Virginia Western Community College
Practical Nursing Program
PNE 155 Anatomy and Physiology

Prerequisites: Admission to the Practical Nursing Program

Course Description: Studies the structure and function of the body.

Semester Credits: 3 Lecture Hours - 0 Lab Hours – 3 Credit Hours

Required Materials

Textbook:

Patton, Kevin T. & Thibodeau, Gary A., Structure and Function of the Body, Elsevier, St. Louis, 2020. ISBN: 9780323597791

Other Required Materials:

Course Outcomes

After the completion of this course, the student should be able to:

1. SAFETY - Discuss the structural foundation of the body and its ability to function, integrating the levels of organization.
2. SAFETY - Discuss the organizational and functional aspects of cell and tissue organization.
3. CRITICAL THINKING - List the major organs of the body and discuss how they function within each system.
4. SAFETY - Discuss the structure and function of each of the following body systems as it relates to health:

- •Integumentary System and Body Membranes
- •Skeletal System
- •Muscular System
- •Nervous System and the Senses
- •Endocrine System
- •Blood and Lymphatic Systems
- •Cardiovascular System
- •Respiratory System
- •Digestive System
- •Urinary System
- •Reproductive System

5. TEAMWORK - Discuss the practical nurse's role in providing safe and holistic nursing care by promoting preventative health behaviors for patients, family, and community.
6. PATIENT CENTERED CARE - Describe basic body system abnormalities that may manifest and be observed by a nurse when delivering patient-centered care.
7. CRITICAL THINKING - Demonstrate basic use of critical thinking skills while utilizing the nursing process in how the major organs of the body function/work synergistically to maintain optimal health.
8. EVIDENCE-BASED PRACTICE - Discuss how current health care trends affect body systems in relation to preventative health and health management behaviors of patients, family and community.
9. INFORMATICS - Utilize course content and use of technology for the purpose of gathering data, organizing data, and communication of data collected as it relates to nursing care.
10. CULTURE - Discuss cultural, ethical, and spiritual differences in various patient populations.

Topical Description

1. Introduction to the body
    - Language of science and medicine
    - Scientific method
    - Levels of organization
    - Anatomical position
    - Anatomical directions
    - Planes of the body
    - Body cavities
    - Body regions
    - Balance of body functions

2. Chemistry of life
    - Language of science and medicine
    - Levels of chemical organization
    - Chemical bonding Inorganic chemistry
    - Organic chemistry
    - Chemistry in the human body

3. Cells
    - Language of science and medicine
    - Overview of cells
    - Parts of the cell
    - Relationship of cell structure and function
    - Movement of substances through cell membranes
    - Cell growth and reproduction

4. Tissues

Language of science and medicine
Introduction to tissues
Epithelial tissue
Connective tissue
Muscle tissue
Nervous tissue

5. Organ systems
Language of science and medicine
Organ systems
The body as a whole

6. Skin and membranes
Language of science and medicine
Body membranes
Skin Skin cancer Burns

7. Skeletal system
Language of science and medicine
Functions of the skeletal system
Gross structure of bones
Microscopic structure of bones
Bone development
Axial skeleton
Appendicular skeleton
Skeletal variations
Joints

8. Muscular system
Language of science and medicine
Muscle tissue
Structure of skeletal muscle
Functions of skeletal muscle
Role of other body systems in movement
Motor unit Muscle stimulus
Types of skeletal muscle contractions
Effects of exercise on skeletal muscle
Movements produced by skeletal muscle contractions
Skeletal muscle groups

9. Nervous system
Language of science and medicine
Organization of the nervous system
Cells of the nervous system
Nerves and tracts

Nerve signals
Central nervous system
Peripheral nervous system
Autonomic nervous system

10. Senses
    Language of science and medicine
    Classification of senses
    Sensory pathways
    General senses
    Special senses
    Integration of senses

11. Endocrine system
    Language of science and medicine
    Endocrine glands
    Mechanisms of hormone action
    Regulation of hormone secretion
    Prostaglandins Pituitary gland
    Hypothalamus
    Thyroid gland
    Parathyroid glands
    Adrenal glands
    Pancreatic islets
    Sex glands
    Thymus
    Placenta
    Pineal gland
    Endocrine functions throughout the body

12. Blood
    Language of science and medicine
    Blood composition
    Red blood cells
    White blood cells
    Platelets and blood clotting

13. Cardiovascular system
    Language of science and medicine
    Heart
    Blood vessels
    Routes of circulation
    Hemodynamics
    Pulse

14. Lymphatic system and immunity
    - Language of science and medicine
    - Lymphatic system Immune system
    - Immune system molecules
    - Immune system cells

15. Respiratory system
    - Language of science and medicine
    - Structural plan
    - Upper respiratory tract
    - Lower respiratory tract
    - Respiration
    - Pulmonary ventilation
    - Gas exchange and transport

16. Digestive system
    - Language of science and medicine
    - Overview of digestion
    - Wall of the digestive tract
    - Mouth
    - Pharynx
    - Esophagus
    - Stomach
    - Small intestine
    - Liver and gallbladder
    - Pancreas
    - Large intestine
    - Appendix
    - Peritoneum
    - Digestion
    - Absorption

18. Urinary system
    - Language of science and medicine
    - Kidneys
    - Formation of urine
    - Control of urine volume
    - Elimination of urine
    - Urinalysis

19. Fluid and electrolyte balance
    - Language of science and medicine
    - Body fluid volumes
    - Body fluid compartments
    - Mechanisms that maintain fluid balance

Fluid imbalances
Importance of electrolytes in body fluids
Electrolyte imbalances

20. Acid-base balance
    Language of science and medicine
    pH of body fluids
    Mechanisms that control pH of body fluids
    pH imbalances

21. Reproductive systems
    Language of science and medicine
    Sexual reproduction
    Male reproductive system
    Female reproductive system
    Summary of the reproductive systems

Notes to Instructor