

## Introduction

*The purpose of providing the four-course health science curriculum framework is to demonstrate how to efficiently and effectively teach a health science program in its entirety while also providing a clear path enabling the student flexibility in choosing a health science program of two versus four semesters. The health science curriculum framework is based on the National Health Science Standards NHSS. The first two courses, Foundations of Healthcare Professions and Essential Healthcare Practices are introductory health science courses with service learning projects consisting of basic skills conducting vision screenings, vital signs and blood pressures in various facilities such as schools and nursing homes. Courses Human Structure, Function, and Disease (A) and Human Structure, Function, and Disease (B) dive in depth into anatomy and physiology while applying coursework into real world work-based opportunities, such as internships and apprenticeships in health clinics, hospitals, nursing homes, etc. It is during these courses that health science programs focus on a specific healthcare pathway(s) such as nurse aide, mental health worker, sports medicine, pharmacy technician, etc. This four-course curriculum framework serves as an example of various possibilities for secondary health science programs to help facilitate development of health science programs. These courses may be delivered in order, in a different order or independently.*

### Title: **Human Structure, Function, and Disease (A)**

**Course Description:** Introduces human anatomy, physiology, common diseases and disorders. Focuses on Skeletal, Muscular, Respiratory, Integumentary, Cardiovascular and Lymphatic Systems. Integrates advanced medical terminology.

**Curricular Activities:** HOSA–Future Health Professionals, Work-based Learning Internships and Apprenticeships

**NCHSE Resources:** Health Science Curriculum Enhancement and Work-based Learning. End of Program (EOP) National Health Science Assessment. End of Course (EOC) Assessments: Medical Anatomy & Physiology, Medical Terminology; and Specific Occupational Focus EOC assessments such as Nurse Assistant, Dental Science, Medical Assistant, etc.

### **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.

### **2.0 Anatomy and Physiology**

**(Based on National Health Science Standards – 1.1.1, 1.1.2 a, b, c, d, e, f)**

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

- 2.1 Identify basic levels of organization of the human body.
  - Chemical
  - Cellular
  - Tissue
  - Organs

- Systems
  - Organism
- 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, 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
- 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
- Vitamin D production
  - Sensory organ
  - Infection protection
  - Temperature regulation
  - UV light protection
- 2.7 Cardiovascular System
- 2.7.1 Structures of the cardiovascular system
- Identify cardiovascular organs
  - Label the parts of the heart
  - Distinguish blood components
- 2.7.2 Functions of the cardiovascular system
- Blood flow through the heart and body

- Transportation of nutrients, waste, antibodies, hormones, and gases
  - Cardiac conduction system
- 2.8 Lymphatic/Immune System
- 2.8.1 Structures of the lymphatic system
- Identify lymphatic organs
- 2.8.2 Functions of the lymphatic system
- Provides protection against disease
  - Movement of lymph fluid
- 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 (Skeletal, Muscular, Integumentary, Cardiovascular, Lymphatic, Respiratory)**

**(Based on National Health Science Standards – 1.2.1, 1.2.2)**

- 3.1 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 Infraction
  - Stroke/Cardiovascular Accident (CVA)
  - Tuberculosis
- 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 testing
  - Gene therapy
  - Cloning
  - 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.

\*Review National Health Science Standards 4 and 7 before entering work-based learning opportunities, if appropriate for your program.