

Component I: Core

Module B: Terminology, Anatomy and Physiology

Topic 2: Overview of Anatomy and Physiology

Statement of Purpose

To prepare the learner with basic knowledge of human anatomy and physiology.

Student Learning Outcomes

Upon completion of this topic, the learner will be able to:

1. Spell and define key terms.
2. Identify and correctly spell points of reference on the human body and employ directions used in reference to structure.
3. Describe the anatomical positions.
4. Describe general body structure.
5. Locate and name the body cavities and regions.
6. List the major body systems.

Terminology

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| 1. Abdominal cavity | 30. Exocrine gland |
| 2. Abduction | 31. Extremities |
| 3. Active transport | 32. Extension |
| 4. Adduction | 33. External |
| 5. Anatomical position | 34. Femoral |
| 6. Anatomy | 35. Frontal |
| 7. Anterior | 36. Gene |
| 8. Biochemistry | 37. Glands |
| 9. Buccal | 38. Golgi apparatus |
| 10. Cardiac | 39. Gross anatomy |
| 11. Cell | 40. Histology |
| 12. Central Nervous System (CNS) | 41. Homeostasis |
| 13. Circulatory system | 42. Horizontal |
| 14. Connective tissue | 43. Hormones |
| 15. Cranial cavity | 44. Hypertonic |
| 16. Cytoplasm | 45. Hypogastric |
| 17. Deep | 46. Immune response |
| 18. Diaphragm | 47. Inferior |
| 19. Diffusion | 48. Inguinal |
| 20. Digestive system | 49. Integumentary system |
| 21. Distal | 50. Internal |
| 22. Deoxyribonucleic Acid (DNA) | 51. Isotonic |
| 23. Dominant gene | 52. Lateral |
| 24. Dorsal | 53. Lymphatic/immune system |
| 25. Dorsiflexion | 54. Medial |
| 26. Electrolytes | 55. Midline |
| 27. Endocrine | 56. Midsagittal |
| 28. Epigastric | 57. Musculoskeletal |
| 29. Epithelial | 58. Nervous system |

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| 59. Nerve | 73. Retroperitoneal |
| 60. Neuron | 74. Rotation |
| 61. Muscle | 75. Sagittal |
| 62. Pelvic girdle | 76. Skeletal |
| 63. Peripheral Nervous System (PNS) | 77. Striated |
| 64. Plantar flexion | 78. Spinal chord |
| 65. Posterior | 79. Superficial |
| 66. Pronation | 80. Supination |
| 67. Proximal | 81. Superior |
| 68. Physiology | 82. Thoracic cavity |
| 69. Quadrant | 83. Transverse |
| 70. Reproductive system | 84. Umbilical |
| 71. Respiratory system | 85. Ventral |
| 72. Recessive gene | |

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Websites

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Content Outline/Theory Objectives	Suggested Learning Activities
<p>Objective 1 Spell and define key terms.</p> <ul style="list-style-type: none"> A. Review the terms listed in the terminology section B. Spell the listed terms accurately C. Pronounce the terms correctly D. Use the terms in their proper context 	<ul style="list-style-type: none"> A. Games: word searches, crossword puzzles, Family Feud, Jeopardy, bingo, spelling bee, hangman and concentration. B. Administer vocabulary pre-test and post-test. C. Discuss learning gaps and plan for applying vocabulary.
<p>Objective 2 Identify and correctly spell points of reference on the human body and employ directions used in reference to structure.</p> <ul style="list-style-type: none"> A. Describe the anatomical positions. B. Apply the appropriate terminology to reference points on the human body <ul style="list-style-type: none"> 1. Anterior, structures toward the front of the body. 2. Posterior, structures toward the rear of the body. 3. Superior, any part farther from the ground, closer to the head. 4. Inferior, any part closer to the ground or feet. 5. Midline, separating the body into right and left halves. 6. Medial, structures closer to the midline. 7. Lateral, structures that are farther away from the midline. 8. Proximal, structures closest to the trunk of the body. 9. Distal, structures that are farther away from the trunk. 10. Patient's right, refers to the right side of the patient's body. 11. Patient's left refers to the left side of the patient's body. 12. Deep, remote from the surface. 13. Superficial, near the surface. 14. Internal, inside the body. 15. External, outside the body. 	<ul style="list-style-type: none"> A. Lecture/Discussion B. Assigned Readings C. Use anatomical diagrams/posters/videos/computer assisted learning/workbook activities. D. Develop handouts for students to use in self-directed study. E. Have students divide themselves in pairs. Ask them to practice and point out the anatomical positions on their partner.
<p>Objective 3 Describe the anatomical positions.</p> <ul style="list-style-type: none"> A. All references to body structures are made when the body is in "anatomical position". B. Description of body in anatomical position <ul style="list-style-type: none"> 1. Standing erect. 2. Facing forward. 3. Arms down at sides. 4. Palms facing forward. C. Anatomical Directional Terms 	<ul style="list-style-type: none"> A. Lecture/Discussion B. Assigned Readings C. Use anatomical diagrams/posters/videos/computer assisted learning/workbook activities. D. Provide students with a

<ol style="list-style-type: none"> 1. Universally used to describe anatomic structures. 2. Sagittal plane, the body is divided vertically down the front with a right and left half. 3. Midsagittal plane <ol style="list-style-type: none"> 1) Anything located toward the midline is medial. 2) Any structure away from the midline is lateral. 4. Frontal or Coronal plane divides the body into anterior and posterior. 5. Transverse plane divides the body into superior and inferior. 6. Relationship to extremities, such as arms, legs, fingers and toes to the trunk of the body <ol style="list-style-type: none"> 1) Proximal, nearness to the point of attachment. 2) Distal, distance away for the point of attachment. 3) The thumb and great toe have proximal and distal sections. 4) The fingers and legs have proximal, middle, and distal sections. <p>D. Actions of Skeletal Muscles</p> <ol style="list-style-type: none"> 1. Flexion, bending a body part. 2. Extension, straightening a body part. 3. Hyperextension, extending a body part past the normal anatomical position. 4. Dorsiflexion, pointing the toes up. 5. Plantar flexion, pointing the toes down. 6. Abduction, moving a body part away from its position in the body. 7. Adduction, moving a body part toward its position on the body. 8. Rotation, turning a body part; the act or process of turning around a center or an axis. 9. Pronation, turning the palm of the hand down. 10. Supination, turning the palm of the hand up. 	<p>picture of person standing facing forward with palms forward.</p> <ol style="list-style-type: none"> E. Groups of students stand and demonstrate directional terms, by positioning themselves, as class writes down the direction they are standing on their handout of standing person. F. Ask students to find the distal part of their fingers and the proximal part of their toes. G. Ask students to write a sentence using anatomical directional terms for: <ol style="list-style-type: none"> a. Right hand. b. Tip of left thumb. c. Heel of right foot. d. Right top left leg. e. Right arm, near the wrist. H. Ask students to choose a site on an extremity, and write one additional sentence utilizing a directional term for place on their body. I. Ask students to remain in pairs and have them practice skeletal muscle actions.
<p>Objective 4 Describe general body structure.</p> <ol style="list-style-type: none"> A. The cell is the basic structural unit of living organisms <ol style="list-style-type: none"> 1. It is the structural unit of all animals. 2. Cells combined with similar cells form tissue. B. Tissue <ol style="list-style-type: none"> 1. Classified into four main types <ol style="list-style-type: none"> a. Epithelial. b. Connective. c. Nerve. d. Muscle. C. Organs <ol style="list-style-type: none"> 1. Combinations of two or more types of tissue. 2. Work together to perform a specific body function. D. Body system 	<ol style="list-style-type: none"> A. Lecture/Discuss B. Assigned Readings C. Use anatomical diagrams/posters/videos/computer assisted learning/workbook activities. D. Provide a picture of the cell without labels and ask students to fill in the blanks.

<ol style="list-style-type: none"> 1. Several closely allied organs. 2. Combine to perform special functions. 	
<p>Objective 5 Locate and name body cavity and regions.</p> <ol style="list-style-type: none"> A. Cranial cavity contains and protects brain. B. Spinal cavity contains and protects spinal cord. C. Thoracic cavity <ol style="list-style-type: none"> 1. Entire chest cavity included. 2. Enclosed in the rib cage. 3. Contains and protects lungs, heart and great blood vessels, part of trachea, esophagus and diaphragm. 4. Diaphragm is the dividing line. D. Abdominal and pelvic cavities <ol style="list-style-type: none"> 1. Abdominal <ol style="list-style-type: none"> a. Extends from the diaphragm to the pelvis. b. Contains all the abdominal organs. c. Not protected by bone. d. Nine regions <ol style="list-style-type: none"> 1) Epigastric. 2) Umbilical. 3) Hypogastric. 4) Left and Right Hypochondriac. 5) Left and Right Lumbar. 6) Left Iliac and Right Iliac. e. Four quadrants <ol style="list-style-type: none"> 1) Right and left upper quadrant (RUQ and LUQ). 2) Right and left lower quadrant (RLQ and LLQ). 2. Pelvic cavity <ol style="list-style-type: none"> a. Contains urinary bladder, portion of large intestine and internal reproductive organs. b. Partially protected with bones of the pelvic girdle. 	<ol style="list-style-type: none"> A. Lecture/Discussion B. Assigned Readings C. Use anatomical diagrams/posters/videos/computer assisted learning/workbook activities. Provide diagrams of the nine regions of the abdominal regions.
<p>Objective 6 List the major body systems.</p> <ol style="list-style-type: none"> A. Skeletal and muscular (combined as Musculoskeletal) <ol style="list-style-type: none"> 1. Includes muscles, bones, ligaments and cartilage. 2. Provides protection and support, allows movement, produces blood cells and stores minerals and fat. B. Special Senses (sensory) <ol style="list-style-type: none"> 1. Smell. 2. Taste. 3. Hearing. 4. Touch. 5. Equilibrium. 6. Vision. C. Nervous <ol style="list-style-type: none"> 1. Brain and spinal cord (Central Nervous System or CNS) and associated nerves (Peripheral Nervous 	<ol style="list-style-type: none"> A. Lecture/Discussion B. Assigned Readings C. Use anatomical diagrams/posters/videos/computer assisted learning/workbook activities.

<p>System or PNS).</p> <ol style="list-style-type: none"> 2. Major regulatory system that detects sensations, controls movements and physiologic processes as well as intellectual functions. <p>D. Circulatory (Cardiovascular)</p> <ol style="list-style-type: none"> 1. Heart, arteries, capillaries, veins and blood. 2. Transports nutrients, waste products, gases and hormones throughout the body. 3. Plays a role in the immune response and the regulation of the bloody temperature. <p>E. Integumentary</p> <ol style="list-style-type: none"> 1. Consists of skin, hair, nails, and sweat glands. 2. Provides protection, regulates temperature, prevents water loss, and produces vitamin D precursor. <p>F. Endocrine</p> <ol style="list-style-type: none"> 1. Glands that secrete hormones. 2. A major regulatory system that influences metabolism, growth, reproduction and many other functions. <p>G. Respiratory</p> <ol style="list-style-type: none"> 1. Nasal cavity, pharynx, larynx, trachea, bronchi and lungs. 2. Exchanges oxygen and carbon dioxide between the blood and air and regulates blood pH. <p>H. Digestive</p> <ol style="list-style-type: none"> 1. Mouth, teeth, salivary glands, pharynx, esophagus, stomach, liver, gallbladder, pancreas, small and large intestines. 2. Performs the mechanical and chemical processes of digestion, absorption of nutrients and elimination of wastes. <p>I. Urinary</p> <ol style="list-style-type: none"> 1. Kidneys, ureters, urinary bladder, and urethra. 2. Removes waste products from the blood and regulates blood pH, fluid and electrolyte balance. 3. Produces the hormone erythropoietin that stimulates the production of red blood cells. <p>J. Lymphatic/Immune</p> <ol style="list-style-type: none"> 1. Sometimes considered part of circulatory system. Includes lymphatic vessels, lymph fluid, lymph nodes, thymus glands, and spleen. 2. Removes foreign substances from the blood and lymph. 3. Provides immune response (humoral and cellular immunity). 4. Maintains tissue fluid balance and absorbs fats from the digestive tract. <p>K. Reproductive</p> <ol style="list-style-type: none"> 1. Male <ol style="list-style-type: none"> a. Male reproductive organs include the scrotum, testes, epididymis, vas deferens, seminal vessels, prostate gland, bulbourethral glands, 	
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penis and urethra

- 1) Produces and transfers sperm cells to the female.
- 2) Produces hormones that influence sexual functions and behaviors.

2. Female

- a. The female reproductive organs include the ovaries, fallopian tubes, uterus, vagina, vulva and accessory glands
 - 1) Produces oocytes.
 - 2) Site of fertilization and fetal development.
 - 3) Produces milk for the newborn.
 - 4) Produces hormones that influence sexual function and behaviors.