muscle tissue, and describe their functions. H
6 Explain the structure and organization of the nervous system. I
7 Describe the functions of nervous tissue. I
8 Compare general and special senses, and define reflexes. J, K
9 Differentiate between the structure and function of the special senses. J
10 Demonstrate concepts of anatomy and physiology in real-world applications. All
11 Recall important terminology from the skeletal, muscular, and nervous systems. F, G, H, I, J, K

Module 3

Outcomes Competencies
1 Differentiate between the structure and functions of blood components. O
2 Explain the importance of diagnostic blood tests, with examples. P
3 Describe the structure and function of the heart including the conduction system. Q
4 Explain the structure and function of arteries, veins, and capillaries. R
5 Identify major blood vessels of the body. S
6 Describe the structure and function of the lymphatic system. T
7 Explain the components and functions of the immune system. T
8 Demonstrate concepts of anatomy and physiology in real-world applications. All
9 Recall important terminology from the lymphatic, circulatory, and immune systems. O, P, Q, R, S, T

Module 4

Outcomes Competencies
1 Compare and contrast the structure and function of the nervous and endocrine systems. L
2 Describe the location and function of the endocrine glands in the body. M
3 Differentiate between the hormones secreted by the endocrine system and their effects. M
4 Describe the anatomy and functions of the respiratory passages. U
5 Explain how alterations in blood carbon dioxide levels, blood pH, and blood oxygen affect respiration. V
6 Locate and define the structures of the digestive system. W
7 Associate the major digestive enzymes with their function and organ of origin. X
8 Demonstrate concepts of anatomy and physiology in real-world applications. All
9 Recall important terminology from the endocrine, respiratory, and digestive systems. L, M, U, V, W, X

Module 5

Outcomes Competencies
1 Describe the structure and function of the urinary system. Y
2 Identify major factors influencing fluid and electrolyte balance. Z
3 Describe the structure and function of the male and female reproductive systems. AA
4 Compare the hormones that influence reproduction with respect to males and females. AB
5 Explain the major events of development from fertilized egg to birth. AC
6 Compare the different types of birth control available. AA, AB, AC
7 Demonstrate concepts of anatomy and physiology in real-world applications. All
8 Recall important terminology from the urinary and reproductive systems. Y, Z, AA, AB, AC
GRADING AND EVALUATION

METHODS
The methods for evaluation include a combination of evaluating discussion participation, quizzes, assignments, and a final presentation. Rubrics will be provided for the evaluation. Information on accessing rubrics is provided on the Course Rubrics page in the Syllabus module of course content.

This class follows a communication-based design, where you are provided with topics to inspire you to think critically. You will engage in the readings and exploration materials, and then delve into the discussions. There, you will discuss and share your ideas as a way of going deeper into the content. Each module includes quizzes through which you will learn important vocabulary. You will have a presentation at the end of the course to demonstrate what you have learned about the disease of your choosing.

This page summarizes all of the graded assignments for the course. You should print it out and post it somewhere that is easily accessible.

This course is not self-paced and is not open-exit. All work is to be completed before 11:59 p.m. MST/MDT on the due date listed on the Course Schedule page.

GRADING POLICIES
Mark all module due dates on your calendar for this class. You may submit assignments ahead of schedule. Assignments, discussions, and quizzes will be given throughout the term with set due dates. See the Course Schedule page for these dates, and make note of them in your calendar. The instructor will communicate any changes to these due dates to the class. If you have an emergency resulting in a missed due date, contact your instructor as soon as possible. No late work is accepted in this course (except in the case of documented emergencies, such as a doctor’s note, military papers, etc.). Due dates will be enforced. Please remember, due to the nature of an online course, it is the student’s responsibility to have access to a functioning computer in order to complete the coursework. Late assignments will not be accepted without prior approval.

Your final grade in this course will be based on the total points that you earn. The grades are final and non-negotiable. They are a measure of your own aptitude and effort. It is expected that you will accept your own performance as an integral part of yourself.
DEADLINES

This course is not designed to be self-paced. Within the schedule of the course, though, you have great flexibility with your study time. For the most part, the course is organized according to the week of the semester. Assignments are spread throughout the course, and they have specific deadlines; you must submit each assignment before its deadline expires.

It is strongly recommended that you do not wait until the last minute to complete or submit assignments. There are many things that can and do go wrong: your internet connection might go down, your computer's hard drive may crash, or you may get ill. You are welcome (and encouraged) to work ahead of schedule to submit work before it is due. Please contact your instructor if you have any questions about what is being asked in any assignment or discussion question. The goal here is learning. Keep that in mind, and enjoy the course.

COMMUNICATING DIFFICULTIES/ABSENCES

It is your responsibility to contact the instructor in a timely manner if you become ill or have scheduling or computer problems that would keep you from participating in course activities for an entire week.

KEEP A COPY OF ALL SUBMISSIONS

Be sure to save copies of everything you send to the instructor, including both emails and assignments. Murphy's Law of the Computer seems to be that what can go wrong, will.

SUMMARY OF GRADING

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Letter Assignment (5 @ 50 points each)</td>
<td>250</td>
<td>25%</td>
</tr>
<tr>
<td>Check Your Knowledge Discussion (5 @ 40 points each)</td>
<td>200</td>
<td>20%</td>
</tr>
<tr>
<td>My Research Discussion (5 @ 40 points each)</td>
<td>200</td>
<td>20%</td>
</tr>
<tr>
<td>Vocabulary Quiz (5 @ 10 points each)</td>
<td>50</td>
<td>5%</td>
</tr>
<tr>
<td>Disease Video Presentation Discussion (2 @ 10 points each)</td>
<td>20</td>
<td>2%</td>
</tr>
<tr>
<td>Disease Video Presentation Progress Reports (3 @ 10 points each)</td>
<td>30</td>
<td>3%</td>
</tr>
<tr>
<td>Disease Video Presentation (1 @ 250 points each)</td>
<td>250</td>
<td>25%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1000</td>
<td>100%</td>
</tr>
</tbody>
</table>

Grading Scale

A = 90 to 100%    B = 80 to 89%    C = 70 to 79%    D = 60 to 69%    F = 59% and below
**DISCUSSIONS**

1. You have two types of discussions each module: a Check Your Knowledge discussion and a My Research discussion. In the Check Your Knowledge discussion, you will discover and share information about topics in each module. In the My Research discussions, you will delve into real-life topics and share with your peers.

2. In both discussions you should find at least two solid sources to support your answers. All references must be cited using APA Style. Please refer to the [CCCOnline APA Citation Toolkit](#).

3. In both discussions it is expected that you post an initial post and at least two follow-up posts. Initial posts are required to be a minimum length of 150 words, and both replies (follow-up posts) must be at least 75 words. However, do not aim to do the minimum or your grade will reflect this.

4. Discussions are a very important part of this class experience and cannot be made up after each week's discussion ends. Discussions are where we can examine real-life applications of course content, and students benefit from other class members' contributions and questions.

**ASSIGNMENTS**

**RESPONSE LETTER ASSIGNMENTS**

Your Response Letter Assignment will be assessed each module. The purpose of these writings is to demonstrate your understanding of applications of principles applied to real-world situations, as well as demonstrate your communication skills. These are due according to your course schedule.

1. All letters should be 300-600 words.
2. These are an application and synthesis of what you have learned in the module. You may use what was covered in your My Research discussion to write the letter.
3. You may not always have references to cite, but if you do have sources that you have consulted in order to write your letter, these must be cited on a separate page using APA Style. Please refer to the [CCCOnline APA Citation Toolkit](#).
4. Please use clear language that could be understood by someone who does not have an extensive medical or biological background.

**DISEASE VIDEO PRESENTATION**

1. This assessment allows you to choose a disease that is most interesting to you. (The selected disease cannot be a type of cancer.)
2. You will become an expert and present your disease to your classmates and the instructor.
3. You will create a 2-3 minute video, and you will upload the video to the discussion area and the assignment folder in Module 5. (Note: Be sure to carefully read the technical directions for creating and submitting your video in the Module 4: Disease Video Presentation Project page.)

4. There are smaller assignments due in each module to keep you on task.

5. You can start work on your presentation as soon as you get approval from the instructor.

**VOCABULARY QUIZZES**

1. These quizzes are present in each module to allow you to check your vocabulary.
2. Each may be taken multiple times, but with a limited submission time. You will have 30 minutes to complete the quiz.
3. Each quiz will select ten questions from a pool relating to the topics from each module. No two quizzes will be exactly alike.
4. All attempts must be taken prior to the due date; however, quizzes may be completed early.

**EXTRA CREDIT**

Extra credit is not available for this course.
## COURSE SCHEDULE

The schedule is subject to change as needed.

This page summarizes all of the graded assignments, exams, and reading assignments for the course. If you want, you can print it out and post it somewhere handy.

All assignments are described in detail on the module assignment pages. If you have questions, check there and/or send the instructor an email.

**This course is not self-paced and is not open-exit.** All assignments, papers, quizzes, discussions, etc., are to be completed by no later than 11:59 p.m. MST/MDT of the due date.

NOTE: Important CCCOnline semester dates (e.g., drop/withdraw/term end) appear on the CCCOnline Calendar.

### MODULE 1

<table>
<thead>
<tr>
<th>Reading/Assignments/Exams</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Icebreaker Discussion</td>
<td></td>
</tr>
<tr>
<td>Read Module 1 Basic Anatomy and Physiology Reading Packet</td>
<td></td>
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<tr>
<td>Module 1: Vocabulary Quiz</td>
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<tr>
<td>Discussion 1: Check Your Knowledge</td>
<td></td>
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<tr>
<td>Discussion 2: My Research</td>
<td></td>
</tr>
<tr>
<td>Brainstorm and select a disease for your Module 1: Disease Video Presentation Project in the discussion board</td>
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<tr>
<td>Module 1 Assignment: Response Letter</td>
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</tbody>
</table>

### MODULE 2

<table>
<thead>
<tr>
<th>Reading/Assignments/Exams</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read Module 2 Basic Anatomy and Physiology Reading Packet</td>
<td></td>
</tr>
<tr>
<td>Review materials in Exploration of Moving and Shaking: Skeletal, Muscular, and Nervous Tissues</td>
<td></td>
</tr>
<tr>
<td>Module 2: Vocabulary Quiz</td>
<td></td>
</tr>
<tr>
<td>Discussion 1: Check Your Knowledge</td>
<td></td>
</tr>
<tr>
<td>Discussion 2: My Research</td>
<td></td>
</tr>
<tr>
<td>Submit the cause of disease for your Module 2: Disease Video Presentation Project, with APA references, to the assignment folder</td>
<td></td>
</tr>
<tr>
<td>Module 2 Assignment: Response Letter</td>
<td></td>
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</tbody>
</table>
**Module 3**

**Reading/Assignments/Exams**
Read Module 3 Basic Anatomy and Physiology Reading Packet
Review materials in Exploration of Fluid Gets Around: Lymphatic, Circulatory, and Immune Systems
Module 3: Vocabulary Quiz
Discussion 1: Check Your Knowledge
Discussion 2: My Research
Submit the symptoms and treatment of disease for your Module 3: Disease Video Presentation Project, with APA references, to the assignment folder
Module 3 Assignment: Response Letter

**Module 4**

**Reading/Assignments/Exams**
Read Module 4 Basic Anatomy and Physiology Reading Packet
Review materials in Exploration of Taking Care of Our Bodies: Endocrine, Respiratory, and Digestive Systems
Module 4: Vocabulary Quiz
Discussion 1: Check Your Knowledge
Discussion 2: My Research
Submit the prevalence and prognosis of disease for your Module 4: Disease Video Presentation Project, with APA references, to the assignment folder
Module 4 Assignment: Response Letter

**Module 5**

**Reading/Assignments/Exams**
Read Module 5 Basic Anatomy and Physiology Reading Packet
Review materials in Exploration of Cleaning House and Carrying Life Forward: Urinary and Reproductive Systems
Module 5: Vocabulary Quiz
Discussion 1: Check Your Knowledge
Discussion 2: My Research
Submit your Module 5: Disease Video Presentation Project to assignment folder and discussion board
Module 5 Assignment: Response Letter
Provide feedback in the Module 5: Disease Video Presentation Project discussion board

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