

PHYSICAL HEALTHCARE SUBCLUSTER
HUMAN STRUCTURE FUNCTION & DISEASE 5552

COURSE DESCRIPTION: Introduces human anatomy, physiology, common diseases, and disorders for the 14 body systems. Medical Terminology is also integrated throughout this course. This course helps to prepare students for the healthcare field and for college level anatomy and physiology courses required for students seeking a career in healthcare.

GENERAL REQUIREMENTS: This is a rigorous course designed for students in grades 10 through 12. This course may be counted as one of the optional third unit choices in a three-unit or four-unit completer path. It is recommended to take as the 3rd course in the Physical Healthcare Subcluster. To advance to any Physical Healthcare Subcluster courses, students must achieve a score of 75% or higher in each Physical Healthcare course taken. Students scoring less than 75% must have a direct recommendation from the instructor of the course that the minimum requirement was not met.

PRE-REQUISITES: Satisfactory completion of Biology 1 and either Healthcare Science 1, Sports Medicine 1 or EMS 1 with a 75% or higher or with the direct recommendation of the instructor from their level one or two course. Students not meeting the general requirements should not take a seat away from the students that do meet the requirements.

CREDIT: CP - 1 unit = (120 hours) To achieve honors weighting, courses must meet the criteria in the SC Honors Framework.

RECOMMENDED CLASS SIZE: 24

CONCENTRATOR: Completes HS1 and HS 2 with a satisfactory score.

COMPLETERS: For a full explanation of completers visit the Student Reporting Procedures Guide (SRPG) or the SCDE program specific web page.

Three Course Completer Sample:

HS1, HS 2, HS Human Structure, Function and Disease

OR Four Course Completer Sample:

HS 1, HS 2, HS WBL, Behavioral Health

STACKABLE CREDENTIALS: Please refer to the updated tired credential list on the SCDE Website. This course would be suitable for Tier One or Tier Two Credentials. An example: FAST (First Aid for Severe Trauma), or any other applicable credentials as listed in the Student Reporting Procedures Guide (SRPG).

CURRICULAR ACTIVITIES: HOSA–Future Health Professionals, Service-Learning Projects

STANDARDS

1.0 MEDICAL TERMINOLOGY

(Based on National Health Science Standards 2.2.1, 2.2.2)

Demonstrate methods of delivering and obtaining information, while communicating effectively

1.1 Use common roots, prefixes, and suffixes to communicate information regarding body systems, diseases, and disorders.

1.2 Interpret common medical abbreviations.

PART A- Basic Levels of Organization, Body Planes, Directional Terms, Skeletal, Muscular, Integumentary, Cardiovascular, Lymphatic/ Immune and Respiratory Systems

2.0 ANATOMY AND PHYSIOLOGY PART A

(Based on National Health Science Standards 1.1.1, 1.1.2 a, b, c, d, e, f, g, h, i, j, k)

Understand human anatomy, physiology, common diseases and disorders, and medical math principles.

2.1 Identify basic levels of organization of the human body.

- Cellular
- Chemical
- Organ

- Organism
- Systems
- Tissue

2.2 Identify body planes, directional terms, cavities, and quadrants.

- Body planes (sagittal, mid-sagittal, coronal/frontal, transverse/horizontal)
- Directional terms (superior, inferior, anterior/ventral, posterior/dorsal, medial, lateral, proximal, distal, superficial, and deep)
- Cavities (dorsal, cranial, orbital, nasal, oral, spinal, thoracic, abdominal, and pelvic)
- Quadrants (upper right, lower right, upper left, and lower left)

2.3 Investigate the process of homeostasis.

2.4 Skeletal System

2.4.1 Structures of the skeletal system

- Distinguish between axial and appendicular skeletons
- Describe long bone anatomy
- Identify joint types and movement
- Name and classify all bones (206)

2.4.2 Functions of the skeletal system

- Structure and support
- Muscle attachment and movement
- Mineral storage
- Hematopoiesis
- Ossification

2.5 Muscular System

2.5.1 Structures of the muscular system

- Identify types of muscle tissue
- Identify major muscle groups of neck, shoulder, chest, abdomen, back, arms and legs

2.5.2 Functions of the muscular system

- Body movement

- Posture
- Protection

2.6 Integumentary System

2.6.1 Structures of the integumentary system

- Identify integumentary components
- Label the layers of skin

2.6.2 Functions of the integumentary system

- Infection protection
- Sensory organ
- Temperature regulation
- UV light protection
- Vitamin D production

2.7 Cardiovascular System

2.7.1 Structures of the cardiovascular system

- Distinguish blood components
- Identify cardiovascular organs
- Label the parts of the heart

2.7.2 Functions of the cardiovascular system

- Blood flow through the heart and body
- Cardiac conduction system
- Transportation of nutrients, waste, antibodies, hormones, and gases

2.8 Lymphatic/Immune System

2.8.1 Structures of the lymphatic system

- Identify lymphatic organs

2.8.2 Functions of the lymphatic system

- Movement of lymph fluid
- Provides protection against disease

2.9 Respiratory System

2.9.1 Structures of the respiratory system

- Identify respiratory organs

2.9.2 Functions of the respiratory system

- Gas exchange

3.0 DISEASES AND DISORDERS- PART A

(Based on National Health Science Standards 1.2.1, 1.2.2)

3.1 A Describe etiology, pathology, diagnosis, treatment, and prevention of common diseases and disorders, including, but not limited to the following:

- Arthritis
- Asthma
- Cancer
- Cystic fibrosis
- Melanoma
- Muscular dystrophy
- Myocardial infarction (MI)
- Stroke/Cerebrovascular Accident (CVA)
- Tuberculosis

PART B- NERVOUS, ENDOCRINE, DIGESTIVE, URINARY, AND REPRODUCTIVE SYSTEMS

2.0 Anatomy and Physiology- Part B

(Based on National Health Science Standards 1.1.1, 1.1.2 a, b, c, d, e, f, g, h, i, j, k)

Understand human anatomy, physiology, common diseases and disorders, and medical math principles.

2.10 Nervous System

2.10.1 Structures of the nervous system

- Identify organs of the nervous system
- Identify structures of the “special sense” organs
- Differentiate CNS and PNS

- Differentiate sympathetic and parasympathetic

2.10.2 Functions of the nervous system

- Sensation
- Movement
- Processing

2.11 Endocrine System

2.11.1 Structures of the endocrine system

- Identify endocrine glands

2.11.2 Functions of the Endocrine System

- Production of hormones
- Regulation of body processes
- Controls metabolism
- Regulates growth, development, and maturation

2.12 Digestive System

2.12.1 Structures of the digestive system

- Identify digestive organs in sequence
- Differentiate between alimentary and accessory organs

2.12.2 Functions of the digestive system

- Chemical and mechanical digestion
- Absorption of nutrients
- Excretion of waste

2.13 Urinary System

2.13.1 Structures of the urinary system

- Identify urinary organs
- Identify gross and microscopic anatomy of the kidney

2.13.2 Functions of the urinary system

- Process of urine formation
- Urine composition
- Homeostatic balance

2.14 Reproductive System

2.14.1 Structures of the reproductive system

- Identify female reproductive organs
- Identify male reproductive organs

2.14.2 Functions of the reproductive system

- Formation of gametes
- Production of hormones

2.15 The Special Senses

2.15.1 Structures of the Eyes and Ears

- Identify structures of the eyes
- Identify structures of the ears

2.15.2 Functions of the Eyes and Ears

- Eyes are the receptor organs of sight; receive and transmit images to the brain
- Ears are the receptor organs of hearing; receive and transmit sound impulses to the brain, helps maintain balance

3.0 DISEASES AND DISORDERS- PART B

(Based on National Health Science Standards 1.2, 1.2.1, 1.2.2)

3.1.B Describe etiology, pathology, diagnosis, treatment, and prevention of common diseases and disorders, including, but not limited to the following:

- Bipolar disorder
- Cancer
- Cataracts
- Concussion / Traumatic Brain Injury (TBI)
- Diabetes
- Dementia
- Gastric ulcer
- Hepatitis
- Sexually Transmitted Infection (STI)
- Urinary Tract Infection (UTI)

3.2 Discuss research related to emerging diseases and disorders such as:

- Autism
- VRSA
- PTSD
- Listeria
- Seasonal flu

3.3 Describe biomedical therapies as they relate to prevention, pathology, and treatment of disease.

- Gene editing
- Gene testing
- Gene therapy
- Immunizations
- Immunotherapy
- Stem cell research

4.0 MEDICAL MATHEMATICS

(Based on National Health Science Standards 1.3.1, 1.3.2, 1.3.3)

4.1 Demonstrate competency using basic math skills and mathematical conversions as they relate to healthcare.

4.2 Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.

5.0 INFORMATION TECHNOLOGY IN HEALTHCARE

(Based on National Health Science Standards 11.1.1, 11.1.2, 11.1.3, 11.1.4)

Apply information technology practices common across health professions.

5.1 Key Principles, components, and practices of Health Information Systems

5.1.1 Utilize components of an electronic health record (EHR) and/or electronic medical record (EMR).

- Diagnostic tests
- History and physical
- Medications

- Patient demographics
- Progress notes
- Treatment Plan

5.1.2 Evaluate types of health data collection tools.

- Medical wearable devices
- Patient monitoring equipment
- Phone application
- Telemedicine/telehealth

5.1.3 Adhere to information systems policies, procedures, and regulations as required by national, state, and local entities.

**Review National Health Science Standard 4: Employability Skills and 7: Safety, before entering work-based learning opportunities, if appropriate for your program.*