



EXAM INFORMATION

Items

71

Points

104

Prerequisites

NONE

Grade Level

10-12

Course Length

ONE YEAR

Career Cluster

HEALTH SCIENCE

NCHSE HEALTH SCIENCE BUNDLE

Performance Standards

INCLUDED

Certificate Available

YES

DESCRIPTION

Explore careers in health care and describe the body plan, organization, and homeostasis. Explain basic principles of body chemistry. Describe basic concepts of structures and functions of cells, histology, and the integumentary system; the structures and functions of the skeletal system and its components; the structures and functions of the muscular system and its components; the structures and functions of the nervous system and special senses. Describe the structures and functions associated with the endocrine system; the components and functions associated with blood, and the structures and functions of the lymphatic and cardiovascular systems; the structures and functions associated with the respiratory system; the structures and functions associated with the digestive system; and, the structures and functions associated with the urinary system.

EXAM BLUEPRINT

STANDARD	PERCENTAGE OF EXAM
1- Body Plan & Organization	10%
2- Body Chemistry	2%
3- Cells	2%
4- Histology & Integumentary System	8%
5- Skeletal System	9%
6- Muscular System	10%
7- Nervous System & Special Senses	10%
8- Endocrine System	5%
9- Blood	7%
10- Lymphatic System	2%
11- Cardiovascular System	5%
12- Respiratory System	7%
13- Digestive System	7%
14- Urinary System	8%
15- Reproductive System	8%



STANDARD I

STUDENTS WILL EXPLORE AND DESCRIBE THE BODY PLAN ORGANIZATION AND HOMEOSTASIS

- Objective 1 Contrast the sciences of anatomy and physiology
- Objective 2 Describe the six levels of structural organization of the human body and give an example of each level.
1. Chemical
 2. Cellular
 3. Tissue
 4. Organ
 5. System
 6. Organism
- Objective 3 Describe the following:
1. Metabolism
 1. Anabolic process
 2. Catabolic process
- Objective 4 Apply directional terms used in human anatomy.
1. Posterior/Anterior
 2. Medial/Lateral
 3. Proximal/Distal
 4. Superficial/Deep
 5. Superior/Inferior
- Objective 5 Apply commonly used planes to divide the body.
1. Sagittal
 2. Midsagittal
 3. Transverse (horizontal)
 4. Frontal (coronal)
- Objective 6 Identify the body cavities and locate the following organs within each cavity.
1. Dorsal Cavity
 1. Vertebral-spinal cord
 2. Cranial-brain
 2. Ventral Cavity
 1. Thoracic-heart, lungs
 1. Mediastinum-heart, bronchi, esophagus, thymus.
 2. Pericardial-heart
 3. Pleural-lungs
 3. Abdominopelvic Cavity-liver, spleen, intestines, kidneys, stomach
 1. Abdominal-liver, spleen, intestines, kidneys, stomach
 2. Pelvic-intestines, urinary bladder, sex organs
- Objective 7 Identify the major organ(s) in each abdominal quadrant.
1. RUQ-right upper quadrant-liver, gallbladder, right kidney
 2. RLQ-right lower quadrant-cecum, appendix, right ovary
 3. LUQ-left upper quadrant-spleen, stomach, left kidney
 4. LLQ-lower left quadrant-left ovary



- Objective 8 Examine the relationship between homeostasis and stress.
- Objective 9 Differentiate between negative and positive feedback mechanisms. Give examples of each.
1. Be able to describe the following:
 2. Childbirth
 3. Breast feeding
 4. Blood clotting

STANDARD 2

STUDENTS WILL EXPLAIN BASIC PRINCIPLES OF BODY CHEMISTRY

- Objective 1 Review the following terms and concepts.
1. States of Matter
 2. Elements
 3. Basic components of the atom
 1. Nucleus
 2. Electrons
 3. Protons
 4. Neutrons
 4. Ion
 1. Electrolyte
- Objective 2 Identify the four major elements in the body.
1. Carbon
 2. Hydrogen
 3. Oxygen
 4. Nitrogen
- Objective 3 Differentiate between:
1. Compound
 2. Molecule
- Objective 4 Differentiate between:
1. Cation
 2. Anion
- Objective 5 Describe the characteristics of bonds. (no longer place any emphasis on which is the strongest type)
1. Ionic
 2. Covalent
 3. Hydrogen
- Objective 6 Define pH.
- Objective 7 Categorize the following based on the pH of a solution:
1. Acidic
 2. Basic
 3. Neutral
- Objective 8 Distinguish between “neutral” pH and the “average” pH range of the blood.
1. Neutral pH=7.0



2. Average pH of blood=7.35 to 7.45

Objective 9 Describe the properties of water and how it is utilized in the human body

1. Universal solvent
2. Transport
3. Lubricant
4. Heat capacity
5. Chemical reactions

Objective 10 Distinguish between:

1. Inorganic compounds-do not contain carbon, small molecules, usually form ionic bonds
2. Organic compounds-usually contain carbon, large molecules, form covalent bonds, flammable

Objective 11 Describe the structures and functions of the following and give an example of each:

1. Carbohydrates
2. Proteins
3. Lipids
4. Nucleic acids
 1. RNA
 2. DNA
5. Amino acids

Objective 12 Describe how the body produces energy during cellular respiration.

1. $ATP \leftrightarrow ADP + P + ENERGY$

STANDARD 3

STUDENTS WILL DESCRIBE BASIC CONCEPTS OF STRUCTURES AND FUNCTIONS OF CELLS

Objective 1 Identify the four principle parts of a generalized animal cell and their functions.

1. Nucleus
2. Cytosol
3. Organelles
4. Cell membrane

Objective 2 Describe the structure and function of the cell membrane.

Objective 3 Describe a selectively permeable membrane and factors which influence permeability.

Objective 4 Contrast intracellular and extracellular fluid in terms of location and composition

Objective 5 Describe each of the following cellular transport processes and classify them as active or passive.

1. Passive processes
 1. Diffusion
 2. Osmosis
 3. Facilitated diffusion
 4. Dialysis
 5. Filtration
2. Active processes
 1. Phagocytosis
 2. Exocytosis
 3. Active transport



Objective 6 Review the osmotic effects that occur when a cell is placed in the following

1. Isotonic solution
2. Hypotonic solution
3. Hypertonic solution

Objective 7 Describe the function of the following structures within the cell.

1. Nucleolus
2. DNA
3. RNA
4. Gene
5. Chromatin
6. Chromosome
7. Ribosomes
8. Rough endoplasmic reticulum
9. Smooth endoplasmic reticulum
10. Golgi complex
11. Vesicle (vacuole)
12. Lysosomes
13. Peroxisomes
14. Mitochondria
15. Cytoskeleton
 1. Microfilaments
 2. Intermediate filaments
 3. Microtubules
16. Centrosomes
17. Centrioles
18. Cellular surface variants
 1. Microvilli (absorption)
 2. Cilia (transports products along the surface of the cell, “crowd surfers”)
 3. Flagella (transports the cell)

Objective 8 Compare and contrast:

1. Mitosis
2. Meiosis

STANDARD 4

STUDENTS WILL DESCRIBE BASIC CONCEPTS OF STRUCTURES AND FUNCTIONS OF HISTOLOGY AND THE INTEGUMENTARY SYSTEM

Objective 1 Identify the general characteristics and functions of each of the four principle types of tissues.

1. Epithelial-strategies for tissue identification (arrangement & cell shape)
2. Connective-adipose, cartilage, dense fibrous, blood, bone
3. Muscular-skeletal, smooth, cardiac
4. Nervous

Objective 2 Contrast the following:

1. Exocrine glands
2. Endocrine glands



- Objective 3** Differentiate between the four basic types of membranes.
1. Mucous
 2. Serous
 3. Synovial
 4. Cutaneous
- Objective 4** Describe the structures and functions of the integumentary system components.
1. Skin
 2. Glands
 3. Hair
 4. Nails
- Objective 5** Describe the major layers of skin.
1. Epidermis
 2. Dermis
 3. Subcutaneous (hypodermis)
- Objective 6** Describe the functions of the following:
1. Sudoriferous (sweat) glands
 2. Sebaceous (oil) glands
- Objective 7** Identify the following diseases and disorders of the integumentary system.
1. Skin cancers
 1. Basal cell carcinoma
 2. Squamous cell carcinoma
 3. Malignant melanoma
 2. Decubitus ulcers
 3. Eczema
 4. Lesion
 5. Burns
 1. 1st degree
 2. 2nd degree
 3. 3rd degree

STANDARD 5

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS OF THE SKELETAL SYSTEM

- Objective 1** Identify the general functions of the skeletal system.
- Objective 2** Identify the roles of the following in bone growth and ossification:
1. Osteoblasts
 2. Osteocytes
 3. Osteoclasts
- Objective 3** Describe the features of a long bone.
1. Periosteum
 2. Diaphysis
 3. Epiphysis
 4. Medullary cavity
 5. Red marrow



6. Yellow marrow
7. Articular cartilage
8. Endosteum
9. Compact bone
10. Spongy bone

Objective 4 Identify the four shapes of bones with characteristics and examples of each.

1. Long
2. Short
3. Flat
4. Irregular

Objective 5 Describe and locate the following bone markings.

1. Foramen
2. Meatus
3. Sinus
4. Fossa
5. Condyle
6. Tuberosity
7. Trochanter
8. Tubercle
9. Process

Objective 6 Describe and differentiate between the following terms:

1. Suture
2. Fontanel

Objective 7 Contrast the axial and appendicular skeletons

Objective 8 Locate the following bones.

1. Mandible
2. Maxilla
3. Zygomatic
4. Frontal
5. Parietal
6. Occipital
7. Sphenoid
8. Ethmoid
9. Hyoid
10. Temporal
11. Clavicle
12. Scapula
13. Sternum
14. Ribs
15. Pubic bone
 1. Ilium
 2. Ischium
 3. Pubis
16. Femur
17. Patella
18. Tibia
19. Fibula



20. Tarsals
21. Metatarsals
22. Phalanges
23. Humerus
24. Ulna
25. Radius
26. Carpals
27. Metacarpals
28. Vertebrae

Objective 9 Contrast the average number, location, and function of each of the five groups of vertebrae.

1. Cervical
2. Thoracic
3. Lumbar
4. Sacral
5. Coccygeal

Objective 10 Explain the structural and functional classifications of articulations.

1. Fibrous
2. Synovial
3. Cartilaginous
4. Amphiarthrotic
5. Diarthrotic
6. Synarthrotic

Objective 11 Differentiate between ligaments and tendons.

Objective 12 Identify the following diseases and disorders of the skeletal system.

1. Herniated disk
2. Osteoarthritis
3. Osteoporosis
4. Scoliosis
5. Kyphosis
6. Lordosis
7. Spina bifida
8. RA (Rheumatoid arthritis)

STANDARD 6

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS OF THE MUSCULAR SYSTEM AND ITS COMPONENTS

Objective 1 Identify the general functions of the muscular system.

Objective 2 Describe the four characteristics of muscle tissue.

1. Elasticity
2. Excitability (irritability)
3. Extensibility
4. Flexibility

Objective 3 Contrast the general location, microscopic appearance, control, and functions of the three specific types of muscle tissue.



1. Skeletal
2. Smooth
3. Cardiac

Objective 4 Contrast thick and thin myofilaments.

1. Actin
2. Myosin

Objective 5 Describe the sliding-filament theory of muscle contraction.

Objective 6 Describe what occurs at the neuromuscular junction.

Objective 7 Define the following terms:

1. Origin
2. Insertion

Objective 8 Explain the role of the following:

1. Prime movers (agonists)
2. Antagonists
3. Synergist
4. Fixators

Objective 9 Describe the locations and functions of the following skeletal muscles:

1. Biceps brachii
2. Triceps brachii
3. Brachialis
4. Flexors
5. Extensors
6. Pronator
7. Supinator
8. Rotator cuff
 1. Supraspinatus
 2. Infraspinatus
 3. Teres minor
 4. Subscapularis
9. Sternocleidomastoid
10. Trapezius
11. Deltoid
12. Diaphragm
13. Rectus abdominis
14. Pectoralis major
15. Latissimus dorsi
16. External oblique
17. Gastrocnemius
18. Tibialis anterior
19. Soleus
20. Hamstrings
 1. Semimembranosus
 2. Semitendinosus
 3. Biceps femoris
21. Quadriceps
 1. Rectus femoris



2. Vastus lateralis
3. Vastus medialis
4. Vastus intermedius
22. Gluteus maximus
23. Gluteus medius
24. Sartorius
25. Gracilis
26. Masseter

Objective 10 Identify the following diseases and disorders of the muscular system.

1. Fibromyalgia
2. Muscular dystrophy
3. Medial tibial stress syndrome
4. Compare and contrast the following, describe the three degrees of injury:
 1. Sprain
 2. Strain

STANDARD 7

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS OF THE NERVOUS SYSTEM AND SPECIAL SENSES

Objective 1 Restate the three broad functions of the nervous system.

1. Sensory
2. Integration
3. Motor

Objective 2 Describe the general organization of the nervous system.

1. Central Nervous System (CNS)
 1. Spinal nerves
 1. 31 pairs
 2. Cranial nerves
 1. I-XII
 3. Subdivisions
 1. Autonomic Nervous System (ANS)
 1. Sympathetic
 2. Parasympathetic
 2. Somatic Nervous System

Objective 3 List the functions and structures of neurons and neuroglial cells.

1. Neuron
2. Astrocytes
3. Microglia
4. Oligodendrocytes
5. Ependymal cells
6. Schwann cells
7. Satellite cells

Objective 4 Contrast white and gray matter of nervous tissue.

Objective 5 Describe the location and function of CSF.



1. Ventricles
 1. Choroid Plexus
2. Subarachnoid space

Objective 6 Identify the structures responsible for the maintenance and protection of the central nervous system.

1. Meninges
 1. Dura mater
 2. Arachnoid mater
 3. Pia mater

Objective 7 Identify the four principal parts of the brain.

1. Cerebrum
2. Cerebellum
3. Brain stem
4. Diencephalon

Objective 8 Describe the functions of the three structures of the brain stem.

1. Medulla oblongata
2. Pons
3. Midbrain

Objective 9 Describe the structures and functions of the diencephalon.

1. Thalamus
2. Hypothalamus

Objective 10 Describe the locations and functions of the four lobes of the cerebrum.

1. Frontal
2. Parietal
3. Temporal
4. Occipital

Objective 11 Explain the major functions of the cerebellum.

Objective 12 Sequence the major events when the nerve impulse (action potential) is initiated and transmitted through a neuron.

1. All or None Principle

Objective 13 Explain the role of each of the components of a reflex arc.

1. Reflex
2. Reflex arc
3. Receptor
4. Sensory neuron
5. Association (interneuron) neuron
6. Motor neuron
7. Effector

Objective 14 Identify the following diseases and disorders of the nervous system.

1. ALS
2. Alzheimer's
3. Bacterial meningitis
4. Cerebral palsy
5. Epilepsy



6. Multiple sclerosis
7. Guillain-Barre syndrome
8. Parkinson's
9. Cerebral Vascular Accident (CVA)-stroke

Objective 15 Describe the principle anatomical structures of the eye.

1. Accessory structures
 1. Eyelid
 2. Conjunctiva
 3. Lacrimal apparatus
 4. Extrinsic muscles
2. Layers of the eyeball
 1. Fibrous tunic
 1. Sclera
 2. Cornea
 2. Vascular tunic
 1. Choroid
 2. Ciliary body
 3. Iris
 4. Lens
 5. Pupil
 3. Nervous tunic
 1. Retina

Objective 16 Describe the principle anatomical structures of the ear.

1. Outer ear
 1. Auricle
 2. Auditory Canal
2. Middle ear
 1. Tympanic cavity
 2. Tympanic membrane
 3. Auditory (Eustachian) tube
 4. Auditory ossicles
 1. Malleus
 2. Incus
 3. Stapes
3. Inner ear
 1. Bony labyrinth
 2. Membranous labyrinth
 3. Semicircular canals
 4. Vestibule
 5. Cochlea
 6. Organ of Corti

Objective 17 Identify the following diseases and disorders associated with special senses.

1. Ametropia-abnormal refracted light
 1. Myopia
 2. Hyperopia
 3. Presbyopia
 4. Cataracts



5. Conjunctivitis
6. Strabismus
7. Glaucoma
8. Macular degeneration
9. Vertigo
10. Tinnitus
11. Middle ear infection (Otitis Media)
12. Deafness
 1. Conductive
 2. Sensorineural

STANDARD 8

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS ASSOCIATED WITH THE ENDOCRINE SYSTEM

Objective 1 Identify the general functions of the endocrine system.

Objective 2 Describe a “hormone” and how it functions in the body.

Objective 3 Describe a “hormone” and how it functions in the body.

1. Hypothalamus
 1. Growth Hormone Releasing Hormone (GHRH)-targets anterior pituitary
 2. Thyrotropin Releasing Hormone (TRH)-targets anterior pituitary
 3. Corticotropin Releasing Hormone (CRH)-target anterior pituitary
 4. Antidiuretic Hormone (ADH)
 1. Produced in hypothalamus
 2. Stored in posterior pituitary
 5. Oxytocin Hormone (Oxt)
 1. Produced in hypothalamus
 2. Stored in posterior pituitary
2. Pituitary Gland-found in the hypophyseal fossa “Sella Turcica”
 1. Anterior Pituitary (adenohypophysis)
 1. Human Growth Hormone (HGH)
 1. Targets cells stimulating growth
 2. Thyroid Stimulating Hormone (TSH)
 1. Targets thyroid gland
 3. Adrenocorticotropin Hormone (ACTH)
 1. Targets adrenal cortex
 3. Posterior Pituitary (neurohypophysis)
 1. Antidiuretic Hormone (ADH)
 1. Neural stimulus releases ADH to target kidneys for water retention
 2. Oxytocin Hormone (Oxt)
 1. Neural stimulus releases Oxt to target uterus for child birthing
 2. Neural stimulus releases Oxt to target breast tissue for milk letdown
 4. Thyroid Gland-found inferior to the Larynx
 1. Thyroxine (T4)
 1. Targets cells increasing metabolism
 2. Triiodothyronine (T3)



1. Targets cells increasing metabolism
5. Adrenal Gland-found atop the kidneys
 1. Adrenal Cortex
 1. Adrenocorticotropic Hormone (ACTH)
 1. Stimulates the release of cortisol
 2. Cortisol
 1. Anti-inflammatory by suppressing white blood cells
 2. Adrenal Medulla-sympathetic stimulus for sustained "Fight or Flight"
 1. Epinephrine-adrenaline increasing cell metabolism
 2. Norepinephrine-noradrenaline increasing cell metabolism
6. Pancreas Gland-Exocrine/Endocrine gland in LUQ posterior to the stomach
 1. Insulin
 1. Released from Beta cells to target cells to decrease blood sugar
 2. Glucagon
 1. Released from Alpha cells to break down glycogen to increase blood sugar

Objective 4 Identify the following diseases and disorders of the endocrine system.

1. Dwarfism
2. Gigantism
3. Acromegaly
4. Hypothyroidism
 1. Myxedema
 2. Cretinism-congenital hypothyroidism
5. Hyperthyroidism (Graves' disease)
 1. Goiter
 2. Exophthalmos
6. Diabetes mellitus
 1. Type I
 2. Type II
7. Diabetes insipidus
8. Cushing's syndrome

STANDARD 9

STUDENTS WILL DESCRIBE THE COMPONENTS AND FUNCTIONS ASSOCIATED WITH BLOOD

Objective 1 Identify the components of blood and their functions.

1. Erythrocytes
2. Leukocytes
3. Thrombocytes
4. Plasma

Objective 2 Describe erythrocytes, including the structure of hemoglobin.

Objective 3 Define leukocyte and list the two major groups with their cell types and their function.

1. Granulocytes
 1. Neutrophils
 2. Basophils
 3. Eosinophils
2. Agranulocytes



1. Monocytes
2. Lymphocytes

Objective 4 Describe the process of hemostasis.

1. Vascular spasm
2. Platelet plug formation
3. Coagulation

Objective 5 Contrast a thrombus and an embolus.

Objective 6 Identify the antigens found on the erythrocytes and the antibodies that determine the ABO blood types and the Rh factor.

Objective 7 Identify the following diseases and disorders associated with the blood.

1. Anemias
 1. Nutritional
 2. Pernicious
 3. Hemorrhagic
 4. Hemolytic
 5. Sickle cell
 6. Aplastic
 7. Hemolytic disease of the newborn
 8. Hemophilia
 9. Leukemia
 10. Mononucleosis
 11. Polycythemia

STANDARD 10

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS OF THE LYMPHATIC SYSTEM

Objective 1 Identify the components of the lymphatic system.

1. Tonsils
2. Spleen
3. Thymus
4. Lymph nodes
5. Bone marrow
6. Lymph vessels

Objective 2 Describe how lymph is moved through the body.

Objective 3 Contrast antigens and antibodies.

Objective 4 Describe the general roles of T-cells and B-cells in the immune response.

Objective 5 Distinguish between active and passive immunity and natural vs. artificial acquisition of immunity.

Objective 6 Identify the following diseases and disorders associated with the lymphatic system.

1. AIDS
2. Measles
3. Mumps
4. Rubella



5. Tetanus

STANDARD 11

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS OF THE CARDIOVASCULAR SYSTEM

- Objective 1 List the general functions of the cardiovascular system.
- Objective 2 Describe the layers of the heart.
1. Epicardium
 2. Myocardium
 3. Endocardium
- Objective 3 Describe the layers of the heart.
1. Epicardium
 2. Myocardium
 3. Endocardium
- Objective 4 Locate the great blood vessels of the heart.
1. Superior vena cava
 2. Inferior vena cava
 3. Pulmonary trunk
 4. Pulmonary arteries
 5. Pulmonary veins
 6. Aorta
 7. Branches of the aorta
- Objective 5 Identify the valves of the heart.
1. Tricuspid
 2. Pulmonary semilunar
 3. Bicuspid (mitral)
 4. Aortic semilunar
- Objective 6 Trace blood flow through the heart.
- Objective 7 Identify the components of the conduction system of the heart and trace the pathway.
1. SA node
 2. AV node
 3. AV bundle
 4. Bundle branches
 5. Purkinje fibers
- Objective 8 Sequence the principle events of the cardiac cycle in terms of systole and diastole.
- Objective 9 Define cardiac output and identify factors that influence it.
1. Heart rate
 2. Stroke volume
- Objective 10 Contrast the structures and functions of arteries, capillaries, and veins.
- Objective 11 Define pulse and identify the general location of arteries where pulse may be felt.
- Objective 12 Describe blood pressure and how to measure it.
- Objective 13 Contrast pulmonary and systemic circulation.
- Objective 14 Identify the following diseases and disorders of the cardiovascular system.



1. Aneurysm
2. Arteriosclerosis
3. Atherosclerosis
4. Cerebrovascular accident/stroke
5. Coronary artery disease
6. Hypertension
7. Murmur
8. Myocardial infarction

STANDARD 12

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS ASSOCIATED WITH THE RESPIRATORY SYSTEM

- Objective 1** Identify the general functions of the respiratory system.
- Objective 2** Sequence the organs of the respiratory system in the order which air will pass through them from the exterior.
1. Nose/mouth
 2. Pharynx
 3. Larynx
 4. Trachea
 5. Bronchi
 6. Bronchioles
 7. Alveolar duct
 8. Alveoli
- Objective 3** Identify the three regions of the pharynx.
1. Nasopharynx
 2. Oropharynx
 3. Laryngopharynx
- Objective 4** Identify the following anatomical features of the larynx.
1. Epiglottis
 2. Glottis
 3. Hyoid bone
 4. Thyroid cartilage
 5. Cricoid cartilage
 6. True vocal cords
 7. False vocal cords
- Objective 5** Identify the coverings of the lungs and the gross anatomical features of the lungs.
1. Apex
 2. Base
 3. Lobes
 4. Visceral pleura
 5. Parietal pleura
 6. Pleural cavity
- Objective 6** Identify the site at which gas exchange occurs in the lungs (alveoli).
- Objective 7** Identify the volumes and capacities of air exchanged during ventilation.



- 1. Tidal volume
 - 2. Vital capacity
- Objective 8 Differentiate between the following.
- 1. Ventilation
 - 2. External respiration
 - 3. Internal respiration
- Objective 9 Describe the effects of carbon dioxide on ventilation.
- Objective 10 Identify the following diseases and disorders of the respiratory system.
- 1. Chronic Obstructive Pulmonary Disorder
 - 1. Emphysema
 - 2. Influenza
 - 3. Lung cancer
 - 4. Pneumonia
 - 5. SIDS
 - 6. Tuberculosis
 - 7. Cystic Fibrosis
 - 8. Respiratory Syncytial Virus (RSV)
 - 9. Respiratory distress

STANDARD 13

STUDENTS WILL PERFORM BASIC LIFE SUPPORT SKILLS

- Objective 1 Identify the general functions of the digestive system.
- Objective 2 Contrast chemical and mechanical digestion.
- Objective 3 Differentiate between the following.
- 1. Alimentary canal structures
 - 1. Mouth
 - 2. Pharynx
 - 3. Esophagus
 - 4. Stomach
 - 5. Small intestines
 - 6. Large intestines
 - 7. Rectum
 - 8. Anus
 - 2. Accessory structures
 - 1. Salivary glands (parotid)
 - 2. Pancreas
 - 3. Gallbladder
 - 4. Liver
- Objective 4 Describe the functions of saliva and salivary amylase in digestion.
- Objective 5 Identify the following parts of a typical tooth.
- 1. Crown
 - 2. Neck
 - 3. Root
 - 4. Gingiva



5. Periodontal ligament
6. Enamel
7. Dentin
8. Pulp
9. Root canal

Objective 6 Define the following.

1. Deglutition
2. Mastication
3. Maceration
4. Segmentation
5. Peristalsis
6. Haustral churning

Objective 7 Identify the anatomical features of the stomach.

1. Fundus
2. Body
3. Pylorus
4. Rugae
5. Cardiac sphincter
6. Pyloric sphincter

Objective 8 Identify the basic components and functions of gastric juice.

1. Chief cells
 1. Pepsinogen
2. Parietal cells
 1. Hydrochloric acid
3. Goblet cells
 1. Mucus

Objective 9 Identify the location and digestive functions of the pancreas.

1. Pancreatic Islets
2. Acini Cells

Objective 10 Describe the function of bile (emulsification).

Objective 11 Identify the three sections of the small intestine and describe the functions.

1. Duodenum
2. Jejunum
3. Ileum

Objective 12 Identify the structures and sections of the large intestine and describe the functions.

1. Cecum
2. Colon
 1. Ascending
 2. Transverse
 3. Descending
 4. Sigmoid
3. Rectum
4. Anal canal

Objective 13 Identify the following diseases and disorders of the digestive system.



1. Appendicitis
2. Cirrhosis
3. Colorectal cancer
4. Gallstones
5. Hepatitis
6. Obesity
7. Ulcers
8. Celiac disease
9. Crohn's disease
10. Irritable Bowel Syndrome (IBS)

STANDARD 14

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS ASSOCIATED WITH THE URINARY SYSTEM

Objective 1 Identify the general functions of the urinary system.

Objective 2 Identify the four major organs of the urinary system.

1. Kidneys
2. Ureters
3. Bladder
4. Urethra

Objective 3 Identify the gross anatomy of the kidney

1. Renal cortex
2. Renal medulla
3. Renal pyramids
4. Renal pelvis
5. Renal capsule
6. Calyces

Objective 4 Identify the microscopic structures of the nephron.

1. Renal corpuscle
2. Glomerulus
3. Glomerular (Bowman's) capsule
4. Afferent arteriole
5. Efferent arteriole
6. Renal tubule
7. Proximal convoluted tubule
8. Descending limb
9. Nephron loop
10. Ascending limb
11. Distal convoluted tubule
12. Collecting duct
13. Peritubular capillaries

Objective 5 Describe the three basic physiological processes and the structures involved in urine formation.

1. Filtration
2. Reabsorption
3. Secretion



Objective 6 Identify abnormal constituents of urine and possible causes of each.

1. Glucose
2. Ketones
3. Erythrocytes
4. Leukocytes
5. Bilirubin
6. Microbes
7. Albumin

Objective 7 Describe the methods of fluid intake and output.

1. Intake
 1. Oral
 1. Liquid
 2. Solid
 2. Intravenous
 3. Metabolic
2. Output
 1. Micturition
 2. Voiding
 3. Sweat
 4. Feces
 5. Exhaled vapor

Objective 8 Identify the following diseases and disorders associated with the urinary system.

1. Cystitis
2. Glomerulonephritis
3. Incontinence
4. Kidney stones
5. Polyuria
6. Renal failure
7. Urinary tract infections (UTI)

STANDARD 15

STUDENTS WILL DESCRIBE THE STRUCTURES AND FUNCTIONS ASSOCIATED WITH THE REPRODUCTIVE SYSTEM

Objective 1 Identify the general functions of the reproductive system.

Objective 2 Describe the anatomy of the male genitalia.

1. External
 1. Penis
 2. Scrotum
 3. Testes
2. Internal
 1. Epididymis
 2. Ductus deferens
 3. Ejaculatory duct
 4. Urethra



3. Accessory
 1. Seminal vesicles
 2. Prostate
 3. Bulbourethral gland

Objective 3 Identify the function of the testes.

Objective 4 Identify the functions of testosterone in the male.

Objective 5 Describe the anatomy of the female reproductive structures.

1. External
 1. Vulva
 2. Labia majora
 3. Clitoris
 4. Labia minora
 5. Mons pubis
 6. Vestibule
2. Internal
 1. Ovaries
 2. Uterus
 3. Uterine tubes
 4. Vagina
3. Accessory
 1. Mammary glands
 2. Perineum

Objective 6 Identify the functions of the ovaries.

Objective 7 Identify the structures and functions of the uterine tubes, including fimbriae and infundibulum.

Objective 8 Describe the structures and function of the uterus.

1. Perimetrium
2. Myometrium
3. Endometrium
 1. Stratum functionalis
 2. Stratum basalis
4. Fundus
5. Cervix

Objective 9 Define the menstrual cycle including the ovarian and uterine cycles and changes that occur during menopause.

Objective 10 Describe the physiological effects of estrogens, progesterone, and relaxin.

Objective 11 Contrast the general outcomes of spermatogenesis vs. oogenesis

Objective 12 Define the following sequence of events that occur during human development.

1. Fertilization
2. Zygote
3. Implantation
4. Embryo
5. Fetus

Objective 13 Identify the principle events associated with the three stages of labor.

1. Stage 1-dilation and effacement
2. Stage 2-delivery and birth



3. Stage 3-placental expulsion

Objective 14 Identify the following diseases and disorders of the reproductive system.

1. Reproductive cancers
 1. Breast
 2. Testicular
 3. Cervical
 4. Ovarian
 5. Prostate
 6. Uterine
2. Endometriosis
3. Impotence
4. Polycystic Ovarian Syndrome
5. Sexually Transmitted Infections (STI)
 1. Gonorrhea
 2. Syphilis
 3. Genital herpes
 4. Chlamydia
 5. Trichomoniasis
 6. Genital warts
 7. Human Papilloma Virus (HPV)



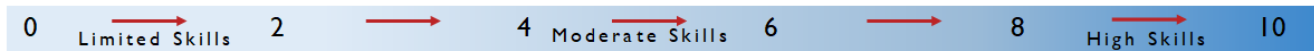
Medical Anatomy & Physiology Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name _____

Class _____

PERFORMANCE RATING SCALE



STANDARD

Score:

- Students will explore careers in healthcare. Students will participate in a minimum of three career exploration experiences to investigate a variety of health care careers related to therapeutic services, diagnostic services, health informatics, support services, and biomedical research and development pathways.
 - NOTE: Electronically delivered career exploration experiences are permissible.
- Students will provide an oral and/or written report for each career exploration.

STANDARD

Score:

- Students will select a topic and defend their position on a current medical ethics dilemma.

PERFORMANCE STANDARD AVERAGE SCORE: