



HEALTHCARE SCIENCE

COURSE: Concepts of Emergency Medicine

UNIT: 4.1 Introduction to Anatomy and Physiology



INTRODUCTION

Annotation:

This unit will cover the parts of a cell, the function of each part of a cell, the relationship between cells, tissues, organs, and systems, and provide an overview of the eleven organ systems of the human body. Body planes, directions, and cavities will be covered.

Grade(s):

☐	9 th
☐	10 th
☒	11 th
☒	12 th

Time:

- Five 50 minute periods

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Additional Author(s):

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Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be

part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.



FOCUS STANDARDS

GPS Focus Standards: Please list the standard and elements covered.

HS-CEM-5:

Students will demonstrate knowledge of the different systems of the body and how they relate to patient care.

- a. Summarize the importance of the Emergency Medical Services Provider's knowledge of the body's anatomy and physiology in relation to providing competent care and accurate communication to other health care providers.
- b. Demonstrate knowledge of the body's anatomy and physiology to provide competent patient care and accurate communication to other health care providers.

GPS Academic Standards:

SAP1: Students will analyze anatomical structures in relationship to their physiological functions.

SAP2: Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.

SAP3: Students will assess the integration and coordination of body functions and their dependence on the endocrine and nervous systems to regulate physiological activities.

ELA11C1: The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

National / Local Standards / Industry / ISTE:



UNDERSTANDINGS & GOALS

Enduring Understandings:

- Students will understand the parts of a cell, the function of each part of a cell, the relationship between cells, tissues, organs, and systems, and the overall purpose of each of the eleven organ systems of the human body.
- Students will understand the names of the planes and directional terms as used in a health care setting.
- Students will understand the main body cavities and the main organs located in each.

Essential Questions:

- How is the human body organized?
- How and why do healthcare providers use body planes and directional terms when communicating information about patients?
- What organs are located in each body cavity?

Knowledge from this Unit:

- Student can identify structures of a cell.
- Student can explain the functions of the parts of a cell.
- Student can describe the purpose of each of the organ systems in the human body.
- Student can identify body planes, directional terms, and body cavities.

Skills from this Unit:

- Student can use proper medical terminology to communicate information about patient condition and treatment to other health care providers.



ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

- ☐ Pre-test
- ☒ Objective assessment - multiple-choice, true- false, etc.
 - ☐ Quizzes/Tests
 - ☒ Unit test
- ☐ Group project
- ☒ Individual project
- ☐ Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
 - ☐ Self-check rubrics
 - ☐ Self-check during writing/planning process
 - ☐ Journal reflections on concepts, personal experiences and impact on one's life
 - ☐ Reflect on evaluations of work from teachers, business partners, and competition judges
 - ☐ Academic prompts
 - ☐ Practice quizzes/tests
- ☒ Subjective assessment/Informal observations
 - ☐ Essay tests
 - ☒ Observe students working with partners
 - ☐ Observe students role playing
- ☐ Peer-assessment
 - ☐ Peer editing & commentary of products/projects/presentations using rubrics
 - ☐ Peer editing and/or critiquing
- ☐ Dialogue and Discussion
 - ☐ Student/teacher conferences
 - ☐ Partner and small group discussions
 - ☐ Whole group discussions
 - ☐ Interaction with/feedback from community members/speakers and business partners
- ☐ Constructed Responses
 - ☐ Chart good reading/writing/listening/speaking habits
 - ☐ Application of skills to real-life situations/scenarios
- ☐ Post-test

Assessment(s) Title:

- Introduction to Anatomy and Physiology Unit Exam

Assessment(s) Description/Directions:

- Introduction to Anatomy and Physiology Unit Exam: administer upon completion of unit.

Attachments for Assessment(s):

- Introduction to Anatomy and Physiology Unit Exam



LEARNING EXPERIENCES

Instructional planning: Include lessons, activities and other learning experiences in this section with a brief description of the activities to ensure student acquisition of the knowledge and skills addressed in the standards. Complete the sequence of instruction for each lesson/task in the unit.

Sequence of Instruction

1. Identify the Standards. Standards should be posted in the classroom for each lesson.

HS-CEM-5. Students will demonstrate knowledge of the different systems of the body and how they relate to patient care.

SAP1. Students will analyze anatomical structures in relationship to their physiological functions.

SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.

SAP3. Students will assess the integration and coordination of body functions and their dependence on the endocrine and nervous systems to regulate physiological activities.

ELA11C1. The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

2. Review Essential Questions.

- How is the human body organized?
- How and why do healthcare providers use body planes and directional terms when communicating information about patients?
- What organs are located in each body cavity?

3. Identify and review the unit vocabulary.

Pre-assign unit by having students read unit chapter and define terms. Take practice self-quizzes at

<http://msjensen.cehd.umn.edu/webanatomy/cells/> and

http://msjensen.cehd.umn.edu/webanatomy/intro_topics/

CELL:

- Anatomy
- cell

- cell membrane
- centrosome
- Chromatin
- connective tissue
- Cytoplasm
- Endoplasmic reticulum
- epithelial tissue
- Golgi apparatus
- lysosomes
- meiosis
- mitochondria
- mitosis
- Nucleolus
- nucleus
- organ
- organelles
- pathophysiology
- Physiology
- pinocytic vesicles
- protoplasm tissue

BODY PLANES/DIRECTIONS/CAVITIES:

- Abdominal cavity
- anterior
- buccal cavity
- caudal
- cranial
- Cranial cavity
- distal
- dorsal
- dorsal cavity
- frontal plane
- Inferior

- lateral
- medial
- midsagittal plane
- Nasal cavity
- orbital cavity
- pelvic cavity
- posterior
- proximal
- Spinal cavity
- superior
- thoracic cavity
- transverse plane
- Ventral
- ventral cavity

4. Assessment Activity.

- Warm-up Activity: Give students note cards. Let them know this is NOT a graded activity. Tell students they have one minute to write down everything they know--or think they know--about cells. Share answers with class.
- Cell lecture: see lecture notes (attached). Have students take notes.
- Complete cell coloring worksheet (attached).
- Wrap-Up activity: Allow students to pair up and come up with creative ways to remember the various parts of the cell (examples: the cell membrane is the national guard because it determines who enters and leaves the cell just as the national guard determines who enters and leaves a restricted area; centrosome is like twins leaving for different colleges who must divide up their belongings evenly, etc.). Have students share their ideas with the class.

Attachments for Learning Experiences: Cell Lecture Notes, Cell Coloring Worksheet

Lesson Two

1. Warm-up Activity: Briefly review parts of the cell and their functions.
2. Hand out Create a **Cookie Cell worksheet** (attached). Each student should get a paper plate (or napkin) and ice their sugar cookie with vanilla icing. Students should

choose candies to represent different organelles. Complete worksheet while creating cookie.

3. Wrap-up Activity: Allow students to opt to enter the cookie contest for best cell representation. Students who wish to enter should stand in front of the class with their cookie entry. Give each student a card with letter A, B, C, and so forth to hold next to their entry. Remaining students cast their votes for the letter of the cookie they choose. Winner gets prize (suggestion: some leftover candy).

Attachments for Learning Experiences: Create a Cookie Cell Worksheet

Lesson Three

- 1. Warm-up Activity:** Organ Systems Teamwork Activity (attached). Give one card to each student. Direct students to determine which body system card matches which function in order to find their partners. If enough students, divide into two teams and distribute set of cards to each team. First team to finish wins.
- 2. Allow students to choose partners.** Assign each pair one of the body systems (can include special senses if more than 11 groups). Have students create song about the body system including the parts and function of the system as well as related disorders of the system. Allow students to use textbooks for information about body systems. Let students know they will perform the songs during the next lesson.
- 3. Wrap-up Activity:** Call out various functions of the body and have students call out the body system responsible for each function.

Attachments for Learning Experiences: Organ Systems Teamwork Activity

Lesson Four

- 1. Warm-up Activity:** have students perform songs.
- 2. Lecture** (see lecture notes, attached): explain anatomical position, body planes, directional terms, and cavities.
- 3. Wrap-up activity:** Play Simon Says using the directional terms. Example: "Simon Says point to the location just superior to your right eye." Have students take turns leading the game.

Attachments for Learning Experiences: Body Planes Cavities Directions Lecture Notes

Lesson Five

1. Warm-up Activity: review directional terms and cavities from previous day's lesson.
2. Directional Terms Study Buddy. Hand out a blank paper doll template (can find a wide variety of these templates on line such as <http://pbskids.org/caillou/activities/paperdolls/index.html>). Have students cut out doll and give the doll tiny "tattoos" with the directional terms (write word "distal" at end of fingers and "proximal" near shoulder, for example). Print out paper doll clothes and cut out. Use popsicle sticks to turn dolls into puppets. Remind students these are now their directional terms "study buddies."
3. Wrap-up activity: Call out sentences such as "The nose is _____ to the mouth." Have students call out appropriate terms to complete the sentences.

Attachments for Learning Experiences:

Notes & Reflections:



CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Ethical and Legal Responsibilities

Culminating Unit Performance Task Description/Directions/Differentiated

Attachments for Culminating Performance Task



UNIT RESOURCES

Web Resources:

- Web Resources: <http://msjensen.cehd.umn.edu/webanatomy/cells/> This is a great website for students to review and complete a self-test on the cell structures
- http://msjensen.cehd.umn.edu/webanatomy/intro_topics/ This website has a great review of body organization including cavities as well as medical terminology related to this lesson
- <http://pbskids.org/caillou/activities/paperdolls/index.html>
- Free PowerPoint's about cells: <http://science.pppst.com/cells.html> This site is also interactive to help students pronounce the names of the cell structures
- Refer to Overview of Anatomy and Physiology information from Applications of Healthcare Science course for additional resources.

Attachment(s):

Materials & Equipment:

- Create a Cookie: paper plates, sugar cookies, variety of candies (M & Ms, taffy, licorice, wafer cookies, etc), vanilla icing, plastic knives, and napkins.
- Directional Terms Study Buddy: coloring pencils, scissors, Popsicle sticks, glue or tape.

What 21st Century Technology was used in this unit:

☒	Slide Show Software
☐	Interactive Whiteboard
☐	Student Response System
☐	Web Design Software
☐	Animation Software
☐	Email

☐	Graphing Software
☐	Calculator
☐	Desktop Publishing
☐	Blog
☐	Wiki
☒	Website

☐	Audio File(s)
☐	Graphic Organizer
☐	Image File(s)
☐	Video
☐	Electronic Game or Puzzle Maker