Kentucky PLTW Biomedical Science

Biomedical Innovation

Foundation Standard 1: Academic Foundation: Understand human anatomy, physiology, common diseases and disorders, and medical math principles. BI1

1.1.2 Identify basic structures and describe functions of human body systems. BI112

1.1.2 a Skeletal BI112A

- A Structures of the skeletal system BI112AA
  - i Distinguish between axial and appendicular skeletons BI112AAI
  - ii Describe long bone anatomy BI112AAII
  - iii Identify joint types and movement BI112AAIII
  - iv Name and classify all bones (206) BI112AAIV
- B Functions of the skeletal system BI112AB
  - i Structure and support BI112ABI
  - ii Muscle attachment and movement BI112ABII
  - iii Mineral storage BI112ABIII
  - iv Hematopoiesis BI112ABIV

1.1.2 b Muscular BI112B

- A Structures of the muscular system BI112BA
  - i Identify types of muscle tissue BI112BAI
  - ii Identify major muscle groups of neck, shoulder, chest, abdomen, back, arms, and legs BI112BAII
- B Functions of the muscular system BI112BB
  - i Body movement BI112BBI
  - ii Posture BI112BBII
  - iii Protection BI112BBIII

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- 1.1.2 c Integumentary BI112C
  - A Structures of the integumentary system BI112CA
    - i Identify integumentary components BI112CAI
    - ii Label the layers of skin BI112CAII
  - B Functions of the integumentary system BI112CB
    - i Vitamin D production BI112CBI
    - ii Sensory organ BI112CBII
    - iii Infection protection BI112CBIII
    - iv Temperature regulation BI112CBIV
    - v UV light protection BI112CBV
- 1.1,2 d Cardiovascular BI112D
  - A Structures of the cardiovascular system BI112DA
    - i Identify cardiovascular organs BI112DAI
    - ii Label the parts of the heart BI112DAII
    - iii Distinguish blood components BI112DAIII
  - B Functions of the cardiovascular system BI112DB
    - i Blood flow through the heart and body BI112DBI
    - ii Transports nutrients, waste, antibodies, hormones, and gases BI112DBII
    - iii Cardiac conduction system BI112DBIII
- 1.1.2 e Lymphatic / Immune BI112E
  - A Structures of the lymphatic system BI112EA
    - i Identify lymphatic organs BI112EAI
  - B Functions of the lymphatic system BI112EB
    - i Provide protection against disease BI112EBI
    - ii Movement of lymph fluid BI112EBII
- 1.1.2 f Respiratory BI112F
  - A Structures of the respiratory system BI112FA
    - i Identify respiratory organs BI112FAI
  - B Functions of the respiratory system BI112FB
    - i Gas exchange BI112FBI

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- 1.1.2 g Nervous System BI112G
  - A Structures of the nervous system BI112GA
    - i Identify organs of the nervous system BI112GAI
    - ii Identify structures of the special sense organs BI112GAII
  - B Functions of the nervous system BI112GB
    - i Sensation BI112GBI
    - ii Movement BI112GBII
    - iii Processing BI112GBIII
- 1.1.2 h Endocrine BI112H
  - A Structures of the endocrine system BI112HA
    - i Identify endocrine glands BI112HAI
  - B Functions of the endocrine system BI112HB
    - i Production of hormones BI112HBI
    - ii Regulation of body processes BI112BBII
    - iii Controls metabolism BI112BBIII
    - iv Regulates growth, development, and maturation BI112BBIV
- 1.1.2 i Digestive BI112I
  - A Structures of the digestive system BI112IA
    - i Identify digestive organs in sequence BI112IAI
    - ii Differentiate between alimentary and accessory organs BI112IAII
  - B Functions of the digestive system BI112IB
    - i Chemical and mechanical digestion BI112IBI
    - ii Absorption of nutrients BI112IBII
    - iii Excretion of waste BI112IBIII
- 1.1.2 j Urinary BI112J
  - A Structures of the urinary system BI112JA
    - i Identify urinary organs BI112JAI
    - ii Identify gross and microscopic anatomy of the kidney BI112JAII
  - B Functions of the urinary system BI112JB
    - i Process of urine formation BI112JBI
    - ii Urine composition BI112JBII
    - iii Homeostatic balance BI112JBIII

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1.1.2 k Reproductive BI112K

A Structures of the reproductive system BI112KA

i Identify female reproductive organs BI112KAI

ii Identify male reproductive organs BI112KAII

B Functions of the reproductive system BI112KB

i Formation of gametes BI112KBI

ii Production of hormones BI112KBII

1.2.2 Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease. BI122

A Gene testing BI122A

B Gene therapy BI122B

C Cloning BI122C

D Stem cell research BI122D

Skip to main content

1.3.1 Demonstrate competency using basic math skills and mathematical conversions as they relate to healthcare. BI131

1.3.1 a Metric system BI131A

- A Kilo- BI131AA
- B Centi- BI131AB
- C Deci- BI131AC
- D Milli- BI131AD
- E Micro- BI131AE

1.3.1 b Mathematical BI131B

- A Average BI131BA
- B Ratios BI131BB
- C Fractions BI131BC
- D Percentages BI131BD
- E Addition/Subtraction BI131BE
- F Multiplication/Division BI131BF

1.3.1 c Conversions BI131C

- A Height (inches/meters) BI131CA
- B Weight (pounds/grams) BI131CB
- C Length (inches/meters BI131CC
- D Volume (ml/cc) BI131CD
- E Temperature (F/C) BI131CE
- F Household measurements (Tbsp/tsp/cup/oz) BI131CF

1.3.2 Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results. BI132

Identify basic levels of organization of the human body BI111A

- **A Chemical** BI111AA
- **B Cellular** BI111AB
- **C Tissue** BI111AC
- **D Organs** BI111AD
- **E Systems** BI111AE
- **F Organism** BI111AF

Fo Skip to main content **.1 Model verbal and nonverbal therapeutic communication.** BI211
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- A Active listening BI211A

Demonstrate methods of delivering and obtaining information, while communicating effectively. BI2

- B Silence BI211B
- C Summarizing BI211C
- D Reflecting BI211D

2.1.3 Distinguish between subjective and objective information. BI213

2.1.5 Modify communication to meet the needs of the patient/client and be appropriate to the situation. BI215

2.3.1 Use proper elements of written and electronic communication (spelling, grammar, and formatting). BI231

2.3.2 Prepare examples of technical and informative writing. BI232

Foundation Standard 4: Employability Skills Use employability skills to enhance employment opportunities and job satisfaction. BI4

4.2.1 Apply employability skills in healthcare. BI421

- A Chain of command BI421A
- B Communication Skills BI421B
- C Decision making BI421C
- D Flexible BI421D
- E Organization BI421E
- F Problem Solving BI421F
- G Scope of practice BI421G
- H Time Management BI421H
- I Work Ethic BI421I

4.4.1 Develop components of a personal portfolio. BI442

- A Letter of introduction BI441A
- B Resume BI441B
- C Sample Projects BI441C
- D Writing Sample BI441D
- E Work-based Learning Documentation BI441E
- F Oral Report BI441F
- G Community Service/Service Learning BI441G
- H Credentials BI441H
- I Technology Skills BI441I
- J Leadership Examples BI441J

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.1 Explain principles of infection transmission. BI711

hazards to clients, coworkers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness. BI7

7.1.1 a Identify classifications of pathogens BI711A

- A Bacteria BI711AA
- B Fungi BI711AB
- C Parasites BI711AC
- D Protozoa BI711AD
- E Viruses BI711AE

7.1.1 b Describe characteristics of microorganisms BII711B

- A Aerobic BI711BA
- B Anaerobic BI711BB
- C Non-pathogenic BI711BC
- D Pathogenic BI711BD

7.1.1 c Recognize chain of infection BI711C

7.1.1 d Describe mode of transmission BI711D

- A Common vehicle (air, food, water) BI711DA
- B Direct BI711DB
- C Healthcare-associated infections (nosocomial) BI711DC
- D Indirect BI711DD
- E Opportunistic BI711DE
- F Vectors BI711DF

7.1.2 Differentiate methods of controlling the spread and growth of pathogens. BI712

7.1.2 a Asepsis BI712A

- A Sanitization BI712AA
- B Antisepsis BI712AB
- C Disinfection BI712AC
- D Sterile technique BI712AD
- E Sterilization BI712AE

7.1.2 b Standard precautions BI712B

- A Handwashing BI712BA
- B Gloving BI712BB
- C Personal Protective Equipment (PPE) BI712BC
- D Environmental cleaning BI712BD

7.1.2 c Isolation precautions BI712C

- A Transmission-based contact BI712CA

7.1.2 d Bloodborne pathogen precautions BI712D

Skip to main content

7.1.2 e Vaccinations BI712E

7.2.1 Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations. BI721

7.2.2 Demonstrate principles of body mechanics during patient care. BI722

A Ambulating BI722A

B Lifting BI722B

C Positioning BI722C

7.2.3 Demonstrate and apply the use of personal protective equipment (PPE). BI723

7.3.1 Apply safety techniques in the work environment. BI731

A Ergonomics BI731A

B Safe operation of equipment BI731B

C Patient/client/employee safety measures BI731C

7.4.1 Observe all safety standards related to the occupational exposure to hazardous chemicals standard (safety data sheets [SDS]). BI741

7.4.2 Comply with safety signs, symbols, and labels. BI742

Foundation Standard 8: Teamwork Identify roles and responsibilities of individual members as part of the healthcare team. BI8

8.1.2 Identify characteristics of effective teams. BI812

A Defined roles BI812A

B Common purpose BI812B

C Effective communication BI812C

D Effective leadership BI812D

E Measurable processes and outcomes BI812E

F Mutual respect BI812F

G Shared goals BI812G

8.2.1 Recognize methods for building positive team relationships. BI821

8.2.2 Analyze attributes and attitudes of an effective leader. BI822

8.2.2 a Characteristics BI822A

A Focused and driven BI822AA

B Interpersonal skills BI822AB

C Motivates and inspires BI822AC

D Organized and balance BI822AD

Skip to main content

8.2.2 b Types BI822B

A Autocratic BI822BA

B Democratic BI822BB

C Laissez faire BI822BC

8.2.2 c Roles BI822C

A Communicates vision BI822CA

B Leads change BI822CB

C Manages accountability BI822CC

8.2.3 Apply effective techniques for managing team conflict. BI823

A Communicate assertively BI823A

B Set clear expectations BI823B

C Gather the facts BI823C

D Mediate disputes BI823D

E Negotiate resolutions BI823E

Foundation Standard 9: Health Maintenance Practices Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors. BI9

9.1.1 Promote behaviors of health and wellness. BI911

A Exercise BI911A

B Nutrition BI911B

C Relationships BI911C

D Sleep habits BI911D

E Stress management BI911E

F Weight control BI911F

9.1.3 Describe strategies for prevention of disease. BI913

A Community health education outreach programs BI913A

B Immunizations BI913B

C Medical, dental, and mental health screenings BI913C

D Routine physical exams BI913D

E Stress management BI913E

Foundation Standard 10: Technical Skills Apply and demonstrate technical skills and knowledge common to he... sp...

10.1.1 Demonstrate procedures for measuring and recording vital signs including the normal ranges. BI1011

A Blood pressure BI1011A

B Temperature BI1011B

C Oxygen saturation BI1011C

D Pain BI1011D

Skip to main content

E Pulse BI1011E

F Respirations BI1011F