



# **INSTRUCTIONAL PACKAGE**

BIO 112

Basic Anatomy and Physiology

Effective Term

Fall 2024/Spring 2025/Summer 2025

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## Part I: Course Information

Effective Term: Fall 2024/Spring 2025/Summer 2025

COURSE PREFIX: BIO 112

COURSE TITLE: Basic Anatomy and Physiology

CONTACT HOURS: 3-3

CREDIT HOURS: 4

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

BIO 112 provides students with a solid foundation in anatomy and physiology that prepares the students for more advanced courses on this topic. After completion of this course, students will possess an increased awareness of the various structures and functions of the human body and will have a better understanding of how this relates to future allied health careers. Through guided classroom and laboratory experiences, students will identify body parts and relate organ systems for a comprehensive overview of body function.

### **COURSE DESCRIPTION:**

This course is a basic integrated study of the structure and function of the human body.

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

New ACCUPLACER Reading Comp 235 or ACT Reading 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 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

\***Online/Hybrid** courses require students to complete the [Distance Learning Orientation Video](#) prior to enrolling in an online course.

### **REQUIRED MATERIALS:**

Please visit the [BOOKSTORE](#) online site for most current textbook information.

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 learning management system (LMS) used for course materials.  
Access to myHGTC portal for student self-services.  
College email access – this is the college's primary official form of communication.

### **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 (Defined in the code as: "a. Copying from another student's test or answer sheet. b. Using materials or equipment during a test not authorized by the person giving the test. c. Collaborating with any other person during a test without permission. d. Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of a test prior to its administration. e. Bribing or coercing any other person to obtain tests or information about tests. f. Substituting for another student or permitting any other person to substitute for oneself. g. Cooperating or aiding in any of the above.") or committing plagiarism (Defined in the code as: "(1) the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work or (2) submitting content for academic purposes that are created by artificial intelligence, technology platforms, or writing services and representing that such content is the person's own work product.") 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 W or WF at the professor's discretion and charges being filed with the Chief Student Services Officer.

## Part II: Student Learning Outcomes

### COURSE LEARNING OUTCOMES and ASSESSMENTS\*:

#### Lecture Student Learning Outcomes: (chapters 5,6,10 &19 Lab Only)

##### UNIT 1: Chapters 1-5

The student will be introduced to anatomy and physiology and histology while reviewing chemistry, cells, and cellular metabolism by:

Defining Anatomy and Physiology and listing the organization of the human body.

Identifying the characteristics of life and defining metabolism by describing the major types of chemical reactions within the body.

Defining homeostasis and the mechanisms utilized by the body to achieve and maintain it.

Outlining the eleven organ systems of the body and their functions.

Utilizing anatomical and directional terms to describe body structures.

Explain atomic structure how and it predicts the way atoms interact.

Defining chemical terms and summarizing types of chemical bonds.

Defining pH and its relationship to human body chemistry.

Identifying major organic and inorganic substances and their importance to living processes.

Examining the structure and function of a variety of cell types.

Explaining how substances move into and out of cells.

Distinguishing between various types of membrane transport systems.

Outlining the life cycle of the cell.

Distinguishing between anabolic and catabolic metabolism.

Explaining how enzymes control metabolic processes.

Discussing how ATP stores chemical energy and makes it available to a cell.

Outlining the reactions of cellular respiration.

Outlining the process of protein synthesis and identifying the roles of DNA and RNA.

Identifying the major characteristics of epithelial, connective, muscle, and nervous tissue.

Identifying epithelial, connective, muscle, and nervous tissues according to their shapes and arrangements and listing locations and functions of each.

Examining the various cell and fiber types found in connective tissues.

Contrasting the major characteristics of the three (3) types of muscle tissue.

##### UNIT II: Chapters 6-8

The student will be able to comprehend the structure and function of the integumentary, muscle and skeletal systems by:

Defining the structure and function of the skin and epidermal derivatives, including body temperature regulation and wound healing.

Contrasting each layer of the skin in terms of tissue types, key features, and functions.

Explaining the role(s) of each accessory organ as they relate to the functions of the skin.

Listing and explaining the functional aspects of the skeletal system.

Classifying bones into five (5) classifications according to their shapes.

Compare and contrast the histology of compact and spongy bone.

Identifying the macroscopic and microscopic structures of a long bone and listing the

functions of these parts.

Identifying the major bones of the axial and appendicular skeleton.

Explaining the role(s) of each part of a long bone.

Comparing and contrasting intramembranous and endochondral ossification and explaining the role(s) of the osteoblasts and osteoclasts.

Distinguishing between red marrow and yellow marrow and their function in the process of hematopoiesis.

Classifying joints based on structure and function and naming joint movements.

Defining basic muscle functions.

Outlining the gross and microscopic structure of skeletal muscle.

Illustrating a sarcomere and labeling the various structures within the sarcomere.

Explaining the process of skeletal muscle contraction including the neuromuscular junction, sliding filament model, and energy sources.

Defining recruitment, summation, and muscle fatigue.

Comparing slow-twitch to fast-twitch muscle fibers.

Comparing the general characteristics of skeletal, smooth, and cardiac muscle including location and contraction.

Defining peristalsis.

Explaining rigor mortis.

Defining origin and insertion and explaining how muscles interact to produce movement.

Identifying major muscles of the human body.

### UNIT III: Chapters 9-11

The student will be able to comprehend the structure and function of the nervous and endocrine systems, and demonstrate an understanding of the somatic and special senses by:

Explaining the structure and function of each division and subdivision of the central, peripheral, and autonomic nervous system.

Listing types of neuroglia and their functions.

Identifying parts of a neuron and their functions, including the role of myelin.

Classifying neurons based on structure and function.

Defining a synapse.

Explaining cell membrane potential and action potential.

Illustrating the pathway of a nerve impulse as it is received by receptors until it reaches the effectors, including the role of neurotransmitters.

Outlining a reflex arc.

Identifying the three layers of the meninges and their functions.

Summarizing the structure and functions of the spinal cord.

Summarizing the structures and functions of the brain, including the four lobes of the cerebrum, cerebellum, diencephalon, and brainstem.

Discussing the functions of the cranial and spinal nerves.

Comparing the actions of the sympathetic and parasympathetic nervous systems as they affect other body systems.

Listing examples of each of the somatic senses and determining the specific kinds of stimuli that would trigger each of these senses.

Comparing visceral pain to referred pain.

Outlining the olfactory nerve pathway.

Listing the five primary taste sensations and explaining which structures are involved in these processes.

Explaining the mechanism of hearing, vision, and equilibrium by integrating anatomical structures with their functions.

Elaborating on the structure and function of the hormone-secreting glands.

Explaining the functions of the endocrine system and its relationship to the functioning of the nervous system.

Explaining how hormones produce effects on target cells and how hormone secretions are regulated by feedback mechanisms.

Identifying the major endocrine organs, labeling major structures and hormones produced and identifying general functions for each organ.

UNIT IV: Chapters 12-14:

The student will possess an understanding of the components of blood, and comprehend the structure and function of the Lymphatic and Cardiovascular systems by:

Outlining the composition and functions of the blood.

List the constituents of plasma and their functions.

Identify the formed elements and list their functions.

Explaining the steps in hemostasis.

Comparing each of the ABO blood types in terms of their antigens and antibodies.

Identifying the preferred and permissible donors for each of the ABO and Rh blood types in case of a blood transfusion.

Identifying the structures of the heart and blood vessels and relating structures with functions.

Organizing the pathway of blood through the heart.

Illustrating how the cardiac conduction system initiates a complete cardiac cycle and interpreting an ECG.

Comparing arteries to veins in terms of their vessel walls and functions.

Contrasting arterioles to venules in terms of their vessel walls and functions.

Defining coronary arteriosclerosis, myocardial infarction, angina pectoris, thrombosis, and embolism.

Defining blood pressure and explaining how it is measured.

Explaining the regulation of blood pressure and flow.

Outlining the organization of the lymphatic system and its role in providing immunity against disease.

Summarizing the general composition of lymph and the role of the lymphatic system in terms of transport of fluids throughout the body.

Organizing the flow of lymph throughout the body from the capillaries to the lymphatic trunk and then to the heart.

Identifying non-specific defense mechanisms of immunity.

Comparing humoral immunity and cell-mediated immunity.

Discussing applications of immunity including allergies, vaccines, and autoimmunity.

UNIT V: Chapters 15, 16, 17 and 19

The student will be able to demonstrate an understanding of the Digestive, Respiratory, Urinary and Reproductive systems by:

Identifying the various organs of the digestive system including the accessory organs of digestion and

explaining the processes involved in the chemical and mechanical digestion of the major food groups.  
 Listing, in order, the structures food passes through from the beginning to the end of the alimentary canal.

Naming the four distinct layers of a hollow tubular digestive organ.

Elaborating on the various regions of the stomach and gastric secretions.

Comparing the small intestines to the colon regarding location and function.

Identifying sites where carbohydrates, proteins and fats are digested.

Identifying the structures of the respiratory system and explaining the mechanics of breathing, exchange of respiratory gases and the regulation of respiration.

Listing, in order, the passageway of air through the bronchial tree.

Contrasting the movements of the diaphragm and intercostal muscles in inspiration and expiration.

Interpreting respiratory volumes and capacities in spirometry.

Discussing the neural control of breathing.

Defining the respiratory membrane.

Explaining how oxygen and carbon dioxide are transported, including the role of hemoglobin.

Identifying the various structures of the urinary system and explaining the processes involved in the elimination of wastes and in homeostasis of body fluid.

Listing the various functions of the urinary system.

Identifying the major structures and their functions in the kidney.

Illustrating a typical nephron labeling each major structure and giving a general function for each.

Discussing the three (3) major processes involved in urine formation.

Discussing the regulation of urine concentration and volume.

Identifying the major reproductive structures of the human body and explaining the function of each in controlling male and female physiology.

Outlining the pathway of a sperm or egg cell through the male or female reproductive system.

Listing the phases of the human sexual response.

Outlining the menstrual cycle and relating it to hormone production by the pituitary gland and ovary.

Contrasting mitosis and meiosis.

Lab Student Learning Outcomes:

Learning outcomes for the lab portion of this course are included in the Lab Student Handouts, a document that will be provided to you by your lab Instructor. They are detailed for each lab topic covered in the course and include items like identification of structures on lab models, diagrams, devices, and dissected materials. Learning outcomes include utilization of microscopes to view and identify cells and tissues. Accurate spelling is a learning outcome and graded component of this course.

***\*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\***

Lecture	75%
Lab	25%
	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, and if you use a testing center other than those provided by HGTC, the center may charge a fee for its services.

**Science Department Attendance Policies:**

For a 15-week course (fall and spring) or a 10-week course (summer), the allowed number of absences for a MW or TR class is as follows: 4 absences are allowed for lecture and 2 are allowed for lab, regardless of reason. For a lecture class that meets once a week, the allowed number of absences is 2.

For a 7-week fast-paced course (fall and spring) or a 5-week fast-paced course (summer), the allowed number of absences is as follows: 1 absence is allowed for lecture and 1 for lab, regardless of reason.



**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.

**Lab Attendance for Hybrid Courses:**

Students in hybrid classes in which labs only meet 5 or 6 times during the semester, must attend all lab sessions for its entirety. Failure to attend one lab will result in immediate withdrawal. Students in hybrid classes where labs meet every week, you are allowed two lab absences. When a student surpasses the allowed number of absences, the student will be dropped automatically from the course with a W or a WF.

**Lab Attendance for Hybrid Courses:**

Students in hybrid classes in which labs meet weekly, are allowed two (2) lab absences. Students in hybrid labs that only meet 5 or 6 times during the semester, must attend all lab sessions for its entirety. When a student surpasses the allowed number of absences, the student will be dropped automatically from the course with a W or a WF.

**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 #1.



### **HGTC Library:**

Each campus location has a library where HGTC students, faculty, and staff may check out materials with their HGTC ID. All three HGTC campus libraries are equipped with computers to support academic research and related school work; printing is available as well. Visit the [Library](#) website for more information or call (843) 349-5268.

### **Student Testing:**

Testing in an **online/hybrid** course and in make-up exam situations may be accomplished in a variety of ways:

- Test administered within D2L
- Test administered in writing on paper
- Test administered through Publisher Platforms (which may have a fee associated with the usage).

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 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 Services staff will review documentation of the student's disability and, in a confidential setting with the student, engage in an interactive process to 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. Students will need to reach out to the Accessibility and Disability Services staff each semester to

renew their accommodations.

**COUNSELING SERVICES:**

HGTC Counseling Services strives to optimize student success through managing personal and academic concerns that may interfere with achieving educational goals. Staff are available to every student for assistance and guidance on personal matters, academic concerns and other areas of concern. HGTC offers free in-person and telehealth counseling services to students. For more information about counseling services, please reach out to [counseling@hgtc.edu](mailto:counseling@hgtc.edu) or visit the website the [Counseling Services webpage](#).

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

Horry-Georgetown Technical College shall not discriminate in employment or personnel decisions or in student admissions or in student decisions, or in all other segments of the College community 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 the educational programs and activities which it operates, and the college is prohibited from discrimination in such manner by applicable laws. Practices and requirements for nondiscrimination extend to the enrollment of students in programs and activities of the College and employment by the College.

All inquiries regarding the federal laws as they relate to discrimination on the basis of sex may be directed to Tamatha Sells, Title IX Coordinator, Horry-Georgetown Technical College, Building 1100C, Room 107B, 2050 Hwy 501 E, PO Box 261966, Conway, SC 29528-6066, 843-349-5218, [tamatha.sells@hgtc.edu](mailto:tamatha.sells@hgtc.edu) or to the US Department of Education Office of Civil Rights. (Telephone: 800-421-3481/Email: [OCR@ed.gov](mailto:OCR@ed.gov)).

Other employee and applicant inquiries concerning the federal laws and their application to the College may be directed to Jacquelyne Snyder, Vice President, Human Resources and Employee Relations & the College's Affirmative Action/Equal Opportunity Officer, Horry-Georgetown Technical College, Building 200C, Room 205B, 2050 Hwy 501 E, PO Box 261966, Conway, SC 29528-6066, 843-349-5212, [jacquelyne.snyder@hgtc.edu](mailto:jacquelyne.snyder@hgtc.edu).

Other student and prospective student inquiries concerning the federal laws and their application to the College or any student decision may be directed to Dr. Melissa Batten, Vice President, Student Affairs, Section 504 & Title II Coordinator Horry-Georgetown Technical College, Building 1100C, Room 107A, 2050 Hwy 501 E, PO Box 261966, Conway, SC 29528-6066, 843-349-5228, [melissa.batten@hgtc.edu](mailto:melissa.batten@hgtc.edu).

## **TITLE IX REQUIREMENTS:**

Title IX of the Education Amendments of 1972 protects students, employees, applicants for admission and employment, and other persons from all forms of sex discrimination.

HGTC prohibits the offenses of domestic violence, dating violence, sexual assault, and stalking and will provide students, faculty, and staff with necessary information regarding prevention, policies, procedures, and resources.

Any student, or other member of the college community, who believes that they have been a victim of sexual harassment, domestic violence, dating violence, sexual assault, or stalking may file a report with the college's Title IX Coordinator or campus law enforcement\*.

\*Faculty and Staff are required to report these incidents to the Title IX Coordinator 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).

For more information, contact Tamatha Sells, Title IX Coordinator, Conway Campus, Building 1100C, Room 107B, 843-349-5218, [tamatha.sells@hgtc.edu](mailto:tamatha.sells@hgtc.edu).

## **PREGNANCY ACCOMMODATIONS**

Under Title IX, colleges must not exclude a pregnant student from participating in any part of an educational program. Horry-Georgetown Technical College is committed to ensuring that pregnant students receive reasonable accommodations to ensure access to our educational programs.

Students should advise the Title IX Coordinator of a potential need for accommodations as soon as they know they are pregnant. It is extremely important that communication between student, instructors, and the Title IX Coordinator begin as soon as possible. Each situation is unique and will be addressed individually.

Title IX accommodations DO NOT apply to Financial Aid. Financial Aid regulations do not give the College any discretion in terms of Financial Aid eligibility.

Certain educational programs may have strict certification requirements or requirements mandated by outside regulatory agencies. Therefore, in some programs, the application of Title IX accommodations may be limited.

To request pregnancy accommodations, please complete the [Pregnancy Intake Form](#).