Anatomy, Physiology, and Disease Concepts
Course Outcome Summary
Wisconsin Indianhead Technical College

Information
Course Number 10-510-135
Credits 2
Instructional Area Nursing
Instructional Level Associate Degree
Division Service and Health Occupations
Developers Jean Kissack/Piper Larson
Development Date 03/11/2002

Types of Instruction

<table>
<thead>
<tr>
<th>Type of Instruction</th>
<th>Contact Hours</th>
<th>Outside Hours</th>
<th>Credits</th>
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<td>On Campus Laboratory and Clinicals</td>
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Description
This course is a study of human anatomical structure, physiology, and the basic mechanisms of disease. It is designed to meet the unique educational needs of the medical secretary/office personnel. The course focuses on assessment, diagnosis, and treatment of commonly occurring medical conditions. The course will be structured to application of the content through case studies and group discussions. It is meant to provide a solid knowledge base for students entering work in health care settings. It is recommended that the student have a basic knowledge of medical terminology.
**Course Level Learning Outcomes**

**Competencies**

1. **Describe the organization of the body from the single cell to the body as a whole.**

   **Performance Standards**
   
   Competence will be demonstrated:
   
   o in classroom without instructor assistance or reference to text
   
   **Criteria - Performance will be satisfactory when:**
   
   o learner completes exam with 80% accuracy

   **Learning objectives**
   
   What you will learn as you master the competency:
   
   a. Define anatomy, physiology, and pathology
   b. Demonstrate levels of knowledge of organization in the body
   c. Demonstrate general knowledge of all ten body systems
   d. Identify all life-sustaining reactions that take place in the body
   e. Identify anatomical planes and directions used to describe a position or area of the body
   f. Identify the basic metric units of length, weight, and volume
   g. Explain the difference between elements, atoms, molecules, and compounds
   h. Describe the chemical bonds that take place in the body
   i. Explain how numbers on the pH scale relate to acids and bases
   j. Demonstrate knowledge of the chemical makeup of living matter
   k. Explain the parts of the living cell and their functions
   l. Explain the roles of risk factors and their effects on cells that may lead to cancer
   m. Describe the four types of tissue found in the body
   n. Identify common disorders of the four types of tissue

2. **Correlate the effects of disease producing mechanisms as the first line of defense.**

   **Performance Standards**
   
   Competence will be demonstrated:
   
   o in classroom without assistance
   
   **Criteria - Performance will be satisfactory when:**
   
   o learner completes exam with 80% accuracy

   **Learning objectives**
   
   What you will learn as you master the competency:
   
   a. Define disease and list causes of disease
   b. List the four types of microbiological organisms
   c. Describe the role of public health in limiting disease
   d. Differentiate sterilization, disinfection, and antisepsis
3. **Correlate the role of the muscular and skeletal system in movement and support.**

   **Performance Standards**

   *Competence will be demonstrated:*
   - in classroom without assistance

   **Criteria - Performance will be satisfactory when:**
   - learner completes exam with 80% accuracy

   **Learning objectives**

   *What you will learn as you master the competency:*
   - Relate support of the body with the skeletal system
   - Explain the makeup of bone tissue
   - Identify marking on bone tissue
   - Explain how bones grow
   - Identify the bones of the skeleton
   - Describe common bone disorders
   - Define the six types of fractures
   - Describe the three types of joints
   - List the most common musculoskeletal disorders
   - Describe the three types of muscle tissue
   - Describe functions of skeletal muscle
   - Define oxygen debt and its effects
   - Describe the effects of exercise on muscles
   - Name the major muscles in each group
   - Describe the functions of the different muscles
   - List the major muscular disorders
   - Describe the most common diagnostic modalities used to assess musculoskeletal disorders
   - Identify ways to promote the health of the musculoskeletal system

4. **Demonstrate the role the nervous system plays in coordination and control.**

   **Performance Standards**

   *Competence will be demonstrated:*
   - in classroom without assistance

   **Criteria - Performance will be satisfactory when:**
   - learner completes exam with 80% accuracy
Learning objectives
What you will learn as you master the competency:

a. Describe the organization of the nervous system according to structure and function
b. Describe the transmission of a nerve impulse
c. Describe transmission at a synapse
d. Define neurotransmitter
e. Describe the three types of nerves
f. Describe the spinal cord and spinal nerves
g. Compare the functions of the sympathetic and parasympathetic nervous system
h. Identify the locations and functions of the four main divisions of the brain
i. Locate the three subdivisions of the brain stem
j. Describe the three meninges
k. Cite the main functions of the cerebral cortex in each lobe of the cerebrum
l. Define the function of the cerebrospinal fluid
m. List the names and functions of the twelve cranial nerves
n. Describe the most commonly used diagnostic methods to assess nervous system disorders
o. List common nervous system disorders and their effects
p. List ways to protect and maintain the health of the nervous system

5. Demonstrate the role of the sensory and endocrine systems in affecting coordination and control.

Performance Standards
Competence will be demonstrated:

- in classroom without assistance

Criteria - Performance will be satisfactory when:

- learner completes exam with 80% accuracy

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

a. Describe the function of the sensory system
b. Describe the structure and function of the eye
c. List common eye disorders and their effects
d. Describe the structure and function of the ear
e. List common ear disorders and their effects
f. Explain the diagnostic methods used to assess eye and ear disorders
g. List ways to protect the eyes and ears from disease and damage
h. Compare the effects of the nervous and endocrine systems in controlling the body
i. Describe the functions of hormones
j. Identify the glands of the endocrine system and the hormones produced by those glands
k. Describe how the hypothalamus controls the anterior and posterior pituitary
l. Describe the effects of hypo- and hypersecretion of the various hormones
m. Describe common disorders of the endocrine system
n. Explain how the endocrine system responds to stress
o. Identify ways to promote the health of endocrine glands
p. List common diagnostic methods used to assess endocrine disorders

6. **Evaluate the role of the circulatory system and its role in body defense.**

   **Performance Standards**
   
   *Competence will be demonstrated:*
   o in classroom without assistance

   **Criteria - Performance will be satisfactory when:**
   o learner completes exam with 80% accuracy

   **Learning objectives**
   
   *What you will learn as you master the competency:*
   a. Describe the layers of the heart wall
   b. Compare the functions of the right and left sides of the heart
   c. Name the chambers and valves of the heart
   d. Describe the cardiac cycle
   e. Name the components of the heart's conduction system
   f. Explain the effects of the autonomic nervous system on the heart rate
   g. Explain what produces the two main heart sounds
   h. Describe common types of heart disease
   i. List actions to minimize the risk of heart disease
   j. Describe diagnostic methods used to assess heart disease
   k. Describe approaches to treatment of heart disease
   l. Differentiate among the three main types of vessels in the body with regard to structure and function
   m. Compare the pulmonary and systemic circuits
   n. Describe examples of anastomosis
   o. Name the main vessels that drain into the superior and inferior venae cavae
   p. Define structure and function of the hepatic portal system
   q. Explain the exchange that takes place across the capillary wall
   r. Describe factors that affect blood flow and pulse
   s. List factors that affect blood pressure
   t. List first aid for hemorrhage
   u. List four types of shock
   v. Describe diagnostic methods used to assess circulatory diseases
   w. Identify common disorders of the circulatory and lymphatic systems
   x. List functions of the lymphatic system
y. Explain how lymphatic capillaries differ from blood capillaries
z. List the major structures and functions of the lymphatic system
aa. Explain ways to promote health of the circulatory system

8. **Demonstrate the role of the respiratory and digestive systems in the body's supply and use of energy.**

*Performance Standards*

*Competence will be demonstrated:*

- in classroom without assistance

*Criteria - Performance will be satisfactory when:*

- learner completes exam with 80% accuracy

**Learning objectives**

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

a. Define respiration and its three phases
b. Describe the structures of the respiratory system
c. Describe the process of respiration
d. List the ways that oxygen and carbon dioxide are transported in the blood
e. Describe how respirations are regulated
f. Define conditions that result from inadequate breathing
g. Describe common types of respiratory infections and pulmonary diseases
h. Identify the effects of smoking on the respiratory system and the rest of the body
i. Describe diagnostic methods to evaluate the respiratory system
j. List common methods used to treat respiratory disorders
k. Describe ways to promote the health of the respiratory system
l. Name the two main functions of the digestive system
m. Describe the structure and functions of the digestive system
n. Explain how bile functions in digestion
o. Explain the role of enzymes in digestion
p. Define absorption and the role of villi in absorption
q. Describe how feedback regulates digestion
r. List the hormones involved in regulating digestion
s. Describe common disorders of the digestive system
t. Identify diagnostic methods used to assess the digestive system
u. List ways to promote the health of the digestive system

9. **Demonstrate the role that metabolism, body fluids, and the urinary system play in the body’s supply and use of energy.**

*Performance Standards*

*Competence will be demonstrated:*
in classroom without assistance

Criteria - Performance will be satisfactory when:

o learner completes exam with 80% accuracy

Learning objectives

What you will learn as you master the competency:

a. Differentiate between catabolism and anabolism
b. Differentiate between anaerobic and aerobic phases of cellular respiration
c. Define metabolic rate
d. Explain the role of glucose in metabolism
e. Compare the energy contents of fats, proteins, and carbohydrates
f. Define essential amino acid
g. Explain the role of vitamins and minerals in nutrition
h. List adverse effects of alcohol on nutrition
i. Explain how heat is produced and lost
j. Describe the role of the hypothalamus in regulating body temperature
k. Define fever
l. Compare intracellular and extracellular fluids
m. List the types of extracellular fluids
n. Name the systems involved in water balance
o. Describe the relationship of hormones to electrolyte balance
p. Describe methods for regulating the pH of body fluids
q. Describe common body fluid disorders
r. Explain diagnostic methods for assessing disorders of body fluids
s. List the systems that eliminate waste from the body
t. Describe the structure and function of the urinary system
u. Describe the structure and function of the juxtaglomerular apparatus
v. Explain the processes involved in urine formation
w. Identify the role of ADH
x. Describe the process of micturition
y. List common disorders of the urinary system
z. Describe signs of chronic renal failure
aa. Explain the purpose of kidney dialysis
ab. Differentiate normal from abnormal constituents of urine
ac. Describe common diagnostic methods used to assess the urinary system
ad. Explain methods to promote a healthy fluid balance in the body and protect kidney function

10. Correlate the structures and functions of the body related to reproduction, birth, and inheritance.

Performance Standards
**Competence will be demonstrated:**
- in classroom without assistance

**Criteria - Performance will be satisfactory when:**
- learner completes exam with 80% accuracy

**Learning objectives**

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

- a. Describe the structure and function of the male and female reproductive organs
- b. Describe the composition and function of semen
- c. Describe the hormones of the menstrual cycle and their effects
- d. List the main functions of the male and female hormones
- e. Describe the changes involved in menopause
- f. Define contraception
- g. List common methods of contraception
- h. Describe major disorders of the male and female reproductive systems
- i. Identify commonly used diagnostic methods to assess the male and female reproductive systems
- j. Describe ways to maintain reproductive health
- k. Describe the process of fertilization
- l. Explain the structure and function of the fetus
- m. Explain the changes that occur in the fetus and mother during pregnancy
- n. Compare fraternal and identical twins
- o. Explain the advantages of breastfeeding
- p. Describe disorders associated with pregnancy, childbirth, and lactation
- q. Identify common diagnostic methods used to assess fertility and pregnancy
- r. Describe the mechanism of gene function
- s. Explain the difference between dominant and recessive genes
- t. Describe what is meant by a carrier of a genetic trait
- u. Explain the process of meiosis
- v. Explain how sex is determined
- w. Describe sex-linked traits
- x. Define mutation
- y. Describe common genetic disorders
- z. Describe genetic counseling
- aa. Explain how karyotypes are used in genetic counseling
- ab. Describe methods used to treat genetic disorders