



# **INSTRUCTIONAL PACKAGE**

BIO 110  
General Anatomy and Physiology

Effective Term  
Fall 2021

# INSTRUCTIONAL PACKAGE

## Part I: Course Information

Effective Term: 2021-2022

COURSE PREFIX: BIO 110

COURSE TITLE: General Anatomy and Physiology

CONTACT HOURS: 3-3

CREDIT HOURS: 3

### **RATIONALE FOR THE COURSE:**

BIO 110 provides students with a general introduction to anatomy and physiology that prepares the students for more advanced coursework in their respective allied health program. This course will serve students in the medical coding and billing, phlebotomy, and patient care programs. After completing this course students will have a general understanding of the complex and interrelated nature of the human body and its various systems.

### **COURSE DESCRIPTION:**

This course is a general introduction to the anatomy and physiology of the human body. Emphasis is on the organ systems of the human and their interrelationships.

### **PREREQUISITES/CO-REQUISITES:**

ACCUPLACER Reading Comp 056 or New ACCUPLACER Reading Comp 235 or COMPANION Reading 056 or ACT English 14 or SAT Critical Reading 380 or Multiple Measures English 1 or Writing Sample ENG101 1 or WS ENG101 with Lab 1 or Writing Sample ENG155 1 or Writing Sample ENG155 1 or Credit level ENG 101 Minimum Grade of C or Credit level ENG 101 Minimum Grade of TC or Credit level ENG 155 Minimum Grade of C or Credit level ENG 155 Minimum Grade of TC

### **REQUIRED MATERIALS:**

Please visit the [BOOKSTORE](#) online site for most current textbook information. Use the direct link to find textbooks.

Enter the semester, course prefix, number and section when prompted and you will be linked to the correct textbook.

### **ADDITIONAL REQUIREMENTS:**

A Connect access code from McGraw Hill is a required component of this course.

For Hybrid/Online Students Only: Each student will be required to view an orientation PowerPoint presentation during the first week of class. This presentation can be found on the course homepage in D2L under News. After viewing the presentation, all online students must complete the orientation quiz, which can be found under the dropdown assignment menu. A student will not be considered officially enrolled in the course until the presentation has been viewed and the quiz completed with a 100% score. Any submitted work from the student including discussion posts, assignments, etc. will not be given a grade until the presentation has been viewed and the quiz has been submitted. Failure to view the presentation and take the quiz before midnight on the last day to add/drop classes will result in the student being automatically dropped from the course.

### **TECHNICAL REQUIREMENTS:**

Access to Desire2Learn (D2L), HGTC's student portal for course materials. myHGTC and college email access.

### **STUDENT IDENTIFICATION VERIFICATION**

Students enrolled in online courses will be required to participate in a minimum of one (1) proctored assignment and/or one (1) virtual event to support student identification verification. Please refer to your Instructor Information Sheet for information regarding this requirement.

### **CLASSROOM ETIQUETTE:**

As a matter of courtesy to other students and your professor, please turn off cell phones and other communication/entertainment devices before class begins. If you are monitoring for an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

**NETIQUETTE:** is the term commonly used to refer to conventions adopted by Internet users on the web, mailing lists, public forums, and in live chat focused on online communications etiquette. For more information regarding Netiquette expectations for distance learning courses, please visit [Online Netiquette](#).

### **ACADEMIC DISHONESTY:**

All forms of academic dishonesty, as outlined in the Student Code in the HGTC catalog, will NOT be tolerated and will result in disciplinary action. Anyone caught cheating or committing plagiarism (Defined in the code as: "The appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit") will be given a grade of a zero for that assignment and reported to the Senior VP of Academic Affairs, in accordance with the student handbook. A second offense will result in the student being withdrawn from the course with a "WF" and charges being filed with the Chief Student Services Officer.

## **Part II: Student Learning Outcomes**

### **COURSE LEARNING OUTCOMES and ASSESSMENTS\*:**

#### **Lecture Student Learning Outcomes:**

## **Chapter 1 The Basics**

Define anatomy, physiology, and pathology.

Describe the location of structures in the human body using anatomical terms of direction, regions, planes, positions, and cavities.

Define homeostasis and explain why it is so important in human physiology.

Define negative feedback and positive feedback and explain their importance to homeostasis.

Define disease and describe the relationship between disease and homeostasis.

Define predisposing factors of disease and explain how specific predisposing factors affect disease.

Differentiate between signs and symptoms of disease and give an example of each.

Explain the function of pain and inflammation.

Define diagnosis and list the steps involved in diagnosing diseases.

Define differential diagnosis and explain when it may be used.

## **Chapter 2 Levels of Organization of the Human Body**

List the levels of organization of the human body from simplest to most complex.

Summarize the five functions of water in the human body and give an explanation or example of each.

Compare solutions based on tonicity.

Describe the four types of major organic molecules in the body by giving the elements present in each, their building blocks, an example of each, the location of each example in the body, and the function of each example.

Describe cell organelles and structures and explain their functions.

Describe the four classifications of tissues in the human body.

Describe the modes of tissue growth, change, shrinkage, and death.

Identify the human body systems and their major organs.

## **Chapter 3 The Integumentary System**

Use medical terminology related to the integumentary system.

Describe the histology of the epidermis, dermis, and hypodermis.

Describe the cells of the epidermis and their function.

Describe the structures of the dermis and their functions.

Compare and contrast the glands of the skin in terms of their structure, products, and functions.

Describe the histology of a hair and hair follicle.

Describe the structure and function of a nail.

Explain how the layers and structures of the skin work together to carry out the functions of the system.

Explain how the skin responds to injury and repairs itself.

Compare and contrast three degrees of burns in terms of symptoms, layers of the skin affected, and method used by the body for healing.

Describe the extent of a burn using the "rule of nines."

Describe a diagnostic test commonly used when diagnosing integumentary system disorders.

Describe three forms of skin cancer in terms of the body area most affected, appearance, and ability to metastasize.

## **Chapter 4 The Skeletal System**

Use medical terminology related to the skeletal system.

Distinguish between the axial skeleton and the appendicular skeleton.

Describe five types of bones classified by shape.

Identify bones, markings, and structures of the axial skeleton and appendicular skeletons.  
Describe the cells, fibers, and matrix of bone tissue.  
Compare and contrast the histology of compact and cancellous bone.  
Compare and contrast the histology of hyaline, elastic, and fibrocartilage connective tissues.  
Describe the anatomy of a long bone.  
Distinguish between two types of bone marrow in terms of location and function.  
Describe three major structural classes of joints and the types of joints in each class.  
Differentiate between rheumatoid arthritis and osteoarthritis.  
Compare and contrast endochondral and intramembranous ossification.  
Compare and contrast endochondral and appositional bone growth.  
Explain how bone is remodeled by reabsorption.  
Describe the negative feedback mechanisms affecting bone deposition and reabsorption by identifying the relevant glands, hormones, target tissues, and hormone functions.  
Summarize the six functions of the skeletal system and give an example or explanation of each.  
Classify fractures using descriptive terms.  
Describe a diagnostic test commonly used when diagnosing skeletal system disorders.  
Describe skeletal system disorders and relate abnormal function to the pathology.

## **Chapter 5 The Muscular System**

Use medical terminology related to the muscular system.  
Define terms concerning muscle attachments and the ways muscles work in groups to aid, oppose, or modify each other's actions.  
Demonstrate actions caused by muscles.  
Identify muscles, giving the origin, insertion, and action.  
Describe the structural components of a muscle, including the connective tissues.  
Compare and contrast skeletal, cardiac, and smooth muscle tissue in terms of appearance, structure, type of nerve stimulation, type of respiration, and location.  
Summarize the five functions of the muscular system and give an example or explanation of each.  
Describe a common diagnostic test used to diagnose disorders of the muscular system.  
Describe muscle disorders and relate abnormal function to pathology.

## **Chapter 6 The Nervous System**

Use medical terminology related to the nervous system.  
Describe the organization of the nervous system in regard to structure and function.  
Describe the anatomy of a neuron.  
Differentiate multipolar, bipolar, and unipolar neurons in terms of anatomy, location, and direction of nerve impulses.  
Describe neuroglia and state their function.  
Describe the meninges covering the brain and spinal cord.  
Explain the importance of cerebrospinal fluid, including its production, circulation, and function.  
Describe the major landmarks and subdivisions of the brain and state their functions.  
Describe the spinal cord.  
List the cranial nerves in order, stating their function and whether they are sensory, motor, or both.  
Compare the parasympathetic and sympathetic divisions of the autonomic nervous system in terms of anatomy and function.  
Describe common diagnostic tests used to diagnose disorders of the nervous system.

Describe nervous system disorders and relate abnormal function to the pathology.

## **Chapter 7 The Nervous System-Senses**

Use medical terminology related to the senses of the nervous system.

Classify the senses in terms of what is sensed and where the receptors are located.

Describe the sensory receptors for the general senses in the skin.

Explain the types of information transmitted by sensory receptors in the skin.

Describe the pathway for pain.

Describe the sensory receptors for taste.

Describe the different tastes and explain how flavor is perceived.

Describe the pathway for taste.

Describe the sensory receptors for smell.

Explain how odors are perceived.

Describe the pathway for smell.

Describe the anatomy of the ear.

Describe the pathway for hearing.

Describe the anatomy of the vestibular apparatus.

Describe the pathway for equilibrium.

Describe the anatomy of the eye.

Describe the pathway for vision.

Describe common diagnostic tests used to diagnose disorders of the senses.

Describe disorders of the senses and relate abnormal function to the pathology.

## **Chapter 8 The Endocrine System**

Use medical terminology related to the endocrine system.

Compare and contrast the endocrine and nervous systems in terms of type, specificity, speed, and duration of communication.

Define gland, hormone, and target tissue.

List the major hormones-along with their target tissues and functions- of each of the endocrine system glands.

Locate and identify endocrine system glands.

Explain the function of hormones by showing how they interact to maintain homeostasis.

Describe common diagnostic tests used to diagnose endocrine system disorders.

Describe endocrine system disorders and relate abnormal function to pathology.

## **Chapter 9 The Cardiovascular System-Blood**

Use medical terminology related to the cardiovascular system.

Identify the components of blood.

List the constituents of plasma and their functions.

Identify the formed elements and list their functions.

Describe the body's mechanisms for controlling bleeding.

Describe two pathways for blood clotting in terms of what starts each, their relative speed, and the clotting factors involved.

Explain what determines ABO and Rh blood types.

Explain how a blood type relates to transfusion compatibility.

Determine from a blood type the antigens and antibodies present and the transfusion compatibility.

Predict the compatibility between mother and fetus given Rh blood types for both and describe the possible effects.

Summarize the functions of blood by giving an example or explanation of each.

Describe common diagnostic blood tests and explain what can be learned from them.

Describe disorders of the cardiovascular system concerning blood and relate abnormal function to pathology.

## **Chapter 10 The Cardiovascular System- Heart and Vessels**

Use medical terminology related to the cardiovascular system.

Identify the chambers, valves, and features of the heart.

Trace blood flow through the heart.

Describe the heart's electrical conduction system.

Describe the events that produce the heart's cycle of contraction and relaxation.

Interpret a normal EKG, explaining what is happening electrically in the heart.

Calculate cardiac output given heart rate and stroke volume.

Explain the factors that govern cardiac output.

Locate and identify the major arteries and veins of the body.

Compare the anatomy of the three types of blood vessels.

Describe coronary and systemic circulatory routes.

Explain how blood in veins is returned to the heart.

Describe how blood pressure is expressed and how mean arterial pressure and pulse pressure are calculated.

Describe common diagnostic tests used to diagnose heart and vessel disorders.

Describe heart and vessel disorders and relate abnormal function to pathology.

## **Chapter 11 The Lymphatic System**

Use medical terminology related to the lymphatic system.

Explain the origin and composition of lymph.

Describe lymph vessels.

Explain the route of lymph from the blood and back again.

Identify lymphoid tissues and organs and explain their functions.

Explain the functions of the lymphatic system.

Describe common diagnostic tests used for lymphatic system disorders.

Describe lymphatic system disorders and relate abnormal function to pathology.

## **Chapter 12 The Respiratory System**

Use medical terminology related to the respiratory system.

Trace the flow of air from the nose to the pulmonary alveoli and relate the function of each part of the respiratory tract to its gross and microscopic anatomy.

Explain the role of surfactant.

Describe the respiratory membrane.

Explain the mechanics of breathing in terms of anatomy and pressure gradients.

Define partial pressure and explain its relationship to a gas mixture such as air.

Explain gas exchange in terms of the partial pressures of gases at the capillaries and the alveoli and at the capillaries and the tissues.

Compare the composition of inspired and expired air.

Describe the mechanisms for transporting O<sub>2</sub> and CO<sub>2</sub> in the blood.  
Explain the functions of the respiratory system.  
Describe common diagnostic tests used for respiratory system disorders.  
Describe respiratory system disorders and relate abnormal function to pathology.

### **Chapter 13 The Digestive System**

Use medical terminology related to the digestive system.  
Differentiate between mechanical digestion and chemical digestion.  
Describe the digestive anatomy of the oral cavity.  
Explain the physiology of mechanical and chemical digestion in the mouth.  
Describe the digestive anatomy from the mouth to the stomach.  
Explain how materials move from the mouth to the stomach.  
Describe the digestive anatomy of the stomach.  
Explain the physiology of mechanical and chemical digestion in the stomach.  
Describe the anatomy of the digestive accessory organs connected to the duodenum by ducts.  
Describe the digestive anatomy of the small intestine.  
Describe the anatomy of the large intestine.  
Summarize the types of nutrients absorbed by the digestive system from the diet.  
Summarize the functions of digestion.  
Describe common diagnostic tests used for digestive system disorders.  
Describe digestive system disorders and relate abnormal function to pathology.

### **Chapter 14 The Excretory/Urinary System**

Use medical terminology related to the excretory system.  
Define excretion and identify the organs that excrete waste.  
List the functions of the kidneys in addition to urine production.  
Describe the external and internal anatomy of the kidneys.  
Describe the anatomy of a nephron.  
Describe the anatomy of the ureters, urinary bladder, and male and female urethras.  
Summarize the functions of the excretory system.  
Describe common diagnostic tests used for excretory system disorders.  
Describe excretory system disorders and relate abnormal function to pathology.

### **Chapter 15 The Male Reproductive System**

Use medical terminology related to the male reproductive system.  
Explain what is needed for male anatomy to develop.  
Describe the anatomy of the testes.  
Describe the male secondary sex organs and structures and their respective functions.  
Describe the anatomy of a sperm.  
Describe common diagnostic tests used for male reproductive system disorders.  
Describe male reproductive system disorders and relate abnormal function to pathology.

### **Chapter 16 The Female Reproductive System**

Use medical terminology related to the excretory system.  
Explain what is needed for female anatomy to develop.  
Describe the anatomy of the ovary and its functions.



Describe the female secondary reproductive organs and structures and their respective functions.  
Describe common diagnostic tests for female reproductive system disorders.  
Describe disorders of pregnancy and relate abnormal function to pathology.

***\*Students – please refer to the Instructor’s Course Information sheet for specific information on assessments and due dates.***

## **Part III: Grading and Assessment**

### **EVALUATION OF REQUIRED COURSE MEASURES/ARTIFACTS\***

Students’ performance will be assessed and the weight associated with the various measures/artifacts are listed below.

#### **EVALUATION\***

Unit Tests	70%
Discussions	15%
LearnSmart/Connect	<u>15%</u>
	100%

***\*Students, for the specific number and type of evaluations, please refer to the Instructor’s Course Information Sheet.***

#### **GRADING SYSTEM:**

Please note the College adheres to a 10 point grading scale A = 100 – 90, B = 89- 80, C = 79 – 70, D = 69 – 60, F = 59 and below.

Grades earned in courses impact academic progression and financial aid status. Before withdrawing from a course, be sure to talk with your instructor and financial aid counselor about the implications of that course of action. Ds, Fs, Ws, WFs and Is also negatively impact academic progression and financial aid status.

The Add/Drop Period is the first 5 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format courses. Please refer to the [academic calendar](#) for deadlines for add/drop. You must attend at least one meeting of all of your classes during that period. If you do not, you will be dropped from the course(s) and your Financial Aid will be reduced accordingly.

## **Part IV: Attendance**

Horry-Georgetown Technical College maintains a general attendance policy requiring students to be present for a minimum of 80 percent (80%) of their classes in order to receive credit for any course. Due to the varied nature of courses taught at the college, some faculty may require up to 90 percent (90%) attendance. Pursuant to 34 Code of Federal Regulations 228.22 - Return to Title IV Funds, once a student has missed over 20% of the course or has missed two (2) consecutive weeks, the faculty is

obligated to withdraw the student and a student may not be permitted to reenroll. **Instructors define absentee limits for their class at the beginning of each term; please refer to the Instructor Course Information Sheet.**

**For online and hybrid courses**, check your Instructor's Course Information Sheet for any required on-site meeting times. Please note, instructors may require tests to be taken at approved testing sites, if you use a testing center other than those provided by HGTC, the center may charge a fee for its services.

### **Lecture Attendance:**

For a 15 week course (fall and spring), the allowed number of absences for a MW or TR class is as follows: 4 absences are allowed for lecture, regardless of reason. For a lecture class that meets once a week, the allowed number of absences is two (2). When a student surpasses the allowed number of absences, the student will be dropped automatically from the course with a W or a WF. Remember, an absence is an absence, no matter if it is excused or not!

### **Online/Hybrid Attendance:**

Students enrolled in distance learning courses (hybrid and online) are required to maintain contact with the instructor on a regular basis to be counted as "in attendance" for the course. All distance learning students must participate weekly in an Attendance activity in order to demonstrate course participation. Students showing no activity in the course for two weeks (these weeks do not need to be consecutive) will be withdrawn due to lack of attendance.

## **Part V: Student Resources**



### **THE STUDENT SUCCESS AND TUTORING CENTER (SSTC):**

The SSTC offers to all students the following **free** resources:

1. **Academic tutors** for most subject areas, **Writing Center support**, and **college success skills**.
2. Online **tutoring** and academic support resources.
3. Professional and interpersonal communication **coaching** in the EPIC Labs.

Visit the [Student Success & Tutoring Center](#) website for more information. To schedule tutoring, contact the SSTC at [ssc@hgtc.edu](mailto:ssc@hgtc.edu) or self-schedule in the Penji iOS/Android app or at [www.penjiapp.com](http://www.penjiapp.com). Email [ssc@hgtc.edu](mailto:ssc@hgtc.edu) or call SSTC Conway, 349-7872; SSTC Grand Strand, 477-2113; and SSTC Georgetown, 520-1455, or go to the [Online Resource Center](#) to access on-demand resources.



## **STUDENT INFORMATION CENTER: TECH Central**

TECH Central offers to all students the following free resources:

1. **Getting around HGTC:** General information and guidance for enrollment, financial aid, registration, and payment plan support!
2. Use the [Online Resource Center \(ORC\)](#) including Office 365 support, password resets, and username information.
3. **In-person workshops, online tutorials and more services** are available in Desire2Learn, Student Portal, Degree Works, and Office 365.
4. **Chat with our staff on TECH Talk**, our live chat service. TECH Talk can be accessed on the student portal and on TECH Central's website, or by texting questions to (843) 375-8552.

Visit the [Tech Central](#) website for more information. Live Chat and Center locations are posted on the website. Or please call (843) 349 – TECH (8324), Option #2.

## **STUDENT TESTING:**

Testing in an **online/hybrid** course may be accomplished in a variety of ways:

- Test administered within D2L
- Test administered in writing on paper
- Test administered through Publisher Platforms

Furthermore, tests may have time limits and/or require a proctor.

Proctoring can be accomplished either face-to-face at an approved site or online through RPNOW, our online proctoring service. To find out more about proctoring services, please visit the [Online Testing](#) section of the HGTC's Testing Center webpage.

The **Instructor Information Sheet** will have more details on test requirements for your course.

## **DISABILITY SERVICES:**

HGTC is committed to providing an accessible environment for students with disabilities. Inquiries may be directed to HGTC's [Accessibility and Disability Service webpage](#). The Accessibility and Disability staff will review documentation of the student's disability and, in a confidential setting with the student, develop an educational accommodation plan.

Note: It is the student's responsibility to self-identify as needing accommodations and to provide acceptable documentation. After a student has self-identified and submitted documentation of a disability, accommodations may be determined, accepted, and provided.

## **STATEMENT OF EQUAL OPPORTUNITY/NON-DISCRIMINATION STATEMENT:**

Horry-Georgetown Technical College prohibits discrimination and harassment, including sexual

harassment and abuse, on the basis of race, color, sex, national or ethnic origin, age, religion, disability, marital or family status, veteran status, political ideas, sexual orientation, gender identity, or pregnancy, childbirth, or related medical conditions, including, but not limited to, lactation in educational programs and/or activities.

### **TITLE IX REQUIREMENTS:**

All students (as well as other persons) at Horry-Georgetown Technical College are protected by Title IX—regardless of their sex, sexual orientation, gender identity, part- or full-time status, disability, race, or national origin—in all aspects of educational programs and activities. Any student, or other member of the college community, who believes that he/she is or has been a victim of sexual harassment or sexual violence may file a report with the college’s Chief Student Services Officer, campus law enforcement, or with the college’s Title IX Coordinator, or designee.

\*Faculty and Staff are required to report incidents to the Title IX Coordinators when involving students. The only HGTC employees exempt from mandatory reporting are licensed mental health professionals (only as part of their job description such as counseling services).

### **INQUIRIES REGARDING THE NON-DISCRIMINATION/TITLE IX POLICIES:**

**Student and prospective student** inquiries concerning Section 504, Title II, and Title IX and their application to the College or any student decision may be directed to the Vice President for Student Affairs.

**Dr. Melissa Batten, VP Student Affairs**

*Title IX Coordinator*

Building 1100, Room 107A, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5228

[Melissa.Batten@hgtc.edu](mailto:Melissa.Batten@hgtc.edu)

**Employee and applicant** inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Vice President for Human Resources.

**Jacquelyne Snyder, VP Human Resources**

*EEO and Title IX Coordinator*

Building 200, Room 212A, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5212

[Jacquelyne.Snyder@hgtc.edu](mailto:Jacquelyne.Snyder@hgtc.edu)