Course Information
Division: Science
Course Number: BIO 160
Title: Introduction to Human Anatomy and Physiology
Credits: 4
Developed by: Mike McCarthy/Revised by Willis Haws
Lecture/Lab Ratio: 3 Lecture/3 Lab
Transfer Status

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<td>Elective Credit</td>
<td>BIO Departmental Elective: Lab Science [LAB]</td>
<td>Elective Credit, Tier 1 &amp; 2 Natural Sciences (NS)</td>
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Activity Course: No
CIP Code: 26.0400
Assessment Mode: Pre/Post Test (100 Questions/100 Points)
Semester Taught: Fall and Spring
GE Category: Lab Science
Separate Lab: Yes
Awareness Course: No
Intensive Writing Course: No

Prerequisites
ENG 091 with a grade of “C” or higher or reading placement test score as established by District policy

Educational Value
The Introduction to Anatomy and Physiology class provides students with an understanding of the body, which will assist them throughout their lives when they encounter events concerning disease, genetics, and lifestyle choices.

Description
Study of structure and dynamics of the human body. For students who desire one semester in anatomy and physiology.

Supplies
None
Competencies and Performance Standards

1. Identify directional terminology.
   **Learning objectives**
   What you will learn as you master the competency:
   a. Ascertain body parts using directional terms.
   b. Identify body position.
   c. Identify body surfaces.
   d. Identify body planes and sections.
   **Performance Standards**
   You will demonstrate your competence:
   o through class discussion
   o on an objective test
   o on a lab practical
   Your performance will be successful when:
   o learner identifies body surfaces
   o learner illustrates body planes and sections
   o learner illustrates body position and direction

2. Identify basic organic compounds.
   **Learning objectives**
   What you will learn as you master the competency:
   a. Identify the functions of carbohydrates.
   b. Recognize the three classes of carbohydrates; monosaccharides, disaccharides, and polysaccharides.
   c. Identify the functions of lipids.
   d. Recognize the kinds of lipids and where they are found; Saturated fats, unsaturated fats, phospholipids, and steroids.
   e. Identify the functions of proteins.
   f. List the four levels of structure of a protein molecule.
   g. Explain the process of denaturation of the structure of a protein.
   h. Recognize enzymes and their functions in reactions.
   i. Identify the functions of the nucleic acids.
   j. Match the nucleic acid to its function; DNA, RNA, ATP
   **Performance Standards**
   You will demonstrate your competence:
   o through class discussion
   o on an objective test
   Your performance will be successful when:
   o learner describes the features and functions of carbohydrates
   o learner describes the features and functions of lipids
   o learner describes the features and functions of proteins
   o learner describes the features and functions of the nucleic acids
3. Identify basic cell structure and function.

Learning objectives
What you will learn as you master the competency:

a. State the structure and function of a cell membrane.
b. Recognize simple diffusion.
c. Recognize osmosis.
d. Recognize facilitated diffusion.
e. Recognize active transport.
f. Identify cell organelles and their functions

Performance Standards
You will demonstrate your competence:

- through class discussion
- on an objective test
- on a lab practical

Your performance will be successful when:

- learner identifies the parts of a cell
- learner describes the features of a cell membrane
- learner explains the movement of materials across the cell membrane
- learner identifies the function of the cell organelles

4. Identify various tissue types and their functions.

Learning objectives
What you will learn as you master the competency:

a. Recognize the four basic types of tissues: epithelial, connective, muscular, and nervous tissues.
b. Identify the main functions of each type of tissue.
c. List the main locations of each type of tissue in the body.

Performance Standards
You will demonstrate your competence:

- through class discussion
- by identification on a microscope slide
- on an objective test
- on a lab practical

Your performance will be successful when:

- learner identifies various epithelial tissue
- learner identifies various connective tissue
- learner identifies various muscle tissue
- learner identifies various nervous tissue
5. **Recognize anatomical parts of the human through viewing of cadaver or computer model.**

*Learning objectives*

*What you will learn as you master the competency:*

a. Recognize the body plan of humans.
b. Identify major cavities of the body.
c. Identify the major organs and structures contained in each body cavity.

*Performance Standards*

*You will demonstrate your competence:*

- on a lab practical

*Your performance will be successful when:*

- learner views the cadaver or human computer model
- learner correctly identifies the various cavities of the body
- learner identifies major organs of the body

6. **Identify the conditions for a human to remain healthy.**

*Learning objectives*

*What you will learn as you master the competency:*

a. Identify the need to keep blood pressure within normal limits.
b. Identify the need to keep blood sugar within normal limits.
c. Identify the need to keep body temperature within normal limits.
d. Identify the need to keep blood Ph within normal limits.

*Performance Standards*

*You will demonstrate your competence:*

- through class discussion
- during a lab exercise

*Your performance will be successful when:*

- learner understands the concept of homeostasis
- learner identifies the normal perimeters of a steady state
- learner measures the factors of homeostasis

7. **Identify anatomical features and physiological functions of the integumentary system.**

*Learning objectives*

*What you will learn as you master the competency:*

a. Identify the features of the epidermis, dermis, and hypodermis.
b. Identify the accessory structures of the integumentary system.
c. Identify the function of the different components of the various layers of skin.

*Performance Standards*

*You will demonstrate your competence:*

- through class discussion
- on an objective test
8. Identify anatomical features and physiological functions of the skeletal system.

**Learning objectives**

*What you will learn as you master the competency:*

- a. Identify the features of skeletal tissue.
- b. Identify the process of bone formation.
- c. Identify the bones of the human skeleton.
- d. Identify the classification of bones; compact, spongy, long, short, flat or irregular bones.
- e. Identify landmarks on bones of the human skeleton.
- f. Identify articulations between bones.
- g. Identify the bones of the axial skeleton.
- h. Identify the bones of the appendicular skeleton.

**Performance Standards**

*You will demonstrate your competence:*

- through class discussion
- on an objective test
- on a lab practical

*Your performance will be successful when:*

- learner identifies features of skeletal tissue
- learner recognizes the steps of the development of bone
- learner identifies the bones of the human skeleton
- learner identifies the landmarks on bones of the human skeleton
- learner identifies articulations between bones
- learner classifies bones and recognizes whether they are located in the axial or appendicular skeleton

9. Identify anatomical features and physiological functions of the muscular system.

**Learning objectives**

*What you will learn as you master the competency:*

- a. Identify components of muscle.
- b. Identify the process of muscle contraction on a cellular level.
- c. Identify muscle attachment to bone.
- d. Identify sources of energy for muscle contraction.
- e. Identify the classification of muscle types; voluntary, involuntary, striated, nonstriated.

**Performance Standards**

*You will demonstrate your competence:*

- through class discussion
- on an objective test
on a lab practical

Your performance will be successful when:

- learner identifies the components of muscle
- learner organizes the stages of bone development
- learner identifies the cellular components that create muscle contraction
- learner differentiates between different muscle types
- learner correctly identifies insertion from origin of muscle to bone
- learner recognizes the various sources of muscular energy

10. Identify anatomical features and physiological functions of the nervous system.

**Learning objectives**

*What you will learn as you master the competency:*

a. List components of the central nervous system.
b. List components of the peripheral nervous system.
c. List components of the somatic system.
d. List components of the autonomic system.
e. Identify types of nerve cells.
f. Identify parts of a neuron.
g. Identify the process of the transmission of a nerve impulse.
h. Identify parts of the brain.
i. Identify the function of various parts of the brain.
j. Identify parts of the spinal cord.

**Performance Standards**

*You will demonstrate your competence:*

- through class discussion
- on an objective test
- during a lab experience

Your performance will be successful when:

- learner lists components of the central nervous system
- learner lists components of the peripheral nervous system
- learner lists components of the somatic system
- learner lists components of the autonomic system
- learner identifies types of nerve cells
- learner identifies parts of a neuron
- learner describes the process of generation of a nerve impulse
- learner identifies parts of the brain
- learner correctly associates the part of the brain to the function of that part of the brain
11. Identify anatomical features and physiological function of the organs and structures of the senses.

Learning objectives
What you will learn as you master the competency:

a. Identify parts of the eye.
b. Identify the functions of the components of the eye.
c. Identify the parts of the ear.
d. Identify the functions of the components of the ear.
e. Identify the parts of the nose.
f. Identify the function of the sensory components of the skin.
g. Identify the function of the components of the nose.
h. Identify the parts of the tongue.
i. Identify the functions of the components of the tongue.
j. Identify the five types of taste.
k. Identify the sensory parts of the skin.

Performance Standards
You will demonstrate your competence:

- through class discussion
- on an objective test
- on a lab practical

Your performance will be successful when:

- learner identifies the parts of the eye and states the function of each part
- learner identifies the parts of the ear and states the function of each part
- learner identifies the parts of the nose and states the function of each part
- learner identifies the parts of the tongue and states the function of each part
- learner recognizes the five types of taste
- learner identifies the sensory parts of the skin and states the function of each part

12. Identify anatomical features and physiological functions of the endocrine system.

Learning objectives
What you will learn as you master the competency:

a. Identify the major endocrine glands and associated organs.
b. Identifies the function of hormones.
c. Identifies positive and negative feedback systems of hormonal control.
d. List the major hormones.
e. Associates the hormone with the gland or organ.

Performance Standards
You will demonstrate your competence:

- through class discussion
- on an objective test
- on a lab practical
Your performance will be successful when:
- learner lists the major endocrine glands and organs
- learner lists the major hormones produced by the major endocrine organs
- learner explains the process of positive and negative feedback systems
- learner identifies the reaction of organ to hormonal control

13. Identify anatomical features and physiological functions of the cardiovascular system.

Learning objectives
What you will learn as you master the competency:

a. Identify the functions of the cardiovascular system.
b. Identify the anatomy of the heart and the function of each chamber.
c. Identify the origination of the heart beat: S.A. Node – A.V. Node.
d. Identify what is occurring in the heart to create a pulse and the heart beat; Lub – Dup.
e. Identify the structures of an artery, artiole, capillary, venule, and vein.
f. Identify the pulmonary and systemic circulatory pathways.
g. Identify the components of the blood and the function of each component.
h. Identify the process of hematopoiesis.
i. Identify the process of hematostasis.

Performance Standards
You will demonstrate your competence:
- through class discussion
- on an objective test
- on a lab practical
Your performance will be successful when:
- learner identifies functions of the cardiovascular system
- learner identifies anatomy of the heart and the functions of each part
- learner identifies the heart functions that create heart beat and pulse
- learner identifies characteristics of the various vessels of the system
- learner identifies circulatory pathways
- learner identifies the components of the heart and the functions of each component
- learner identifies the process of hematopoiesis
- learner identifies the process of hematostasis

14. Identify anatomical features and physiological functions of the immune system including the lymph system.

Learning objectives
What you will learn as you master the competency:

a. Identify components of nonspecific defense.
b. Identify the components of the lymph system.
c. Identify the processes of lymph defense system.
15. Identify anatomical features and physiological functions of the respiratory system.

Learning objectives
What you will learn as you master the competency:
  a. Identify the functions of the respiratory system.
  b. Identify the anatomy of the respiratory system.
  c. Identify the reason we breathe: removing CO₂
  d. Identify lung volumes.

Performance Standards
You will demonstrate your competence:
  o through class discussion
  o on an objective test
  o on a lab practical
Your performance will be successful when:
  o learner identifies the function of the respiratory system
  o learner describes the anatomy of the respiratory system
  o learner describes the response of the system to the build-up of CO₂ – causing us to breathe
  o learner differentiates various lung volumes

16. Identify anatomical features and physiological functions of the digestive system.

Learning objectives
What you will learn as you master the competency:
  a. Identify the function of the digestive system.
  b. Identify the components of the digestive system and the function of each component.
  c. Identify the associated organs of the digestive process: gall bladder and pancreas.
  d. Identify the process of digestion and absorption of nutrients.

Performance Standards
You will demonstrate your competence:
  o through class discussion
  o on an objective test
  o on a lab practical
Your performance will be successful when:
  o learner identifies the function of the digestive system
lerner identifies the components of the digestive system and their functions
- lerner identifies the functions of the gall bladder and pancreas and their functions in the digestive process
- lerner describes the processes of digestion and absorption of nutrients

17. Identify anatomical features and physiological functions of the excretory system.

**Learning objectives**

*What you will learn as you master the competency:*

a. Identify the common function of the excretory system: excretion, Ph balance, and homeostasis.

b. Identify the components and functions of the organs and structures of the urinary system.

c. Identify nephron structure.

d. Identify the process of diffusion and filtration of blood through the nephron.

**Performance Standards**

*You will demonstrate your competence:*

- through class discussion
- on an objective test
- on a lab practical

*Your performance will be successful when:*

- learner identifies the functions of the excretory system
- learner identifies the components and functions of the kidney
- learner identifies the structure of the nephron and the process of diffusion and filtration through the nephron

18. Identify anatomical features and physiological functions of the reproductive system.

**Learning objectives**

*What you will learn as you master the competency:*

a. Identify the common function of the male and female reproductive system.

b. Identify the components and functions of the female reproductive anatomy.

c. Identify the components and functions of the male reproductive system.

d. Identify spermatogenesis in males.

e. Identify oogenesis in females.

f. Identify the process of fertilization.

g. Identify the process of the menstrual cycle including the associated hormones.

**Performance Standards**

*You will demonstrate your competence:*

- through class discussion
- on an objective test
- on a lab practical

*Your performance will be successful when:*

- learner identifies the common function of the reproductive systems
o learner identifies the components and functions of the female reproductive system
o learner identifies the components and function of the male reproductive system
o learner describes the processes of both spermatogenesis and oogenesis
o learner recognizes the process of fertilization
o learner identifies the processes involved in the menstrual cycle

**Types of Instruction**
Classroom presentation, including media
Large group discussion
Small group discussion
Writing workshops
Individual and small group presentations

**Grading Information**

**Grading Rationale**
Each instructor has the flexibility to develop evaluative procedures within the following parameters:
1. The Post Test will represent 10% of the course grade.
2. Course learning activities shall represent 90% of the course grade.

**Grading Scale**

A 90% - 100%
B 80% - 89%
C 70% - 79%
D 60% - 69%
F Below 60 %
P 70% - 100% This is a community interest course that is appropriate for a P/F grade.