

NORTH CENTRAL TEXAS COLLEGE



COURSE SYLLABUS

Course Name & Number	Anatomy and Physiology for Allied Health VNSG 1420	Semester & Year	Fall 2008																				
Instructor's Name	Tanys James – G'ville	Office Phone #	940-668-7144 940-521-1376																				
Instructor's Office #		Office Fax #																					
E-mail Address	tjames@nctc.edu	Office Hours																					
Grading Policy & Procedures	<p>TESTING AND GRADING SYSTEM: The course grade will be determined by Online Module exams, Discussion Forums, and a comprehensive final exam. The course grade will be calculated as follows:</p> <table><tr><td>Average of Unit</td><td></td><td>60%</td></tr><tr><td>Average of Discussion Forums</td><td></td><td>10%</td></tr><tr><td>Comprehensive Final Exam</td><td></td><td>30%</td></tr></table> <p>Letter grades will be assigned on the basis of the following numerical scores</p> <table><tr><td>90 – 100</td><td>A</td><td rowspan="5">NOTE: There will be no rounding of any grades.</td></tr><tr><td>80 – 89</td><td>B</td></tr><tr><td>75 – 79*</td><td>C</td></tr><tr><td>66 – 74</td><td>D</td></tr><tr><td>65 – or below</td><td>F</td></tr></table> <p>*A grade of "C" or above is required for the course to be accepted for credit and for the student to progress within the Vocational Nursing Program.</p> <p>UNIT EXAMS: There will be (21) Module exams consisting primarily of multiple-choice questions, but may include fill-in-the-blank and picture identification questions.</p> <p>Students have 2 weeks from the scheduled exam to challenge test questions by submitting a written request to consider another answer with complete documentation, including page numbers, of the alternate answer. The decision to grant the appeal remains solely with the individual instructor. After the 2-week period, all grades will stand and no appeal will be allowed.</p> <p>MAKE-UP EXAMINATIONS: Students are expected to take all exams as scheduled. If a student is unable to take an exam at the scheduled time, he/she will arrange to make-up exam with the instructor. The make-up exam will cover the same content but may include essay and/or short answer questions. <i>Only one exam may be made up.</i> <u>THE STUDENT IS RESPONSIBLE FOR MAKING ARRANGEMENT WITH THE INSTRUCTOR TO TAKE A MAKE UP EXAM.</u></p>			Average of Unit		60%	Average of Discussion Forums		10%	Comprehensive Final Exam		30%	90 – 100	A	NOTE: There will be no rounding of any grades.	80 – 89	B	75 – 79*	C	66 – 74	D	65 – or below	F
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80 – 89	B																						
75 – 79*	C																						
66 – 74	D																						
65 – or below	F																						

FINAL EXAM:

This is a comprehensive exam that will be derived from the entire content of the course.

ASSIGNMENTS:

Discussion Forums will not be accepted after the due date. A "0" will be given for these assignments not turned in by the due date .

CLASS POLICIES:

1. **Students must complete assignments regularly.**
2. Students are required to participate in discussion forums as assigned. Not every module has a discussion forum.
3. Students are responsible for all announcements and course content.
4. All assignments are due as directed by the instructor on the date specified by the instructor. Late work will not be accepted.

Catalog Description**COURSE DESCRIPTION:**

Introduction to the normal structure and function of the body, including an understanding of body systems in maintaining homeostasis. Principles of microbiology also included.

PLACEMENT:

This course is taught in the spring, summer, and fall semesters on campus and online.

PREREQUISITES:

None

CREDIT: 4 credit hours.

***Textbooks & Materials
Required /
Recommended*****REQUIRED TEXTBOOK AND WORKBOOK:**

Thibodeau, G. A. & Patton, K. T. (2008). Structure & function of the body (13th ed.). St. Louis: Mosby.

Swisher, L. (2008). Study guide to accompany structure & function of the body (13th ed.). St. Louis: Mosby.

Course Competencies**COURSE OBJECTIVES:**

Upon successful completion of VNSG 1420, A & P for Allied Health, the student will:

1. Discuss basic concepts of human biology, i.e., Anatomy and Physiology. (DEL C 1) (SCANS 1,5)
2. List individual organs and systems, and describe their inter-relatedness. (DEL C 1). (SCANS 1,5)
3. Define and describe the principle of homeostasis and identify failures of homeostasis as a basic mechanism of disease. (DEL C 1) (SCANS 1, 5)

***Other Pertinent
Information*****METHODS OF ONLINE INSTRUCTION:**

Power Point and Instructor Lecture Notes
Self-Study Modules and Quizzes
Interactive Exercises
Animations

Discussion Forums
Multimedia

Scholastic Integrity

Scholastic dishonesty shall include, but not be limited to cheating on a test, plagiarism, and collusion. See *Student Handbook* “Student Rights & Responsibilities: Student Conduct [FLB-(LOCAL)]” #18.

ADA Statement

North Central Texas College does not discriminate on the basis of disability for admission or access to its programs.

- The ACCESS program provides accommodations for students who have a documented disability. A disability is anything that can interfere with learning, such as a learning disability, psychological challenge or physical illness or injury. Accommodations may include extra time on tests, tests in a non-distracting environment, notetaker in class, etc. On the Corinth campus, contact: Robin Truhe (rtruhe@nctc.edu, 940-498-6207) or Penny Cogbill (pcogbill@nctc.edu, 940-498-6212) in suite 170. On the Gainesville campus, contact Mary Martinson (mmartinson@nctc.edu, 940-668-7731 ext 4377) in ASC 111.

- The Student Success Center is designated to help all students at NCTC develop tools to achieve their academic goals. Students can attend free interactive workshops about Time Management, Study Skills, Test Anxiety, Choosing a Major, Learning Style Strategies, Career Exploration, and much more. This program also links student to FREE tutoring, including a Writing Center, a Math Lab, and free online tutoring in the evening and helps new students acclimate to college by providing new student orientations and THEA/Compass Test Preparation. All students are invited to visit the Student Success Center. We are located in Rooms 160 and 170 in Corinth and 114 in Gainesville.

- TRIO Programs are federally funded programs which offer services designated to assist student in achieving their academic goals. Services include educational workshops, academic advising, tutoring, personal counseling, career counseling, cultural enrichment, and financial aid information. Students may be eligible for TRIO if they are currently enrolled at NCTC, have academic need, and meet at least ONE of THREE criteria which include: 1) first generation status-neither parent has a degree from a 4 year college, 2) income level is within federal low income guidelines, and/or 3) has a documented disability. TRIO is located in room 170 on the Corinth campus and room 114 on the Gainesville campus.

Students can access our website by going to www.nctc.edu and clicking on the red button in the middle of the page labeled “Tutoring and Other ACADEMIC SUPPORT SERVICES” or by going directly to: http://www.nctc.edu/Student_Services/Access/AcademicandStudentSupportServices.html.

EEOC Statement

North Central Texas College does not discriminate on the basis of race, color, national origin, gender, religion, age, or disability in the employment or the provision of services.

Web Page

Visit the North Central Texas College web page for information on registration, financial aid, counseling/advising, and cost of tuition and fees. You will also find information on the catalog and semester schedules as well as courses of study. You can keep up with what is happening on campus by checking the calendar of events and the sports news. The web has information on the library as well as links to other areas of interest. Check out our web page at <http://www.nctc.edu> and Vocational Nursing Web Page.

NORTH CENTRAL TEXAS COLLEGE
VOCATIONAL NURSING

Differentiated Entry Level Competencies (DEL C)

List of all Identified Competencies and Required Courses															
Competencies														VNSG Course Number	Course Title
1	2	3	4	5	6	7	8	9	10	11	12	13	14		
		K			K	K				K	K	K	K	1219	Professional Development
		B												1227	Essentials of Medication Admin
K		K	K					K	K					1230	Maternal-Neonatal Nursing
K		K	K					K	K					1234	Pediatrics
B	K	B		K	K						K	K	K	1323	Basic Nursing Skills
K		K												1331	Pharmacology
C	C	C	C	C	C	C	C	C	C	C	C	C	C	1360	Clinical I
C	C	C	C	C	C	C	C	C	C	C	C	C	C	1363	1463 – Clinical II
K	K	K	K				K	K	K			K	K	1400	Nursing in Health and Illness I
K														1420	A & P for Allied Health
							K	K	K					1509	Nursing in Health and Illness II
							K	K	K				K	1510	Nursing in Health and Illness III
C	C	C	C	C	C	C	C	C	C	C	C	C	C	2360	2460 – Clinical III
Competency References															
														M – Demonstrate behaviors that promote vocational nursing	
														M - Participate as an advocate for improving the health care team	
														M – Demonstrate accountability for own nursing practice	
														C – Participate in support of structured health care setting	
														C – Participate in identification of client needs for community resources	
														C – Collaborate with clients and health care team to provide direct care to clients	
														C – Assist in coordination of resources for provision of care to assigned clients	
														P – Use problem-solving approach for decision making in practice	
														P – Provide direct basic care to assigned multiple client in structured settings	
														P – Assist in evaluation of client’s responses and outcomes to therapeutic interventions	
														P – Implement teaching plan for the client with common health problems and well-defined learning needs	
														P – Implement plan of care within legal and ethical parameters including scope of education and collaboration	
														P – Assist in formulating goals/outcomes in collaboration with client, family, and health care team members	
														P – Assist in determining health status/needs based on data and health practices in collaboration with client, family, and team	

P = Provider of Care
C = Coordinator of Care
M = Member of a Profession

K = Knowledge
C = Clinical Behaviors/Judgments
B = Both

SCANS Matrix Model

Program: Vocational Nursing								Credential:	
CIP: 51.1613.00								Certificate	
List of all Courses Required and Identified Competencies									
Competencies								Course Number	Course Title
1	2	3	4	5	6	7	8		
X	X		X	X	X		X	VNSG 1219	Professional Development
X		X		X				VNSG 1227	Essentials of Medication Administration
X				X			X	VNSG 1230	Maternal-Neonatal Nursing
X		X		X			X	VNSG 1234	Pediatrics
X	X	X	X	X				VNSG 1323	Basic Nursing Skills
X		X		X			X	VNSSG 1331	Pharmacology
X	X	X	X	X	X	X		VNSG 1360	Clinical I
X	X	X	X	X	X	X		VNSG 1363	VNSG 1463 – Clinical II
X				X			X	VNSG 1400	Nursing in Health and Illness – I
X				X				VNSG 1420	A & P for Allied Health
X				X			X	VNSG 1509	Nursing in Health and Illness – II
X				X			X	VNSG 1510	Nursing in Health and Illness – III
X	X	X	X	X	X	X		VNSG 2360	VNSG 2460 – Clinical III
									Competency References
									8 - Basic use of computers (2)
									7 - Workplace competencies (2)
									6 - Personal qualities (1c)
									5 – Thinking skills (1b)
									4 - Speaking and listening (1a)
									3 - Arithmetic or mathematics (1a)
									2 - Writing (1a)
									1 - Reading (1a)

MODULE 1 **An Introduction to the Structure and Function of the Body**

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

Define the terms *anatomy* and *physiology*.

List and discuss in order of increasing complexity the levels of organization of the body.

Define the term anatomical position.

List and define the principal directional terms and sections (planes) used in describing the body and the relationship of body parts to one another.

List the nine abdominopelvic regions and the abdominopelvic quadrants.

List the major cavities of the body and the subdivisions of each.

Discuss and contrast the axial and the appendicular subdivisions of the body. Identify a number of specific anatomical regions in each area.

Explain the meaning of the term *homeostasis* and give an example of a typical homeostatic mechanism.

CHAPTER OUTLINE

1. Structural levels of organization
2. Anatomical Position
3. Anatomical Directions
 - a. Superior-Inferior
 - b. Anterior-Posterior
 - c. Medial-Lateral
 - d. Proximal-Distal
 - e. Superficial-Deep
4. Planes or Body Sections
 - a. Sagittal plane
 - b. Frontal (coronal)
 - c. Transverse
5. Body Cavities
6. Body Regions
7. The Balance of Body Functions

MODULE 2 **CHEMISTRY OF LIFE**

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

Define the terms *atom*, *element*, *molecule*, and *compound*.

Describe the structure of an atom.

Compare and contrast ionic and covalent types of chemical bonding.

Distinguish between *organic* and *inorganic* chemical compounds.

Discuss the chemical characteristics of water.

Explain the concept of pH.

Discuss the structure and function of the following types of organic molecules: *carbohydrate*, *lipid*, *protein*, and *nucleic acid*.

CHAPTER OUTLINE

1. Levels of chemical organization
 - a. Atoms
 - b. Elements, molecules, compounds
2. Chemical bonding
 - a. Ionic bonds
 - b. Covalent bonds
3. Inorganic chemistry
 - a. Water
 - b. Acids, bases, and salts
4. Organic chemistry
 - a. Carbohydrates
 - b. Lipids
 - c. Proteins
 - d. Nucleic acids

MODULE 3 CELLS AND TISSUES**STUDENT OBJECTIVES – After completing the chapter, the student will be able to:**

Identify and discuss the basic structure and function of the three major components of a cell.

List and briefly discuss the functions of the primary cellular organelles.

Compare the major passive and active transport processes that act to move substances through cell membranes.

Compare and discuss DNA and RNA and their function in protein synthesis.

Discuss the stages of mitosis and explain the importance of cellular reproduction

Explain how epithelial tissue is grouped according to shape and arrangement of cells.

List and briefly discuss the major types of connective and muscle tissue.

List the three structural components of a neuron.

CHAPTER OUTLINE

1. Cells
 - a. Size and shape
 - b. Composition
 - c. Parts of the cell
 - d. Relationship of cell structure and function
2. Movement of Substances Through Cell Membranes
 - a. Passive transport
 - 1) Diffusion
 - 2) Filtration
 - b. Active transport
 - 1) Ion pumps
 - 2) Phagocytosis and pinocytosis
3. Cell Reproduction and Heredity
 - a. DNA molecule and genetic information
 - b. Cell division
4. Tissues
 - a. Epithelial
 - b. Connective
 - c. Muscle
 - d. Nervous

MODULE 4 ORGAN SYSTEMS OF THE BODY**STUDENT OBJECTIVES – After completing the chapter, the student will be able to:**

Define and contrast the terms *organ* and *organ system*.

List the 11 major organ systems of the body.

Identify and locate the major organs of each major organ system

Briefly describe the major functions of each major organ system.

Identify and discuss the major subdivisions of the reproductive system.

CHAPTER OUTLINE

1. Organ Systems
 - a. Integumentary
 - b. Skeletal
 - c. Muscular
 - d. Nervous
 - e. Endocrine
 - f. Cardiovascular
 - g. Lymphatic
 - h. Respiratory
 - i. Digestive
 - j. Urinary
 - k. Reproductive

MODULE 5 THE INTEGUMENTARY SYSTEM AND BODY MEMBRANE**STUDENT OBJECTIVES – After completing the chapter, the student will be able to:**

Classify, compare the structure of, and give examples of each type of body membrane.

Describe the structure and function of the epidermis and dermis.

List and briefly describe each accessory organ of the skin.

List and discuss the three primary functions of the integumentary system.

Classify burns and describe how to estimate the extent of a burn injury.

CHAPTER OUTLINE

1. Classification of Body Membranes
 - a. Epithelial membranes
 - b. Connective tissue
2. The Skin
 - a. Structure
 - b. Accessory structures of the skin
 - c. Skin cancer
 - c. Functions of the skin
 - d. Burns

MODULE 6 THE SKELETAL SYSTEM

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

List and discuss the generalized functions of the skeletal system.

Identify the major anatomical structures found in a typical long bone.

Discuss the microscopic structure of bone and cartilage, including the identification of specific cell types and structural features.

Explain how bones are formed, how they grow, and how they are remodeled.

Identify the two major subdivisions of the skeleton and list the bones found in each area.

List and compare the major types of joints in the body and give an example of each.

CHAPTER OUTLINE

1. Functions of the skeletal system
 - a. Support
 - b. Protection
 - c. Movement
 - d. Storage
 - e. Hemopoiesis
2. Types of bones
3. Structure of long bones
4. Microscopic structure of bone and cartilage
5. Bone formation and growth
6. Divisions of Skeleton
 - a. Axial skeleton
 - b. Appendicular skeleton
7. Differences between a man's and a woman's skeleton
8. Joint (Articulations)

MODULE 7 THE MUSCULAR SYSTEM

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

List, locate, and compare the structure and function of the three major types of muscle tissue.

Discuss the microscopic structure of a skeletal muscle sarcomere and motor unit.

Discuss how a muscle is stimulated and compare the major types of skeletal muscle contractions.

Name, identify on a model or diagram, and give the function of the major muscles of the body discussed in this chapter.

List and explain the most common types of movement produced by skeletal muscles.

CHAPTER OUTLINE

1. Muscle tissue
2. Structure of skeletal muscle
 - a. Microscopic structure
3. Functions of Skeletal Muscle
 - a. Movement
 - b. Posture
 - c. Heat production
4. Fatigue
5. Role of other body systems in movement
6. Motor unit
7. Muscle stimulus

8. Types of skeletal muscle contraction
 - a. Twitch and tetonic
 - b. Isotonic
 - c. Isometric
9. Effects of Exercise on Skeletal Muscles
10. Skeletal Muscle Groups
 - a. Head and neck
 - b. Upper extremities
 - c. Trunk
 - d. Lower extremities
11. Types of movement produced by skeletal muscle contractions

MODULE 8 THE NERVOUS SYSTEM

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

- List the organs and divisions of the nervous system and describe the generalized functions of the system as a whole.
 Identify the major types of cells in the nervous system and discuss the functions of each.
 Identify the anatomical and functional components of a three-neuron reflex arc. Compare and contrast the propagation of a nerve impulse along a nerve fiber and across a synaptic cleft.
 Identify the major anatomical components of the brain and spinal cord and briefly comment on the function of each.
 Compare and contrast spinal and cranial nerves.
 Discuss the anatomical and functional characteristics of the two divisions of the autonomic nervous system.

CHAPTER OUTLINE

1. Organs and divisions of the nervous system
2. Cells of the nervous system
 - a. Neurons
 - b. Glia
3. Nerves and tracts
4. Reflex arcs
5. Nerve impulses
6. The synapse
7. Central Nervous System
 - a. Divisions of the brain
 - b. Spinal Cord
 - c. Coverings and fluid spaces
8. Peripheral Nervous System
 - a. Cranial nerves
 - b. Spinal nerves
9. Autonomic Nervous System
 - a. Functional anatomy
 - b. Autonomic conduction paths
 - c. Sympathetic nervous system
 - d. Parasympathetic nervous system
 - e. Autonomic neurotransmitters
 - f. Autonomic nervous system as a whole

MODULE 9 THE SENSES

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

- Classify sense organs as special or general and explain the basic differences between the two groups.
 Discuss how a stimulus is converted into a sensation.
 Discuss the general sense organs and their functions.
 Describe the structure of the eye and the functions of its components.
 Discuss the anatomy of the ear and its sensory function in hearing and equilibrium.
 Discuss the chemical receptors and their functions.

CHAPTER OUTLINE

1. Classification of sense organs
2. Converting a stimulus into a sensation
3. General sense organs

4. Special sense organs
 - a. Eye
 - b. Ear
 - c. Taste
 - d. Smell

MODULE 10 THE ENDOCRINE SYSTEM

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

- Distinguish between endocrine and exocrine glands and define the terms *hormone* and *prostaglandin*.
- Identify and locate the primary endocrine glands and list the major hormones produced by each gland.
- Describe the mechanisms of steroid and nonsteroid hormone action.
- Explain how negative and positive feedback mechanisms regulate the secretion of endocrine hormones.
- Identify the principal functions of each major endocrine hormone and describe the conditions that may result from hyposecretion or hypersecretion.
- Define *diabetes insipidus*, *diabetes mellitus*, *giantism*, *goiter*, *cretinism*, and *glycosuria*.

CHAPTER OUTLINE

1. Mechanisms of hormone action
 - a. Nonsteroid hormones
 - b. Steroid hormones
2. Regulation of hormone secretion
3. Prostaglandins
4. Pituitary Gland
 - a. Anterior pituitary
 - b. Posterior pituitary
5. Hypothalamus
6. Thyroid gland
7. Parathyroid glands
8. Adrenal glands
 - a. Adrenal cortex
 - b. Adrenal medulla
9. Pancreatic islets
10. Female sex glands
11. Male sex glands
12. Thymus
12. Placenta
13. Pineal gland
14. Other endocrine structures

MODULE 11 BLOOD

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

- Describe the primary functions of blood.
- Describe the characteristics of blood plasma.
- List the formed elements of blood and identify the most important function of each.
- Discuss anemia in terms of red blood cell numbers and hemoglobin content.
- Explain the steps involved in blood clotting.
- Describe ABO and Rh blood typing.
- Define the following medical terms associated with blood: *hematocrit*, *leukocytosis*, *leukopenia*, *polycythemia*, *sickle cell*, *phagocytosis*, *acidosis*, *thrombosis*, *erythroblastosis fetalis*, *serum*, *fibrinogen*, *Rh factor*, *anemia*.

CHAPTER OUTLINE

1. Blood Composition
 - a. Blood plasma
 - b. Formed elements
 - c. RBCs
 - d. Anemia
 - e. Hematocrit test
 - f. WBCs

- g. Platelets and blood clotting
- 2. Blood Types
 - a. ABO system
 - b. Rh system
 - c. Universal donor and universal recipient blood
 - d. Erythroblastosis fetalis

MODULE 12 THE CIRCULATORY SYSTEM

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

Discuss the location, size, and position of the heart in the thoracic cavity and identify the heart chambers, sounds, and valves.

Trace blood through the heart and compare the functions of the heart chambers on the right and left sides.

List the anatomical components of the heart conduction system and discuss the features of a normal electrocardiogram.

Explain the relationship between blood vessel structure and function.

Trace the path of blood through the systemic, pulmonary, hepatic portal, and fetal circulations.

Identify and discuss the primary factors involved in the generation and regulation of blood pressure and explain the relationships between these factors.

CHAPTER OUTLINE

1. Heart
 - a. Location, size, and position
 - b. Anatomy
 - c. Heart sounds
 - d. Blood flow through the heart
 - e. Blood supply to the heart muscle
 - f. Cardiac cycle
 - g. Conduction system
 - h. Electrocardiogram
2. Blood vessels
 - a. Types
 - b. Structure
 - c. Functions
3. Circulation
 - a. Systemic and pulmonary circulation
 - b. Hepatic portal circulation
 - c., Fetal circulation
4. Blood pressure
 - a. Defining blood pressure
 - b. Factors that influence blood pressure
 - c. Fluctuations in blood pressure
5. Pulse

MODULE 13 THE LYMPHATIC SYSTEM AND IMMUNITY

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

Describe the generalized functions of the lymphatic system and list the primary lymphatic structures.

Discuss and compare nonspecific and specific immunity, inherited and acquired immunity, and active and passive immunity.

Discuss the major types of immune system molecules and indicate how antibodies and complements function.

Discuss and contrast the development and functions of B and T cells.

Compare and contrast humoral and cell-mediated immunity.

CHAPTER OUTLINE

1. Lymphatic System
 - a. Lymph and lymph vessels
 - c. Lymph nodes
 - d. Thymus
 - e. Tonsils

- f. Spleen
- 2. Immune System
 - a. Functions of the immune system
 - b. Nonspecific immunity
 - c. Specific immunity
- 3. Immune System Molecules
 - a. Antibodies
 - b. Complement proteins
- 4. Immune System
 - a. Phagocytes
 - b. Lymphocytes

MODULE 14 THE RESPIRATORY SYSTEM

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

Discuss the generalized functions of the respiratory system.

List the major organs of the respiratory system and describe the function of each.

Compare, contrast, and explain the mechanism responsible for the exchange of gases that occurs during internal and external respiration.

List and discuss the volumes of air exchanged during pulmonary ventilation.

Identify and discuss the mechanisms that regulate respiration.

CHAPTER OUTLINE

- 1. Structural plan
- 2. Respiratory tracts
- 3. Respiratory mucosa
- 4. Nose
- 5. Pharynx
- 6. Larynx
- 7. Trachea
- 8. Bronchi, Bronchioles, and Alveoli
- 9. Lungs and Pleura
- 10. Respiration
 - a. Mechanisms of breathing
 - b. Exchange of gases in lungs
 - c. Exchange of gases in tissues
 - d. Blood transportation of gases
 - e. Volumes of air exchanged in pulmonary ventilation
- 11. Regulation of respiration
 - a. Cerebral cortex
 - b. Receptors influencing respiration
- 11. Types of Breathing

MODULE 15 THE DIGESTIVE SYSTEM

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

List in sequence each of the component parts or segments of the alimentary canal from the mouth to the anus and identify the accessory organs of digestion.

List and describe the four layers of the wall of the alimentary canal. Compare the lining layer of the esophagus, stomach, small intestine, and large intestine.

Discuss the basics of protein, fat, and carbohydrate digestion and give the end products of each process.

Define and contrast mechanical and chemical digestion.

Define *peristalsis*, *bolus*, *chyme*, *jaundice*, *ulcer*, and *diarrhea*.

CHAPTER OUTLINE

- 1. Wall of the digestive tract
- 2. Mouth
- 3. Teeth
 - a. Typical tooth
 - b. Types of teeth

4. Urinary Bladder
5. Urethra
6. Micturation

MODULE 18 FLUID AND ELECTROLYTE BALANCE

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

List, describe, and compare the body fluid compartments and their subdivisions.

Discuss avenues by which water enters and leaves the body and the mechanisms that maintain fluid balance.

Discuss the nature and importance of electrolytes in body fluids and explain the aldosterone mechanism of extracellular fluid volume control.

Explain the interaction between capillary blood pressure and blood proteins.

Give examples of common fluid imbalances.

CHAPTER OUTLINE

1. Body fluids
2. Body fluid compartments
3. Mechanisms that maintain fluid balance
 - a. Regulation of fluid intake
 - b. Importance of electrolytes in body fluids
 - c. Capillary blood pressure and blood proteins
4. Fluid Imbalances

MODULE 19 ACID-BASE BALANCE

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

Discuss the concept of pH and define the term *acid-base balance*.

Define the terms *buffer* and *buffer pair* and contrast strong and weak acids and bases.

Contrast the respiratory and urinary mechanisms of pH control.

Discuss compensatory mechanisms that may help return blood pH to near-normal levels in cases of pH imbalances.

Compare and contrast metabolic and respiratory types of pH imbalances.

CHAPTER OUTLINE

1. pH of Body Fluids
2. Mechanisms that control pH of body fluids
 - a. Buffers
 - b. Respiratory mechanism
 - c. Urinary mechanism
 - d. Metabolic and respiratory disturbances
 - e. Vomiting and metabolic alkalosis
 - f. Cardiac arrest and respiratory acidosis

MODULE 20 THE REPRODUCTIVE SYSTEMS

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

List the essential and accessory organs of the male and female reproductive systems and give the generalized function of each.

Describe the gross and microscopic structure of the gonads in both sexes and explain the developmental steps in spermatogenesis and oogenesis.

Discuss the primary functions of the sex hormones and identify the cell type or structure responsible for their secretion.

Identify and describe the structures that constitute external genitals in both sexes.

Identify and discuss the phases of the endometrial or menstrual cycle and correlate each phase with its occurrence in a typical 28-day cycle.

CHAPTER OUTLINE

1. Common structural and functional characteristics between the sexes

2. Male Reproductive System
 - a. Structural plan
 - b. Testes
 - c. Ducts
 - d. Accessory, or supportive, sex glands
 - e. External genitals
3. Female Reproductive System
 - a. Structural plan
 - b. Ovaries
 - c. Ducts
 - d. Accessory, or supportive, sex glands
 - e. External genitals
 - f. Menstrual cycle
4. Summary of Male and Female Reproductive Systems

MODULE 21 GROWTH AND DEVELOPMENT

STUDENT OBJECTIVES – After completing the chapter, the student will be able to:

Discuss the concept of development as a biological process characterized by continuous modification and change.

Discuss the major developmental changes characteristic of the prenatal stage of life from fertilization to birth.

Discuss the three stages of labor that characterize a normal vaginal birth.

Identify the three primary germ layers and several derivatives in the adult body that develop from each layer.

List and discuss the major developmental changes characteristic of the four postnatal periods of life.

Discuss the effects of aging on the major body organ systems.

CHAPTER OUTLINE

1. Prenatal Period
 - a. Fertilization to implantation
 - c. Periods of development
 - d. Formation of the primary germ layers
 - e. Histogenesis and organogenesis
 - f. Birth defects
2. Birth or Parturition
 - a. Stages of labor
3. Postnatal Period
 - a. Infancy
 - b. Childhood
 - c. Adolescence and adulthood
 - d. Older adulthood
4. Effects of Aging
 - a. Skeletal system
 - b. Integumentary system,
 - c. Urinary system
 - d. Respiratory system
 - e. Cardiovascular system
 - f. Special Senses

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