

Kentucky PLTW Biomedical Science

Human Body Systems

Foundation Standard 1:
Academic Foundation:
Understand human anatomy, physiology, common diseases and disorders, and medical math principles. HBS1

1.1.1 Describe the organization of the human body and directional terms. HBS111

1.1.1 a Identify basic levels of organization of the human body HBS111A

- A Chemical HBS111AA
- B Cellular HBS111AB
- C Tissue HBS111AC
- D Organs HBS111AD
- E Systems HBS111AE
- F Organism HBS111AF

1.1.1 b Demonstrate anatomical position HBS111B

1.1.1 c Identify body planes HBS111C

- A Sagittal HBS111CA
- B Midsagittal HBS111CB
- C Coronal/Frontal HBS111CC
- D Transverse/Horizontal HBS111CD

1.1.1 d Use directional terms HBS111D

- A Anterior/Posterior HBS111DA
- B Medial/Lateral HBS111DB
- C Proximal/Distal HBS111DC
- D Superficial/Deep HBS111DD
- E Superior/Inferior HBS111DE
- F Ventral/Dorsal HBS111DF

1.1.1 e Identify body cavities HBS111E

- A Abdominal HBS111EA
- B Cranial HBS111EB
- C Dorsal HBS111EC
- D Pelvic HBS111ED
- E Spinal HBS111EE
- F Thoracic HBS111EF

1.1.1 f Identify the components of the abdominal quadrants HBS111F

- A Right upper HBS111FA
- B Right lower HBS111FB
- C Left upper HBS111FC
- D Left lower HBS111FD

1.1.2 Identify basic structures and describe functions of human body systems. HBS112

1.1.2 a Skeletal HBS112A

- A** Structures of the skeletal system HBS112AA
 - i Distinguish between axial and appendicular skeletons HBS112AAI
 - ii Describe long bone anatomy HBS112AAII
 - iii Identify joint types and movement HBS112AAIII
 - iv Name and classify all bones (206) HBS112AAIV
- B** Functions of the skeletal system HBS112AB
 - i Structure and support HBS112ABI
 - ii Muscle attachment and movement HBS112ABII
 - iii Mineral storage HBS112ABIII
 - iv Hematopoiesis HBS112ABIV

1.1.2 b Muscular HBS112B

- A** Structures of the muscular system HBS112BA
 - i Identify types of muscle tissue HBS112BAI
 - ii Identify major muscle groups of neck, shoulder, chest, abdomen, back, arms, and legs HBS112BAII
- B** Functions of the muscular system HBS112BB
 - i Body movement HBS112BBI
 - ii Posture HBS112BBII
 - iii Protection HBS112BBIII

1.1.2 c Integumentary HBS112C

- A** Structures of the integumentary system HBS112CA
 - i Identify integumentary components HBS112CAI
 - ii Label the layers of skin HBS112CAII
- B** Functions of the integumentary system HBS112CB
 - i Vitamin D production HBS112CBI
 - ii Sensory organ HBS112CBII
 - iii Infection protection HBS112CBIII
 - iv Temperature regulation HBS112CBIV
 - v UV light protection HBS112CBV

1.1.2 d Cardiovascular HBS112D

- A** Structures of the cardiovascular system HBS112DA
 - i Identify cardiovascular organs HBS112DAI

- ii Label the parts of the heart [HBS112DAII](#)
 - iii Distinguish blood components [HBS112DAIII](#)
 - B Functions of the cardiovascular system [HBS112DB](#)
 - i Blood flow through the heart and body [HBS112DBI](#)
 - ii Transports nutrients, waste, antibodies, hormones, and gases [HBS112DBII](#)
 - iii Cardiac conduction system [HBS112DBIII](#)
 - 1.1.2 e Lymphatic / Immune [HBS112E](#)
 - A Structures of the lymphatic system [HBS112EA](#)
 - i Identify lymphatic organs [HBS112EAI](#)
 - B Functions of the lymphatic system [HBS112EB](#)
 - i Provide protection against disease [HBS112EBI](#)
 - ii Movement of lymph fluid [HBS112EBII](#)
 - 1.1.2 f Respiratory [HBS112F](#)
 - A Structures of the respiratory system [HBS112FA](#)
 - i Identify respiratory organs [HBS112FAI](#)
 - B Functions of the respiratory system [HBS112FB](#)
 - i Gas exchange [HBS112FBI](#)
 - 1.1.2 g Nervous System [HBS112G](#)
 - A Structures of the nervous system [HBS112GA](#)
 - i Identify organs of the nervous system [HBS112GAI](#)
 - ii Identify structures of the special sense organs [HBS112GAI](#)
 - B Functions of the nervous system [HBS112GB](#)
 - i Sensation [HBS112GBI](#)
 - ii Movement [HBS112GBII](#)
 - iii Processing [HBS112GBIII](#)
 - 1.1.2 h Endocrine [HBS112H](#)
 - A Structures of the endocrine system [HBS112HA](#)
 - i Identify endocrine glands [HBS112HAI](#)
 - B Functions of the endocrine system [HBS112HB](#)
 - i Production of hormones [HBS112HBI](#)
 - ii Regulation of body processes [HBS112HBII](#)
 - iii Controls metabolism [HBS112HBIII](#)
 - iv Regulates growth, development, and maturation [HBS112HBIV](#)
 - 1.1.2 i Digestive [HBS112I](#)

- A Structures of the digestive system [HBS112IA](#)
 - i Identify digestive organs in sequence [HBS112IAI](#)
 - ii Differentiate between alimentary and accessory organs [HBS112IAII](#)
- B Functions of the digestive system [HBS112IB](#)
 - i Chemical and mechanical digestion [HBS112IBI](#)
 - ii Absorption of nutrients [HBS112IBII](#)
 - iii Excretion of waste [HBS112IBIII](#)

1.1.2 j Urinary [HBS112J](#)

- A Structures of the urinary system [HBS112JA](#)
 - i Identify urinary organs [HBS112JAI](#)
 - ii Identify gross and microscopic anatomy of the kidney [HBS112JAI](#)
- B Functions of the urinary system [HBS112JB](#)
 - i Process of urine formation [HBS112JBI](#)
 - ii Urine composition [HBS112JBII](#)
 - iii Homeostatic balance [HBS112JBIII](#)

1.1.2 k Reproductive [HBS112K](#)

- A Structures of the reproductive system [HBS112KA](#)
 - i Identify female reproductive organs [HBS112KAI](#)
 - ii Identify male reproductive organs [HBS112KAI](#)
- B Functions of the reproductive system [HBS112KB](#)
 - i Formation of gametes [HBS112KBI](#)
 - ii Production of hormones [HBS112KBII](#)

1.2.1 Describe etiology, pathology, diagnosis, treatment, and prevention of common diseases and disorders, including, but not limited to the following: HBS121

- A Arthritis HBS121A
- B Asthma HBS121B
- C Cancer HBS121C
- D Cataracts HBS121D
- E Concussion/Traumatic Brain Injury (TBI) HBS121E
- F Cystic fibrosis HBS121F
- G Diabetes mellitus HBS121G
- H Dementia HBS121H
- I Hypertension HBS121I
- J Melanoma HBS121J
- K Muscular Dystrophy HBS121K
- L Myocardial Infarction HBS121L
- M Sexually Transmitted Infection (STI) HBS121M
- N Stroke/Cardiovascular Accident (CVA) HBS121N
- O Tuberculosis HBS121O
- P Urinary Tract Infection (UTI) HBS121P

1.2.2 Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease. HBS122

- A Gene testing HBS122A
- B Gene therapy HBS122B
- C Cloning HBS122C
- D Stem cell research HBS122D

1.3.1 Demonstrate competency using basic math skills and mathematical conversions as they relate to healthcare. HBS131

1.3.1 a Metric system HBS131A

- A Kilo- HBS131AA
- B Centi- HBS131AB
- C Deci- HBS131AC
- D Milli- HBS131AD
- E Micro- HBS131AE

1.3.1 b Mathematical HBS131B

- A Average HBS131BA
- B Ratios HBS131BB
- C Fractions HBS131BC
- D Percentages HBS131BD
- E Addition/Subtraction HBS131BE
- F Multiplication/Division HBS131BF

1.3.1 c Conversions HBS131C

- A Height (inches/meters) HBS131CA
- B Weight/mass (pounds/grams) HBS131CB
- C Length (inches/meters) HBS131CC
- D Volume (ml/cc) HBS131CD
- E Temperature (F/C) HBS131CE
- F Household measurements (Tbsp/tsp/cup/oz) HBS131CF

1.3.2 Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results. HBS132

Foundation Standard 2: Communications
Demonstrate methods of delivering and obtaining information, while communicating effectively. HBS2

2.1.1 Model verbal and nonverbal therapeutic communication. HBS211

- A Active listening HBS211A
- B Silence HBS211B
- C Summarizing HBS211C
- D Reflecting HBS211D

2.1.2 Identify common barriers to communication HBS212

2.1.2 a Physical disabilities HBS212A

- A Aphasia HBS212AA
- B Hearing loss HBS212AB
- C Impaired vision HBS212AC
- D Developmental level HBS212AD

2.1.2 b Psychological barriers HBS212B

- A Attitudes HBS212BA
- B Bias HBS212BB
- C Prejudice HBS212BC
- D Stereotyping HBS212BD

2.1.3 Distinguish between subjective and objective information. HBS213

2.1.5 Modify communication to meet the needs of the patient/client and be appropriate to the situation. HBS215

2.2.1 Use common roots, prefixes, and suffixes to communicate information. HBS221

2.2.2 Interpret common medical abbreviations to communicate information. HBS222

2.3.1 Use proper elements of written and electronic communication (spelling, grammar, and formatting). HBS231

2.3.2 Prepare examples of technical and informative writing. HBS232

Foundation Standard 4: Employability Skills Use employability skills to enhance employment opportunities and job satisfaction. HBS4

4.3.1 Research levels of education, credentialing requirements, and employment trends in health professions. HBS431

4.4.1 Develop components of a personal portfolio. HBS441

- A Letter of introduction HBS441A
 - B Resume HBS441B
 - C Sample Projects HBS441C
 - D Writing Sample HBS441D
 - E Work-based Learning Documentation HBS441E
 - F Oral Report HBS441F
 - G Community Service/Service Learning HBS441G
 - H Credentials HBS441H
 - I Technology Skills HBS441I
 - J Leadership Examples HBS441J
-

Foundation Standard 7: Safety Practices Identify existing and potential hazards to clients, coworkers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness. **HBS7**

7.2.1 Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations. **HBS721**

7.2.2 Demonstrate principles of body mechanics during patient care. **HBS722**

A Ambulating **HBS722A**

B Lifting **HBS722B**

C Positioning **HBS722C**

7.2.3 Demonstrate and apply the use of personal protective equipment (PPE). **HBS723**

7.4.1 Observe all safety standards related to the occupational exposure to hazardous chemicals standard (safety data sheets [SDS]). **HBS741**

Foundation Standard 8: Teamwork Identify roles and responsibilities of individual members as part of the healthcare team. **HBS8**

8.1.1 Evaluate roles and responsibilities of healthcare team members. **HBS811**

8.1.2 Identify characteristics of effective teams. **HBS812**

A Defined roles **HBS812A**

B Common purpose **HBS812B**

C Effective communication **HBS812C**

D Effective leadership **HBS812D**

E Measurable processes and outcomes **HBS812E**

F Mutual respect **HBS812F**

G Shared goals **HBS812G**

8.2.1 Recognize methods for building positive team relationships. **HBS812**

8.2.2 Analyze attributes and attitudes of an effective leader. HBS822

8.2.2 a Characteristics HBS822A

- A Focused and driven HBS822AA
- B Interpersonal skills HBS822AB
- C Motivates and inspires HBS822AC
- D Organized and balanced HBS822AD

8.2.2 b Types HBS822B

- A Autocratic HBS822BA
- B Democratic HBS822BB
- C Laissez faire HBS822BC

8.2.2 c Roles HBS822C

- A Communicates vision HBS822CA
- B Leads change HBS822CB
- C Manages accountability HBS822CC

8.2.3 Apply effective techniques for managing team conflict. HBS823

- A Communicate assertively HBS823A
- B Set clear expectations HBS823B
- C Gather the facts HBS823C
- D Mediate disputes HBS823D
- E Negotiate resolutions HBS823E

**Foundation Standard 9:
Health Maintenance
Practices Differentiate
between wellness and
disease. Promote
disease prevention and
model healthy
behaviors.** HBS9

9.1.1 Promote behaviors of health and wellness. HBS911

- A Exercise HBS911A
 - B Nutrition HBS911B
 - C Relationships HBS911C
 - D Sleep habits HBS911D
 - E Stress management HBS911E
 - F Weight control HBS911F
-

**Foundation Standard 10:
Technical Skills Apply
and demonstrate
technical skills and
knowledge common to
health career
specialties.** HBS10

10.1.1 Demonstrate procedures for measuring and recording vital signs including the normal ranges. HBS1011

- A Blood pressure HBS1011A
- B Temperature HBS1011B
- C Oxygen saturation HBS1011C
- D Pain HBS1011D
- E Pulse HBS1011E
- F Respirations HBS1011F