

Virginia Western Community College

PNE 155

Anatomy and Physiology

Prerequisites: Admission to the Practical Nursing Program

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

Semester Credits: 4 Lecture Hours - 0 Lab Hours – 4 Credit Hours

Required Materials

Textbook:

Patton, Kevin T. & Thibodeau, Gary A., Structure and Function of the Body, Elsevier, St. Louis, 2016. ISBN: 9780232341127

Other Required Materials:

Lippincott Nursing 2020 Drug Handbook, Philadelphia: Lippincott. ISBN: 9781975109264

Timby, B.K. (2018). Introductory Medical-Surgical Nursing (12th ed.). Philadelphia: Lippincott. ISBN: 9781496351333

Timby, B.K. (2017). Fundamental Nursing Skills and Concepts (11th ed.). Philadelphia: Lippincott. ISBN: 9781496327628 [Click here to enter text.](#)

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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

