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
- 1.1.1 b Demonstrate anatomical position HBS111B
  - F Organism HBS111AF
- 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

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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

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- 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

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- 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 HBS112GAII
  - 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 HBS112JAII
  - B Functions of the urinary system HBS112JB
    - i Process of urine formation HBS112JBI
    - ii Urine composition HBS112JBII
    - iii Homeostatic balance HBS112JBIII

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1.1.2 k Reproductive HBS112K

A Structures of the reproductive system HBS112KA

i Identify female reproductive organs HBS112KAI

ii Identify male reproductive organs HBS112KAII

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 HAB122B

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

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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

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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 HBS411A

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 pra he policies and procedures

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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

to prevent injury and illness. HBS7

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

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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 Weiight 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