JACKSON COLLEGE
DEPARTMENT OF NURSING

LPN 141
BODY STRUCTURE AND FUNCTION

(ALL SECTIONS)

Course Syllabus

2017-2018

COURSE DESCRIPTION:
This course is a body systems approach to the body structures and functions providing a foundation of understanding normal and abnormal body functions and disease processes. (Pre-requisite ENG 085)

EVALUATION:
The student's mastery of the theory is demonstrated by a grade averaged from daily quizzes, 7 unit tests and a final comprehensive exam.

- Each class will begin with a short 10-20 point quiz which covers the prior class content. If a student is absent, or arrives late and misses the quiz, a 0 will be awarded for the quiz grade. When figuring the quiz average, the lowest 2 quiz scores will be dropped.
- There are 7 unit tests; the lowest unit test score will be dropped when figuring the final course grade. * see the test make up policy below*
- The final exam is comprehensive and cannot be dropped.

To obtain the final course grade, add together:

- The sum of the quiz grades minus the two lowest and obtain the overall percentage.
- The individual percent earned on the 6 highest unit tests.
- The percent earned on the final exam
- Divide this total by 8 to obtain your overall course percentage earned.

The grading scale will be as follows:

94 -100% = 4.0	78-81% = 2.0	below 66% = 0.0
90 - 93% = 3.5	74-77% = 1.5	
86 - 89% = 3.0	70-73% = 1.0	
82 - 85% = 2.5	66-69% = .5	

TEST MAKE-UP POLICY:
The first missed exam may be made up without penalty if the student contacts the instructor or Nursing Department **BEFORE** the exam is given. After the first missed test, 5 percentage points will be deducted from the test score, if prior contact with the instructor has been made. IF NO CONTACT WITH THE INSTRUCTOR HAS BEEN INITIATED, A MAKE-UP TEST WILL NOT BE ALLOWED AND A SCORE OF 0.0% WILL BE RECORDED FOR THAT TEST. Any subsequent late exams will again be given only with prior contact with the instructor and will be docked the appropriate number of percentage points. (1^{st} late = 0 points deducted; 2^{nd} late = 5% deducted; 3^{rd} late = 10% deducted, 4^{th} =15%).

ALL TESTS MUST BE TAKEN WITHIN ONE WEEK OF THE ORIGINAL TEST DATE OR A 0.0 WILL BE RECORDED FOR THAT TEST.

TEACHING METHODS:

-Lecture, Class discussion, Computer simulations
-Homework assignment, Daily Quizzes
-Digital textbook resources @ http://evolve.e;sevier.com/PattonThibodeau/humanbody

REQUIRED TEXTBOOK:
Thibodeau & Patton 2017, 7th ed., *The Human Body in Health and Disease*, Mosby, St. Louis
ISBN 13: 978-0323402118
Digital
E-Textbook available at http://www.us.elsevierhealth.com/
E-ISBN- 978-0323402071

Course guided notes- available at the JC bookstore

RECOMMENDED RESOURCE:
Thibodeau & Patton 2017, 7th ed., *Study Guide for The Human Body in Health and Disease*
ISBN: 978032340941

NURSING DEPARTMENT ACADEMIC HONESTY POLICY:

Honesty and integrity are essential qualities for success in the profession of nursing. Any student found to be cheating on an exam, quiz, or other assignment will receive a maximum grade of 1.5 in the course.

Cheating may come in many forms. These may include but are not limited to:

- bringing an answer source to the testing site.
- copying from another student's test.
- changing an answer after a test has been submitted.
- sharing information with someone who has not yet complete the test.
- electronic transmission of test information.
- plagiarism.

STUDENT BEHAVIOR EXPECTATIONS:
"A student enrolling in Jackson College or the visitors on the campus assume an obligation to conduct themselves in a manner compatible with the College's functions as an educational institution" (JC Student Rights and Responsibilities Handbook). Disruptive behavior will not be tolerated in the classroom. Please refer to the JC Student Rights and Responsibilities Handbook for additional information.

CELL PHONE POLICY:
While the nursing faculty recognizes that communication with family and friends is important, the use of cell phones in class is very distracting to other students and to your instructor. Please keep all electronic devices on either silent, vibrate or voice mail mode during class. If you are experiencing a family emergency and must keep a cell phone on, please obtain instructor permission prior to class. **No cell phones are to be out during test taking or test review.**

ACCOMMODATIONS:
Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Center for Student Success (CSS) as soon as possible to ensure that such accommodations are implemented in a timely fashion.

NOTE: While all attempts to provide the student with a complete and accurate syllabus, some revisions may be necessary due to instructor illness, school closing policies or other unforeseen events.

Course Objectives

The student will:

1. be able to identify various chemical aspects as they apply to the human body.

2. be able to identify pathogenic organisms and how they affect the human body.

3. be able to identify anatomical structures and physiological principles associated with the immune system.

4. be able to identify anatomical structures and physiological principles associated with the integumentary system.

5. be able to identify anatomical structures and physiological principles associated with the skeletal system.

6. be able to identify anatomical structures and physiological principles associated with muscular system.

7. be able to identify anatomical structures and physiological principles associated with nervous system.

8. be able to identify anatomical structures and physiological principles associated with endocrine system.

9. be able to identify anatomical structures and physiological principles associated with reproductive system.

10. be able to identify anatomical structures and physiological principles associated with circulatory and lymphatic systems.

11. be able to identify anatomical structures and physiological principles associated with respiratory system.

12. be able to identify anatomical structures and physiological principles associated with digestive system.

13. be able to identify anatomical structures and physiological principles associated with urinary system.

14. be able to relate how body structure and function differ across the life span.

15. describe common diseases and disorders associated with the various body systems

16. describe common evaluation and treatment modalities for the discussed diseases and disorders

The student is advised to refer to the individual topic outlines for additional details.

Please complete and give to instructor

Name: _____ Date _____

Phone number: _____

☐ Yes: I have read and understand the testing policy

What is your career goal _____

Do you have any experience in the healthcare field? (Please describe)

Have you taken any prior A & P courses? [ ] No [ ] Yes; when & where

What diseases/medical conditions do you have some background knowledge about? (Personal, family or friends)

Tell me about you as a learner. How to do learn best?

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UNIT 1

1. BODY ORGANIZATION
2. CHEMISTRY
3. CELLS
4. TISSUES
5. CANCER
6. MEMBRANES

Unit I

Outline	Student Assignment	Objectives
I. Basic Reference Systems and Organizational Plan A. The anatomical position B. Directions 1. Anterior/posterior 2. Dorsal/ventral 3. Medial/lateral 4. Superior/inferior 5. Proximal / distal C. Planes 1. Sagittal 2. Frontal (Coronal) 3. Transverse D. Cavities 1. Ventral a) Thoracic b) Abdominopelvic 2. Dorsal a) Cranial b) Spinal E. Structural Units 1. Cell 2. Tissue 3. Organ system 4. Systems a) organ in each system b) function of each system F. Homeostasis a. Negative feedback b. Positive feedback	Thibodeau Chapter 1 & Guided notes Chapter 5 Chapter 1 (14-16)	**The student will:** 1. State the anatomical position 2. Differentiate between the various anatomical directions 3. Describe the planes used to divide the body. 4. Label and describe the contents of the closed body cavities 5. Label the 4 quadrants of the ventral cavity 6. Locate and describe the 9 regions of the ventral cavity 7. Define and relate the structural units of the body. 8. List the major body systems and describe their main functions. 9. Define homeostasis and state the significance for the human body

Outline	Student Assignment	Objectives
II. Chemistry A. Structural Units 1. Atom 2. Molecule 3. Element 4. Compound 5. Ion 6. Isotopes	Thibodeau Chapter 2 (25-26) Guided notes	**The student will:** 1. Define and give examples of various structural units of matter. 2. Discuss the diagnostic and therapeutic uses of isotopes.
B. Electrolytes 1. Sodium 2. Potassium 3. Chloride 4. Calcium 5. Iron 6. Carbon 7. Hydrogen 8. Iodine 9. Magnesium 10. Oxygen 11. Phosphorus 12. Nitrogen	Chapter 2 (27-28- Table 2-1 & 2-2) Chapter 21 (559-590)	3. Identify the role of electrolytes in the body. 4. Name and give the symbol of the most commonly found electrolytes in the body.
C. Inorganic compounds 1. Water a) Intracellular b) Extracellular c) Imbalances I.edema II.dehydration III.effusion IV.ascities 2. Acids & Basis a) Acid b) Base c) pH scale d) Buffer	Chapter 2 (29-31) Chapter 22 (583-589) Clinical application 590 Chapter 2 (30-31) Chapter 22 (601-604)	5. Differentiate between organic and inorganic compounds 6. State the normal value for intake and output. 7. Identify the various body fluid compartments. 8. Identify fluid imbalances. 9. Define an acid and base 10. Label a pH scale with the following: acid, base, blood, neutral, urine, skin, stomach, intestines, OH, H. 11. Define a buffer. Give an example.
D. Organic Compounds Macronutrients 1. Carbohydrates (CHO) 2. Fats (lipids) 2. Protein 3. Enzymes Micronutrients 1. Vitamins a. water soluble b. fat soluble	Chapter 2 (31-34) Chapter 19 (538-540)	12. State the importance of carbohydrates, lipids and proteins in the body. 13. Describe the function of enzymes. 14. Give examples of fat soluble and water soluble vitamins.

Outline	Student Assignment	Objectives
III. Cells A. Structure 1. Size 2. Shape B. Plasma (Cell) Membrane C. Nucleus 1. Nucleolus 2. DNA D. Cytoplasm & Organelles 1. Endoplasmic reticulum a. rough b. smooth 2. Mitochondria 3. Golgi apparatus 4. Lysosome 5. Ribosome 6. Centriole 7. Cellular extensions a. Microvilli b. Cilia c. Flagellum D. Movement of Substances across cell membrane 1. Passive Transport a. Diffusion b. Osmosis c. Filtration 2. Active Transport a. Ion Pump b. Exocytosis c. Endocytosis 3. Dialysis	Thibodeau Chapter 3 (43 -50) Chapter 3 (50-53)	**The student will:** 1. Identify the function of the cell. 2. Identify general cell structure. 3. State the role of the nucleus. 4. State the role of DNA. 5. Label a cell diagram with the major organelles. 6. Describe the function of each organelle. 7. Describe methods of transporting materials across the cell membrane. 8. State the difference between active and passive transportation 9. Define hypertonic, isotonic and hypotonic solutions. 10. Compare and contrast pinocytosis and phagocytosis. .

Outline	Student Assignment	Objectives
F. Cellular reproduction 1. Mitosis 2. Meiosis G. Cellular changes 1. Atrophy 2. Hypertrophy 3. Hyperplasia 4. Metaplasia 5. Dysplasia	Chapter 2 (59) Chapter 25 (681-692) Chapter 3 (60-62) Table 3-5	11. Differentiate between mitosis and meiosis. 12. Contrast the end products of meiosis and mitosis. 13. Define various cellular changes.
V. Tissues A. Epithelial B. Connective 1. Loose 2. Dense 3. Specialized C. Muscular 1. Striated 2. Smooth 3. Cardiac D. Nervous 1. Neurons 2. Neuroglia	Chapter 4 (71-85) Table 4-3	1. Identify the 4 main tissue types. 2. State the general function of each tissue type. 3. Discuss the 3 different types of muscle tissue 4. Describe the 2 types of nervous tissue and state their significance
V. Neoplasms A. Benign B. Malignant C. Symptoms D. Abnormalities of tissues 1. Carcinoma 2. Sarcoma E. Common Benign and malignant neoplasms	Chapter 3 (62) Chapter 6 (128-131) Table 6-8 and 6-10	1. List 8 warning signs of cancer. 2. Compare and contrast benign and malignant neoplasms. 3. Differentiate between carcinoma and sarcoma 1. Identify common benign and malignant neoplasms

VI. Membranes A. Epithelial membranes 1. Mucous 2. Serous a. pleura b. pericardium c. peritoneum B. Connective membranes 1. Fascia a. meninges 2. Skeletal a. periosteum b. perichondrium c. synovial	Chapter 7 (145-148)	1. State the function and location of the epithelial membranes. 2. Identify and locate the serous membranes. 3. State the function of fascia 4. Describe the location of the meninges 5. State the location and function of 3 skeletal connective tissue membranes.

UNIT 2

1. DISEASE AND PATHOGENS
2. IMMUNITY
3. INTEGUMENTARY SYSTEM

Unit 2

Outline	Student Assignment	Objectives
I. Disease A. Health-Wellness continuum B. Causes 1. Direct 2. Indirect (Predisposing/Risk Factors) **II. Terminology** A. Define the following 1. acute 2. chronic 3. diagnosis 4. etiology 5. idiopathic 6. infection 7. infestation 8. inflammation 9. local 10. mycotic 11. prognosis 12. signs 13. symptoms 14. systemic B. Health Care Associated 1. Nosocomial 2. Iatrogenic C. Disease Specialties 1. Microbiology 2. Bacteriology 3. Pathology **III. Microorganisms** A. Bacteria 1. Bacilli 2. Cocci a. streptococci b. staphylococci c. diplococci 3. Curved Rods 4. Extremely Small a. Rickettsia b. Chlamydia 5. Spores	Thibodeau Chapter 6 (113-128) Guided notes Guided notes Chapter 6 (120-121) Table 6.2	**The student will:** 1. Explain the wellness continuum. 2. List 7 direct causes of disease 3. Explain the importance of risk factors in the disease process. 4. Define the disease terminology as listed in the outline. 5. Differentiate between nosocomial and iatrogenic infections 6. Describe the various disease specialties. 7. Describe the various types of bacteria. 8. Give an example of a disease caused by each bacteria. 9. Define a spore and discuss the significance in disease transmission

B. Viruses	(118) Table 6-1	10. Describe what makes viruses special. 11. Give examples of diseases caused by viruses.
C. Fungi (Mycoses) 1. molds 2. yeasts	(123) Table 6-3	12. Describe mycotic infections. 13. Give examples of diseases caused by fungi.
D. Protozoa	(123) Table 6-4	14. Describe protozoa. 15. Give examples of diseases caused by protozoa.
E. Helminths 1. Roundworms 2. Tapeworms 3. Flukes 4. Pinworm	(124) Table 6-5	16. Describe helminthes. 17. Give examples of diseases caused by helminthes.
F. Arthropod 1. ticks 2. lice	Table 7-7	18. Describe arthropods. 19. Give examples of diseases caused by arthropods
IV. Defense Mechanisms A. Non Specific-Innate Immunity 1. Skin 2. Mucous membrane 3. Inflammatory response 4. Pinocytosis/phagocytosis	Guided notes Chapter 16 (436-437) Table 16-2	20. Discuss the body's lines of defense against microorganisms. 21. Distinguish between B and T cells
B. Specific (also see immunity). 1. T- Lymphocytes 2. B-Lymphocytes		22. Differentiate between Cell Mediated Immunity (CMI) and Antibody Mediated Immunity (AMI)
V. Infection A. Chain of Infection		23. List the criteria needed for establishment of a pathogen.
B. Correct mode of transmission 1. Direct contact- Person to Person 2. Indirect contact- Environmental contact a. Vector b. Vehicle 3. Pets	Chapter 6 (125)	
B. Correct portal of entry 1. Skin 2. Respiratory 3. Digestive 4. Urinary 5. Reproductive	Guided notes	

C. Virulence of the pathogen D. Resistance of the host		
VI. Microbial control A. Public health B. Aseptic methods 1. Medical versus surgical 2. Disinfect 3. Sterilize 4. Antisepsis C. Chemical control 1. Chemotherapy 2. Antibiotics 3. Antifungal 4. Antiviral D. Handwashing E. Isolation	Chapter 6 (125-128) Science application (126)	19. Describe the function of the public health department. 20. Differentiate between medical and surgical asepsis 21. List and give advantages and disadvantages of various methods of microbial control
I. Immunity A. Antigens B. Antibodies C. Agglutination D. Lymphocytes 1. B-cells a. antibody-mediated immunity (AMI) 2. T-cells a. cell-mediated immunity (CMI) E. Types of immunity 1. Naturally acquired active immunity. 2. Naturally acquired passive immunity 3. Artificially acquired active immunity 4. Artificially acquired passive immunity F. Define: 1. Vaccine 2. Serum	Chapter 16 (439-443) (438) (447) Clinical Application (448) Science Application	22. Define immunity. 23. Define antigen, antibody and agglutination. 24. Distinguish between B-cell and T-cell origin. 25. Describe AMI 26. Describe CMI 27. Describe the stimulus for each type of immunity. 28. Describe the results of each type of immunity. 29. Define: vaccine, serum, booster. 30. State which type of immunity is given with each.

3. Booster G. Allergic reactions & Anaphylaxis H. Autoimmunity I. Immunodeficiency's 1. HIV/AIDS J. Opportunistic Infections	(445-448) (448) (125)	31. Define allergic reactions. 32. List cause of immunodeficient diseases. 33. Define and state the importance of opportunistic infections 34. Define autoimmunity

Integumentary System Outline	Student Assignment	Objectives
I. Classification A. Membrane B. Organ C. System **II. Structure** A. Epidermis B. Dermal-Epidermal Junction C. Dermis D. Subcutaneous E. Glands 1. sudoriferous 2. sebaceous **III. Functions** A. Protection B. Temperature regulation C. Sensory receptor D. Excretory E. Synthesis of Vitamin D **IV. Wound healing** A. Vasodilation B. Hematoma formation C. Fibrin network D. Granulation E. Regeneration of epidermis **V. Skin observations** A. Pigmentation B. Temperature C. Integrity **VI. Skin abnormalities** A. Dermatitis B. Alopecia	Chapter 7 (148) (149-154) (155-156) (157) (149) (155-162) Table 7-1	**The student will:** 1. Be able to label a skin diagram. 2. Discuss the structure and function of the epidermis and dermis. 3. Discuss the structure and function of the hypodermis. 4. Differentiate between sebaceous and sudoriferous glands. 5. List the main functions of the skin. 6. List in sequential order the steps of wound healing. 7. Describe the events in the stages of wound healing. 8. Explain the importance of skin observations. 9. List the most common observations of a patient's skin. 10. Explain the various skin abnormalities.

C. Pruritus D. Urticaria E. Eczema F. Acne G. Impetigo		
H. Burns a. rule of Nines b. complications	(157)	11. Classify burns and describe how to estimate the extent of burn injury. 12. Explain various complications resulting from burns
I. Developmental Abnormalities a. strawberry hemangioma b. port wine stain c. stork bite	(151)	13. Define the 3 types of integumentary developmental abnormalities
J. Warning signs of Malignant Melanoma (ABCDE)	(164) Table 7-2	14. List the warning signs of Malignant Melanoma
VII. Temperature Regulation A. Basic Metabolic Rate (BMR) (Resting Energy Expenditure REE) B. Normal body temperature ranges C. Structures a. Hypothalamus #1 b. Others c. D. Thermoregulation-Heat loss mechanisms a. Radiation b. Conduction c. Convection d. Evaporation E. Thermoregulation- Heat producing mechanisms	Chapter 7 (156) Chapter 19 (541 & 544-545) Health & Wellbeing(156)	9. Describe BMR/ REE 10. State normal body temperature in Fahrenheit & Centigrade. 11. Discuss the physiological mechanisms that regulate body temperature 12. Differentiate between oral, rectal and axillary temperatures. 13. Identify and locate the main temperature regulator. 14. Describe the various temperature abnormalities and give treatments for each.
VII. Temp. Abnormalities A. Hyperthermia B. Hypothermia C. Frostbite D. Chilblains E. Heat stroke F. Heat exhaustion	(546)	

UNIT 3

1. SKELETAL SYSTEM

2. MUSCLE SYSTEM

Skeletal Outline	Student Assignment	Objectives
I. Functions A. Protection B. Support C. Movement D. Hematopoiesis E. Mineral salt storage	Thibodeau Chapter 8 (175-176)	**The student will:** 1. State and explain the functions of the skeletal system.
II. Bone structure A. Compact bone B. Cancellous bone C. Cellular considerations 1. Osteocytes 2. Osteoclasts 3. Osteoblasts	(179)	2. Difference between cancellous and compact bone. State the importance of each type. 3. Define osteoclasts and osteoblasts. State the function of each.
D. Long bone structure 1. epiphysis 2. diaphysis 3. medullary canal 4. epiphyseal growth line 5. articular cartilage 6. periosteum 7. endosteum	(176)	4. Label the various parts of a long bone.
E. Fetal skeletal-endochondrial ossification	(180)	5. Contrast the adult and fetal skeletons.
F. Nutrition		6. Identify minerals and vitamins necessary for healthy bone growth.
III. Bone markings A. Projections and Processes 1. trochanter 2. head 3. crest	Guided notes Clinical application (192)	7. Identify the various bone markings.
B. Depression and Cavities 1. foramen 2. fossa 3. sinus		
IV. Skeletal Divisions A. Axial Skeleton 1. Skull a. Cranium 1. Frontal 2. Parietal 3. Temporal 4. Ethmoid 5. Sphenoid 6. Occipital	(180, 181, 185) Table 8-2	8. Differentiate between the axial and appendicular skeletal divisions. 9. Locate all skull bones (cranium and facial).

b. Facial Bones 1. Mandible 2. Maxilla 3. Palatine 4. Zygomatic 5. Lacrimal 6. Nasal 7. Vomer 8. Concha 9. Ear ossicles 10. Hyoid c. Sutures and Fontanels 1. Coronal 2. Lambdoidal 3. Squamous		10. Identify the make-up of the hard palate and state its significance 11. Identify the individual bones of the eye orbit and ear ossicles 12. Define and locate the sutures and fontanels.
2. Vertebral Column a. Structure 1. Centrum (body) 2. Transverse processes 3. Spinous process 4. Vertebral foramen 5. Intervertebral disks	(186) Table 8-3	13. Identify structures on typical vertebrae.
b. Organization 1. Cervical 2. Thoracic 3. Lumbar 4. Sacral 5. Coccygeal		14. Locate the various vertebrae divisions.
c. Spinal curves 1. Primary curves-convex a. Thoracic curve b. Sacral curve 2. Secondary curves-concave a. Cervical curve b. Lumbar curve	(187)	15. Explain the various spinal curves.
3. Anomalies a. Scoliosis b. Kyphosis c. Lordosis	(188)	16. Define the abnormal spinal curves. 17. Identify the function of the thoracic cage.
3. Thorax a. Sternum b. Ribs 1. True ribs 2. False ribs 3. Floating ribs	(189) Table 8-4	18. Locate the sternum and list the 3 composite bones. 19. Contrast the 3 types of ribs in terms of their anterior attachment.

B. Appendicular Skeleton 1. Upper extremity a. Pectoral girdle 1. Scapula a. glenoid fossa b. acromion process 2. Clavicle b. Upper arm 1. Humerus a. olecranon fossa c. Forearm 1. Ulna a. olecranon process 2. Radius d. Wrist 1. Carpals e. Hand 1. Metacarpals 2. Phalanges	(190) Table 8-5	20. Define appendicular Skelton 21. Locate the bones and specific markings of the pectoral girdle. 22. Locate the humerus. 23. Locate the ulna and radius. 24. Identify the structures forming the elbow 25. Locate the carpel bones. 26. Locate the metacarpals. 27. Locate the phalanges.
2. Lower extremity a. Pelvic girdle 1. Os Coxa a. Ischium b. Ilium 1. iliac crest c. Pubis d. Symphysis pubis e. Acetabulum f. Obturator foreman b. Femur 1. greater trochanter c. Patella d. Tibia 1. medial malleolus e. Fibula 1. Lateral malleolus f. Ankle 1. Tarsal bones a. Talus b. Calcaneus d. Foot 1. Metatarsals 2. Phalanges e. Arches 1. Purpose 2. Longitudinal and transverse	(191-194) Table 8-6 (195)	28. State the importance of the pelvic girdle. 29. Locate the 3 bones in the os coxa. 30. Locate the symphysis pubis. 31. Identify and locate the major landmarks of the pelvic girdle 32. Name and locate the bones of the lower extremity. 33. Locate and state the function of the patella 34. Locate the tibia and the medial malleolus. 35. Locate the fibula and the lateral malleolus. 36. Locate the talus and the calcaneus. 37. Locate the metatarsals. 38. Locate the phalanges. 39. State the function of the arches.

V. Fractures A. Simple (closed) B. Compound (open) C. Comminuted bone fragments D. Greenstick E. Impacted (compression) F. Spiral	(203)	. 40. Describe the various types of fractures.
VI. Bone disorders/abnormalities A. Rickets-Osteomalacia B. Osteoporosis C. Osteomyelitis	(201, 222)	41. Define Rickets 42. Define Osteoporosis. 43. Define Osteomyelitis.
VII. Bone Healing A. Reduction B. Stage of Hematoma C. Granulation occurs D. Callus formation E. Ossification	(205)	44. Describe the stages of healing a fracture.
VIII. Articulations A. Functions B. Types 1. Synarthroses 2. Amphiarthroses 3. Diarthroses (Synovial) a. structure b. types of movement 1. flexion/extension 2. abduction/adduction 3. pronation/supination 4. eversion/inversion 5. protraction/retraction 6. rotation	(196-197) (199) Table 8-7 Chapter 9 (228-229)	45. Describe 2 functions of articulation. 46. Describe 3 types of joints and the amount of movement they allow. 47. Describe the structure of a synovial joint.
C. Abnormalities of joints 1. Sprain 2. Dislocation 3. Arthritis a. Degenerative (Osteoarthritis) b. Rheumatoid c. Gout 4. Bursitis	(205, 206, 235)	48. Describe the various joint abnormalities.

Muscles Outline	Student Assignment	Objectives
I. Functions A. Movement B. Heat production C. Posture/Structure **II. Muscle Tissue Types** A. Striated (Voluntary, Skeletal) B. Smooth (Involuntary) C. Cardiac **III. Skeletal Muscles** A. Structure 4- Rule for muscle movement Parts- attachements 1. insertion 2. origin 3. body B. Muscle Contractions 1. Mechanism of contraction 2. Types of contraction a. Tonus b. Isotonic c. Isometric d. Tetany 3. Threshold 4. All or None Response 5. Motor Unit 6. Oxygen Debt 7. Muscle Action a. Prime Mover b. Antagonistic c. Synergistic C. Major Muscles 1. Neck Muscles a. Trapezius b. Sternocleidomastoid 2. Fascial and Head muscles a. frontalis b. orbicularis oculi c. orbicularis oris d. buccinator e. zygomaticus f. masseter	Thibodeau Chapter 9 (222) (220) (220) (220-222) (224-225) (225) (223) (232) Table 9-2	**The student will:** 1. State the functions of the muscular system. 2. Name the 3 types of muscle tissue. 3. Give the location and the appearance of the 3 muscle types. 4. Define the 4 rules for muscle attachment and movement including the muscle origin and insertion. 5. State the steps of a muscle contraction from stimulation to final muscle shortening. 6. Explain the all-or-none response. 7. Define a motor unit. 8. State the condition of oxygen debt 9. Define the function of the prime mover, antagonist and synergist 10. Locate and describe the action of the major muscles of the body as listed in the outline. (Learn what groups of muscles to produce an action)

g. temporalis h. tongue muscles		
3. Upper Extremity and Pectoral Girdle a. trapezius b. latissimus dorsi c. deltoid d. pectoralis major e. triceps brachii f. biceps brachii g. brachioradialis h. flexor carpi i. extensor carpi j. flexor digitorum k. extensor digitorum	(232) Table 9-3	
4. Thoracic Cage a. intercostal b. diaphragm	Table 9-4	
5. Abdominal muscles a. rectus abdominis b. external oblique c. internal oblique d. transverse abdominis		
6. Lower Extremity and Pelvic Girdle a. iliopsoas b. gracilis c. pectineus d. adductor longus e. gluteus maximus f. gluteus medius g. levator ani h. sartorius i. quadriceps group 1. rectus femoris 2. vastus lateralis 3. vastus intermedius 4. vastus medialis j. hamstrings group 1. biceps femoris 2. semimembranosus 3. semitendinosus k. tibialis anterior l. peroneus longus m. gastrocnemius n. soleus o. flexor digitorum p. extensor digitorum	(234) Table 9-5	

7. Injection sites a. Common muscles 1. gluteus medias 2. deltoid 3. rectus femoris 4. vastus lateralis 8. Muscular Disorders/Conditions a. contracture b. atrophy c. myalgia d. strains e. hernia f. myositis g. fibrositis (fibromyalgia) h. torticollis i. muscular dystrophy	Clinical Application (237)	11. List the main muscles used as injection sites. 12. Describe the various muscle anomalies.

UNIT 4

1. NERVOUS SYSTEM

2. SPECIAL SENSES

Nervous System Outline	Student Assignment	Objectives
I. Introduction **II. Nervous tissue** A. Neurons 1. structure 2. classification a. ascending- sensory-afferent b. descending- motor- sensory c. interconnecting	Thibodeau Chapter 10 Guided Notes (250)	**The student will:** 1. Identify characteristics of the nervous system. 2. Identify different types of nervous tissue. 3. Identify the structural parts of a neuron.
B. Neuroglia 1. Structure and function a. microglia b. Schwann cell c. oligodendrocyte d. astrocyte e. blood brain barrier	(250-252) Clinical application 256	4. State the function of the neuroglia cells. 5. State the significance of the blood brain barrier
C. Nerve communication 1. transmission 2. action potential a. polarized b. depolarized c. repolarized d. threshold stimuli 3. neurotransmitters 4. synapse 5. white matter vs gray matter a. nodes of Ranvier b. saltatory conduction 6. reflex arc	(255) (257) (256) (254)	6. Describe nerve impulse transmission (polarized, depolarized, repolarized, threshold stimuli, action potential). 7. Identify the common neurotransmitters in the body 8. Discuss the difference between nerve transmission from white to gray matter (nodes of Ranvier, saltatory conduction) 9. Describe a reflex.
III. Central Nervous System (CNS) A. Brain 1. Cerebrum a. convulsions b. gyri (fissure, sulci) 1. longitudinal fissure 2. central sulcus c. hemispheres 1. corpus collosum d. cerebral lobes 1. frontal 2. parietal 3. temporal 4. occipital e. Basal Nuclei (ganglia)	(259-262)	10. Discuss the white and gray matter of the brain (location and function). 11. Locate and state the function of the cerebrum brain structures (lobes)
2. Brainstem a. Pons	(260)	12. Identify the structure and function of the brain stem

b. Midbrain c. Medulla Oblongata 1. reticular formation		
3. Diencephalon a. hypothalamus b. thalamus	(261)	13. Identify structure and function of the diencephalon
4. Cerebellum	(260)	14. Locate the cerebellum and list its functions.
5. Ventricles a. Cerebrospinal fluid 1. production 2. circulation 3. drainage b. Abnormalities 1. hydrocephalus 2. spinal headache	(269)	15. Identify the structure of the cerebellum 16. Locate the ventricles and state their function. 17. Trace the flow of CSF. 18. Describe abnormalities of the ventricles and CSF
8. Vascular supply to the CNS a. Carotid arteries b. Vertebral arteries c. Cerebral circle - Circle of Willis	Guided notes	19. State the significance of CNS vascular supply.
B. Spinal Cord	(266-268)	20. Locate the spinal cord and list its functions.
1. Gray matter a. dorsal horns b. anterior horns		21. Locate the gray matter of spinal cord and list its function.
2. White matter a. pyramidal tract (corticospinal) b. spinothalamic (anterolateral) c. posterior tract		22. Locate the white matter of the spinal cord. 23. List the various spinal tracts and give their characteristics.
C. Meninges 1. function 2. structure	(268)	24. Locate the meninges. 25. Describe the structure and function of the meninges.

IV. Peripheral Nervous System (PNS) A. Cranial Nerves (12 pairs)	(270) Table 10-2	26. List the 12 cranial nerves; identify the structures they innervate; identify as sensory, motor or mixed functions
B. Spinal Nerves (31 pairs)		27. Locate the spinal nerves and state their function.
C. Spinal Plexus 1. cervical 2. brachial 3 . lumbar 4 . sacral 5. coccygeal		28. List and identify the spinal plexus .
D. Dermatomes	(273)	29. Define and state the significance of dermatomes
V. Autonomic Nervous System (ANS)		30. State the function of the ANS.
A. Sympathetic nervous system B. Parasympathetic nervous system	(274-277) Table 10-3	31. Contrast and compare the two systems of the ANS.
VI. Abnormalities of the brain and spinal cord A. Quadriplegia (tetraplegia) B. Paraplegia C. Hemiplegia D. Poliomyelitis E. Concussion F. Multiple Sclerosis G. Encephalitis H. Stroke-Cerebrovascular Accident (CVA) I. Cerebral Palsy J. Epilepsy K. Aphasia L. Parkinson's Disease M. Alzheimer's Disease		32. Explain the various abnormalities of the brain and spinal cord.
VII. Diagnostic Exams 1. Electroencephalogram (EEG) 2. Magnetic Resonance Imaging(MRI) 3. Computerized Topography(CT) 4. Lumbar Puncture 5. X-Ray 6.Ultrasound (US)	(266) Chapter 6 (131) Clinical application (272)	33. Describe the various examinations of the nervous system.

Sensory System Outline	Student Assignment	Objectives
I. Introduction **II. General Senses** **III. Special Senses** A. Eye 1. External structures a. conjunctiva b. lacrimal apparatus c. accessory structures 2. Eye layers a. sclera 1. cornea b. choroid 1. iris 2. ciliary muscles 3. lens 4. pupil 5. Anterior chamber a. Aqueous humor c. retina 1. photoreceptors (rods/cones) 2. Macula 3. Fovea 4. Optic disk 3. Light transmission / visual pathway 4. Normal ocular actions a. accommodation b. convergence c. refraction 5. Visual Abnormalities a. myopia b. hyperopia c. presbyopia d. astigmatism e. color blindness f. cataracts g. glaucoma h. conjunctivitis B. Auditory Sense (ear) 1. External ear a. pinna b. external auditory canal	Thibodeau Chapter 11 (291-294) Table 11-1 (294-295) (296) (297) Clinical application (298) (299-302) (302-303)	**The student will:** 1. Identify the 5 general senses 2. Locate and identify the various structures of the eye. 3. State the function and location of the lacrimal apparatus and accessory organs. 4. Locate the eye layers and their modifications. 5. List the type of photoreceptors. 6. State the significance of the optic disk 7. Differentiate between the macula and the fovea. 8. Trace a beam of light through all structures of the eye until cerebral interpretation. 9. Describe the various visual abnormalities. 10. Identify and locate structures in the 3 divisions of the ear.

c. cerumen 2. Middle ear a. ossicles b. Eustachian tube c. tympanic membrane	(304)	11. Trace the path of sound from the source to cerebral interpretation. 12. Describe the various acoustic abnormalities.
3. Inner ear a. oval window b. semicircular canals c. vestibule d. cochlea e. cochlear duct f. organ of Corti	(304-306)	
4. Pathway to hearing	(304)	
5. Acoustic Abnormalities a. otitis media b. myringotomy c. conduction deafness d. nerve deafness e. Menieres Syndrome f. tinnitus g. otosclerosis h. presbycusis	(307)	
C. Olfactory Sense (smell) 1. olfactory bulb 2. cerebral interpretation	(308-309)	13. Locate the olfactory bulb. 14. Identify the cerebral lobe for smell interpretation
D. Gustatory Sense (taste) 1. taste buds a. 4 basic sensations b. 2 additional sensations 2. cerebral interpretation	(307-308)	15. Locate the arrangement of taste buds. 16. Locate the cerebral lobe for taste interpretation 17. State the 4 basic taste sensations 18. Locate the arrangements of the taste buds on the tongue

UNIT 5

1. ENDOCRINE SYSTEM

2. REPRODUCTIVE SYSTEM

Unit 5

Endocrine System Outline	**Student Assignment**	**Objectives**
I. Glands A. Exocrine B. Endocrine 1. Common features a. rich vascular supply b. endocrine gland stimulation c. negative feed-back d. hormones are protein/fat molecule F. Effects of hormones at the target area (organ)	Thibodeau Chapter 12 Guided Notes (320-325)	**The student will:** 2. Differentiate between exocrine and endocrine glands 2. List common features of all endocrine glands. 3. Describe how endocrine glands are stimulated. 4. Define a hormone. 5. Distinguish between the 2 major hormone classes. 6. Describe the actions a hormone can produce. 7. Describe the 2 regulatory feedback mechanisms.
II. Individual endocrine glands A. Hypothalamus B. Pituitary 1. Anterior pituitary (adenohypophysis) a. GH b. ACTH c. TSH d. PRL e. FSH f. LH g. MSH	(328-329) (326-327) Table 12-1	8. Discuss the location and the function of the hypothalamus. 9. Locate the pituitary. 10. State the tissue type of the anterior pituitary. 11. Name and give the action of the hormones secreted by the anterior pituitary.
2. Posterior pituitary (neurohypophysis) a. Oxytocin b. ADH	(328)	12. State the tissue type of the posterior pituitary. 13. Name and describe the hormones of the posterior pituitary.
3. Abnormalities a. pituitary dwarf b. gigantism c. acromegaly d. sterility e. diabetes insipidus	(327-328)	14. Describe the various abnormalities associated with hypersecretion or hyposecretion of the pituitary.
C. Thyroid Gland 1. Thyroxin (T4) 2. Triiodothyronine (T3). 3. Calcitonin 4. Abnormalities a. Hypothyroidism 1. myxedema	(329-331)	15. Locate the thyroid gland. 16. Name the action of each thyroid hormone. 17. Describe the hypersecretion and hyposecretion disorders of the thyroid.

2. goiter 3. Hashimoto's 4. Cretinism b. Hyperthyroidism 1. Grave's disease 2. Exophthalmos 3. Hypocalcemia.		
D. Parathyroid gland 1. PTH 2. Abnormalities a. Hypercalcemia	(331)	18. Locate the parathyroid gland. 19. Name the hormone associated with the parathyroid gland and state its action. 20. Describe abnormalities of the parathyroid gland
E. Pancreas 1. Exocrine and endocrine functions 2. Islets of Langerhans a. alpha 1. glucagon b. beta 1. insulin c. delta 3. Abnormalities a. Diabetes Mellitus b. Hypoglycemia c. Hyperglycemia	(334-336) Clinical Application (336)	21. Locate the pancreas 22. State the exocrine and endocrine functions of the pancreas. 23. Name the islet cells and state the hormone produced by each type. 24. Describe the function of each of the pancreatic hormones. 25. Describe the pancreatic abnormalities.
F. Adrenal Glands 1. Adrenal Cortex a. mineralocorticoids b. glucocorticoids c. androgens. d. abnormalities 1. Addison's disease 2. Cushing's syndrome 3. Virilizing tumor 2. Adrenal Medulla a. epinephrine b. norepinephrine	(331-334)	26. Locate the adrenal glands. 27. Describe the tissue type in the 2 functional areas of the adrenal cortex. 28. List and state the action of the adrenal cortex hormones. 29. Describe the abnormalities associated with the adrenal cortex. 30. Locate the adrenal medulla 31. Name the adrenal medulla hormones and state the action of each.
G. Pineal Body 1. melatonin a. seasonal affective disorder	(338)	32. Locate the pineal body. 33. State the name and the pineal body hormone. 34. Describe the various abnormalities of the pineal body
H. Thymus 1. thymosin	(337)	35. Locate the thymus. 36. State the function of the thymosin

I. Gonads 1. Ovaries a. exocrine function b. endocrine function 1. estrogen 2. progesterone 2. Testes a. exocrine function b. endocrine function 1. testosterone	(336)	35. Define gonad and gamete. 36. Locate the ovaries. 37. List both exocrine and endocrine functions of the ovaries. 38. List the hormones produced by the ovaries and state their function. 39. Locate the testes. 40. List the hormone associated with the testes and state their function.
J. Placenta 1. HCG 2. Estrogen 3. Progesterone	(337-338)	41. Locate the placenta. 42. Name the placental hormones and state their function.

Endocrine System
Hormone List

I. Pituitary Gland (Hypophysis)
- A. Anterior Pituitary (Adenohypophysis)
  1. Somatotropic Hormone (STH) or **Growth Hormone (GH)**
  2. Adrenocorticotropic Hormone (ACTH)
  3. Thyroid Stimulation Hormone (TSH)
  4. Lactogenic Hormone-Prolactin
  5. Follicle Stimulating Hormone (FSH)
  6. Luteinizing Hormone (LH) in males called ICSH
  7. Melanocyte Stimulating Hormone (MSH)
- B. Posterior Pituitary (Neurohypophysis)
  1. Oxytocin
  2. Antidiuretic Hormone (ADH)

II. Thyroid Gland
1. Thyroxine (T4)
2. Triiodothyronine (T3)
3. Calcitonin

III. Parathyroid Gland
1. Parathyroid Hormone (PTH)

IV. Pancreas
1. Insulin
2. Glucagon

V. Adrenal Glands (Suprarenal Glands)
- A. Adrenal Cortex
  1. Mineralocorticoids
  2. Glucocorticoids
  3. Androgens
- B. Adrenal Medulla
  1. Epinephrine
  2. Norepinephrine

VI. Pineal Body
1. Melatonin

VII. Thymus
1. Thymosin

VIII. Gonads
- A. Ovaries
  1. Estrogen
  2. Progesterone
- B. Testes
  1. Testosterone

IX. Placenta
1. Human Chorionic Gonadotropin (HCG)
2. Estrogen
3. Progesterone

I. Reproductive System A. Male reproductive system 1. Testes a. exocrine function 1. spermatozoa 2. Seminiferous tubules b. endocrine function 1. testosterone 2. interstitial cells 2. Duct system a. epididymis b. vas deferens c. ejaculatory duct d. urethra 3. Penis a. circumcision b. phimosis c. cryptorchidism 4. Accessory structures (semen) a. seminal vesicles b. prostate gland c. bulbourethral gland 5. Vasectomy 6. Abnormalities a. Priapism b. benign prostatic hypertrophy c. varicocele d. hypo & epi -spadias e. Hydrocele f. testicular torsion B. Female Reproductive System 1. Function a. exocrine 1. ova b. endocrine 1. estrogen 2. progesterone 2. Structures a. ovaries 1. follicles 2. corpus luteum b. fallopian tubes 1. fimbriae c. uterus 1. endometrium 2. myometrium 3. perimetrium d. vagina e. vulva 1. labia majora	Thibodeau Chapter 23 (618-626) (621) (622-623) (623-625) Clinical application (624) (620-623) (623) (627) (627-630) (628-6290 (630) (630-631) (631) (632-633)	1. Discuss the functions of the reproduction system. 2. Define gametes and gonads. 3. Locate the testes and state their function. 4. Locate the seminiferous tubules and state their function. 5. Locate the interstitial cells and state their function 6. Locate all structures in the duct system. 7. Locate and state the function of the penis. 8. Locate and state the function of the accessory structures. 9. Define vasectomy. 10. Describe the male structural abnormalities. 11. State the exocrine and endocrine function of female reproductive systems. 12. Discuss the importance of the female sexual hormones 13. Locate and describe the function of the structures in the female reproductive tract.

2. labia minora 3. clitoris 4. perineum 3. Breasts 4. Menstrual Cycle a. menses b. proliferative c. ovulation d. secretory 5. Abnormalities a. amenorrhea b. dysmenorrhea c. salpingitis 6. Birth Control a. abortion b. vasectomy c. tubal ligation d. condoms e. spermicides f. the pill g. diaphragm h. intrauterine device (IUD) I. withdrawal j. rhythm method k. abstinence	(631-632) (634-635 Figure 23-16 (635-637) Notes	14. List the events in the menstrual cycle and the regulating hormones. 15. Define menarche and menopause. 16. Describe the various female reproductive abnormalities. 17. List 5 methods of birth control. Give an advantage and disadvantage for each. 18. List 5 STI's and state the causative factor.
C. Sexually Transmitted Infections (STI) 1. HIV/AIDS 2. Gonorrhea 3. Syphilis 4. Genital herpes 5. Trichomoniasis 6. PID 7. Chlamydia	(636, 639-640) Table 23-4	19. Describe the four stages of labor.
D. Growth & Development 1. Length of pregnancy 2. Stages of Labor a. First Stage 1. Latent Phase 2. Active Phase 3. Transition phase b. Second Stage c. Third Stage d. Fourth Stage 3. Twins a. maternal b. fraternal	Chapter 24 (661-662)	

UNIT 6

1. CIRCULATORY SYSTEM

2. LYMPHATIC SYSTEM

3. RESPIRATORY SYSTEM

Unit 6 – Circulatory System

Outline	Student Assignment	Objectives
I. Heart & Blood Vessels A. The Heart 1. Location & size 2. Heart Wall a. pericardium b. myocardium c. endocardium 3. Chambers a. Atria b. Ventricles 4. Actions a. systole b. diastole 5. Valves a. Atrioventricular Valves 1. tricuspid 2. mitral b. Semilunar Valves 1. aortic semilunar valve 2. pulmonary semilunar valve 6. Cardiac Cycle	Thibodeau Chapter 14 (381) (380) (383) (387)	The student will: 1. State the size & location of the heart. 2. Describe the heart's structure & function. 3. State the difference between systole & diastole. 4. Locate the various heart structures on a diagram. 5. Trace the sequence of blood flow through the heart. 6. Describe the hearts sounds associated with the valves. 7. Discuss the various cardiac abnormalities and state their implications
B. Abnormalities of the heart 1. Murmur 2. Heart block 3. Myocardial infarction 4. Heart Failure	(383, 385, 389, 394)	
B. Electrical Conduction System 1. Myogenic 2. Controlling systems a. Autonomic Nervous System b. Nodal (Purkinje) System 1. Sinoatrial node 2. Atrioventricular node 3. Bundle of His 4. L & R Bundle branches 5.Purkinje fibers	(388-389)	8. Define the term myogenic & state the rates. 9. Describe the components of the nodal system. 10. Trace the conduction system through the heart.

3. Conductive abnormalities a. Bradycardia b. Tachycardia c. Ischemia d. Fibrillation e. Heart Block	(390-391)	11. Describe the various conduction abnormalities. 12. Identify the components of an EKG.
4. Electrocardiogram (EKG/ECG) a. P wave b. QRS complex c. T wave	(388-389)	13. State the significance of the 3 recognizable waves.
C. Circulation of the Blood 1. Vessels a. arteries b. arterioles c. capillaries d. venules e. veins	Thibodeau Chapter 15 (403-404)	14. Identify the various structures of the tubular system in the body
2. Blood Pressure a. how measured b. normal range c. where found	(414-416) Clinical application 419	15. State the normal range of arterial blood pressure. 16. State where a blood pressure may be found.
3. Pulse a. how measured b. normal range c. where found	(419)	17. State the normal pulse rate. 18. Identify the various pulse points.
4. Major arteries for pulse points a. temporal b. external maxillary c. common carotid d. brachial e. radial f. femoral g. popliteal h. dorsalis pedis i. post tibialis j. apical	(410, 419)	19. Identify the major arteries.
D. Circulatory System Divisions 1. Systemic Circulation a. cardiac cycle 2. Pulmonary Circulation 3. Fetal Circulation a. ductus arteriosus b. foramen ovale c. ductus venosus	(408) (412-413)	20. State the circulatory pathways in the body. 21. Identify the differences in fetal circulation.

d. umbilical veins & arteries 4. Portal (Hepatic) Circulation 5. Coronary Circulation	(409)	
E. Circulatory Abnormalities 1. Coronary Artery Disease 2. Arteriosclerosis 3. Atherosclerosis 4. Hypertension (HTN)		22. Describe the various circulatory abnormalities
II. Blood	Thibodeau Chapter 13	
A. Functions 1. transportation a. solids b. liquids c. gases 2. protection		23. Describe 2 functions of the blood.
B. Structure 1. Plasma a. definition b. composition 1. blood proteins 2. nutrients 3. gases 4. mineral salts	(350)	24. Identify the components of the plasma.
2. Formed elements (Corpuscles) a. Erythrocytes (RBC's) 1. structure 2. function 3. hemoglobin 4. anemias (*see Handout)* 5. normal lab value	(353-354) (358-361)	25. Identify the structure & function of the RBC's. 26. State the RBC count. 27. State the normal hemoglobin and hematocrit values. 28. List the significance of iron. 29. Identify the major causes of anemia.

b. Leukocytes (WBC's) 1. function 2. structure 3. types a. granular 1. neutrophils 2. eosinophils 3. basophil b. agranular 1. monocytes 2. lymphocytes 4. Normal lab values 5. Significance of the differential 6. Disorders	(361-362)	30. Identify the types of WBC's & state the function of each. 31. State the normal lab values for the various WBC's. 32. State the structure & function of platelets. 33. State the normal lab values for platelets. 34. Describe the mechanism of coagulation.
c. Thrombocytes (Platelets) 1. structure & function 2. clotting mechanism *(see handout)* 3. anticoagulants 4. clotting disorders a. hemophilia b. thrombus c. embolus d. petechia	(365)	35. Identify the various clotting disorders.
C. Blood groups 1. ABO blood typing 2. Rh factors 3. transfusions	(355-358) Table 13-2	36. Explain the ABO typing system. Be able to identify antibodies and antigens associated with each group. 37. Explain the Rh typing system.
D. Lab Values 1. RBC 2. WBC 3. Hemoglobin 4. Hematocrit 5. Glucose 6. Cholesterol 7. Sodium 8. Potassium 9. Chloride 10. Platelets		38. Identify normal values for the blood studies listed.

ANEMIA HANDOUT

Direct Cause	*Resulting from*	*Leading to*
Decrease in RBC number	Sudden hemorrhage	Hemorrhagic anemia
	Lysis of RBCs -- due to bacterial infections	Hemolytic anemia
	Lack of Vitamin B_{12}	Pernicious anemia
Decrease in hemoglobin content or abnormal hemoglobin in RBCs.	Depression/destruction of bone marrow by cancer, radiation, or certain medications.	Aplastic anemia
	Lack of iron in diet or slow/prolonged bleeding (such as results from heavy menstrual flow or a bleeding ulcer), which depletes the iron reserves needed to make hemoglobin; RBCs are small and pale because they lack hemoglobin.	Iron-deficiency anemia
	Genetic defect leads to an abnormal hemoglobin, which becomes sharp and sickle-shaped under conditions of increased oxygen use by the body; occurs mainly in members of the black race.	Sickle cell anemia

COAGULATION SCHEMATIC

Injury - usually with blood - blood vessel damage	AT	1) injured tissues release thromboplastin triggers the clotting mechanism.
1) platelets agglutinate at damaged site – producing a temporary platelet plug.	THE	2) thromboplastin + Ca + clotting factors triggers prothrombin to convert to thrombin.
2) platelet plug releases serotonin – causing the blood vessels to go into spasm	SAME	3) thrombin + fibrinogen produce fibrin -- an insoluble thread-like network.
	TIME	4) fibrin network traps additional platelets and RBC's producing the permanent clot.

Unit 6 – Lymphatic System

Outline	Student Assignment	Objectives
IV. Lympahatic System A. Description B. Functions 1. return blood proteins 2. drainage for toxins 3. absorb digested fats a. chyle	Thibodeau Chapter 16 (429-436)	39. Describe the function of the lymph system.
C. Anatomy 1. vessels a. right lymphatic duct b. thoracic duct	(431)	40. Identify the main lymphatic vessels.
D. Physiology of Lymph tissue 1. filter 2. phagocytize 3. manufacture lymphocytes		41. Identify the function of the lymph tissue.
E. Lymph organs 1. spleen 2. tonsils a. palatine b. pharyngeal c. lingual 3. thymus	(435) (434-435)	42. Locate & state the significance of the larger lymph organs.
F. Abnormalities 1. Lymphangitis 2. Lymphedema 3. Hodgkin's disease 4. Non-Hodgkin's lymphoma	(432-435)	43. Identify the various lymph abnormalities.

Unit 6 – Respiratory System

Outline	Student Assignment	Objectives
IV. Respiratory System A. Introduction 1.External respiration 2.Cellular respiration	Thibodeau Chapter 17 (453-485)	44.Contrast external & cellular respiration
B. Structures 1.Nose a. functions 1. warms air 2. filters air 3. moistens air 4. sense of smell b. nasal septum c. conchae d. mucous membrane	(462) (461)	45.Label the respiratory structures on a diagram 46. State the functions of the nose.
2.Pharynx a. divisions 1. nasopharynx a. Eustachian tube b. adenoids (pharyngeal tonsils) 2. oropharynx a. palatine tonsils b. lingual tonsils 3. laryngeal	(462-463)	47. Identify & locate the 3 divisions of the pharynx. 48. Identify the section common to the respiratory & digestive systems.
3.Larynx (Voice Box) a. structure b. glottis c. epiglottis d. vocal folds	(464)	49.Describe the structure of the larynx 50. State the function of the epiglottis. 51. State the function and structure of the vocal cords.
4.Trachea (Windpipe) a. structure 1. cartilage/muscle rings b. mucous lining	(466)	52. Locate the trachea. 53. State the significance of its structure.
5.Lungs a. right and left b. pleura c. internal structures 1. primary bronchi 2. secondary bronchi 3. terminal bronchioles 4. alveoli a. structure b. function	(469) (469-470) (466) (467)	54. State the function of the lungs. 55. State the difference between the R/L lung. 56. State the importance of the bronchi. 57. State structural difference R/L primary bronchi. 58. Describe the structure of the alveoli. 59 State the importance of the alveoli

C. Muscle of respiration 1.Diaphragm a. action 2.Intercostals a. location b. action	(473-474)	60. Locate the principle respiratory muscles. State their action.
D. Respiratory Control 1. central nervous system a. phrenic nerve 2. Hering-Breuer reflex 3. Normal respiratory values	(474-476)	61. Describe the various respiratory controls. 62. State the normal respiratory values.
E. Respiratory patterns 1. eupnea 2. apnea 3. dyspnea 4. hypoxia 5. tachypnea 6. hyperpnea 7. hyperventilation	(473-477) Table 17-2	63. Describe the various respiratory pattern abnormalities.
F. Lung function studies 1. total lung capacity 2. vital capacity 3. residual volume	(475) Table 17-1	64. Describe the lung function tests & state their normal values.
G. Respiratory Abnormalities 1. pneumonia 2. tuberculosis 3. pulmonary edema 4. asthma 5. pneumothorax 6. atelectasis 7. pleurisy	(470)	65. Describe the various respiratory abnormalities.
H. Diagnostic studies 1. Bronchoscopy 2. Sputum studies 3. Thoracentesis		66. Describe the various respiratory system diagnostic studies.

UNIT 7

1. DIGESTIVE SYSTEM

2. URINARY SYSTEM

Unit 7 – Digestive System

Outline	Student Assignment	Objectives
I. Basic processes A. Ingestion B. Digestion C. Absorption D. Elimination	Thibodeau Chapter 18	**The student will:** 1. Identify the 4 basic processes of the digestive system.
II. Alimentary Canal A. Wall structure 1. Mucosa 2. Submucosa 3. Muscularis 4. Serosa- Peritoneum a. Mesentery b. Omentum	(494-496) (516)	2. Define the alimentary canal. 3. Name the four layers of the G.I. tract wall. 4. Identify the extensions of the mesentery and omentum
B. Regions of the G.I. tract 1. Oral cavity a. structure b. function c. accessory organs 1. tongue a. frenulum b. tastes 2. teeth 3. salivary glands a. 3 glands b. function 1. amylase 2. moisten	(496) (497) (499)	5. State the function of the mouth. 6. Define deciduous and permanent teeth. 7. List the 4 basic taste sensations. 8. Name the 3 pairs of salivary glands. 9. Name the function of the salivary glands.
2. Pharynx a. structure b. function 3. Epiglottis 4. Esophagus a. upper esophageal b. lower esophageal sphinter	(501-502)	10. State the function of the pharynx. 11. Locate and state the function of the epiglottis. 12. Locate and state the function of the esophagus.
5. Stomach a. structure b. function c. regions d. sphincters 1. lower esophageal -Cardiac 2. pyloric e. gastric juice-chyme	(504) (505)	13. Locate the stomach. 14. State the function of the stomach. 15. Identify the 3 stomach regions. 16. Name the 2 gastric sphincters and state their location and function. 17. State the purpose and the composition of the gastric juice. .

6. Small intestine a. structure b. function c. divisions 1. duodenum 2. jejunum 3. ileum	(506-508)	18. Locate and state the function of the small intestine. 19. Name the regions of the small intestine.
7. Large intestine a. cecum 1.appendix b. ascending colon 1. hepatic flexure c. transverse colon 2. splenic flexure d. descending colon e. sigmoid colon f. rectum g. anus	(512-516)	20. Locate and state the function of the large intestine. 21. Locate the regions of the large intestine.
C. Accessory structures 1. Pancreas a. endocrine function b. exocrine function 1. Pancreatic lipase 2. Pancreatic amylase 3. Trypsin	(511-512)	22. State the location and function of the pancreas. 23. Name and state the function of the pancreatic enzymes.
2. Liver a. structure b. function	(509-511)	24. Locate the liver. 25. State the liver's function.
3. Gallbladder a. structure b. function		26. Locate and state the function of the gallbladder.
		27. Trace the digestive pathway from initial ingestion until final excretion. Name all regions, valves, and juices along the way.

D. Abnormalities 1. Dental carries 2. Periodontal disease (pyorrhea) 3. Herpes Simplex 4. Parotitis (Mumps) 5. Hiatal hernia 6. Heartburn 7. Vomiting 8. Gastritis 9. Enteritis 10. Peptic ulcer 11. Constipation 12. Diarrhea 13. Diverticulitis 14. Hemorrhoids 15. Flatulence 16. Jaundice 17. Cholecystitis 18. Cirrhosis 19. Hepatitis 20. Appendicitis		28. Identify the abnormalities listed in the outline.

Digestive System -Flow Sheet

Food into :

I. Oral Cavity (mouth)
- A. Masticated
- B. Acted upon by salivary glands (parotid, sublingual, submandibular
  - 1. saliva to moisten food
  - 2. salivary amylase to start CHO digestion
- C. Food into bolus & pushed by the tongue to the

II. Pharynx
- A. Moved along by peristalsis
- B. Bypasses the epiglottis, which seals off the larynx to

III. Esophagus
- A. By the cardiac sphincter (lower esophageal sphincter)

IV. Stomach
- A. Mainly for food storage
- B. Pepsin begins protein digestion
- C. HCL in gastric juices: activates pepsin and kills bacteria
- D. Food is now called chyme
- E. Goes by the pyloric sphincter to the

V. Small Intestine
- A. most digestion & absorption of nutrients takes place here.
- B. Duodenum
  - 1. if chyme is fat-laden, duodenum releases cholecystokinin, which stimulates the gallbladder to release bile (helps in fat digestion)
  - 2. pancreatic juices enter
    - a. p. amylase for CHO digestion
    - b. p. lipase for fat digestion
    - c. trypsin for protein digestion
- C. Jejunum
- D. Ileum
  - 1. Through the ileocecal valve to the

VI. Large Intestine
- A. Most water absorption and concentration of wastes
- B. Cecum- appendix hangs from this
- C. Ascending colon- turns at hepatic flexure
- D. Transverse colon- turns at splenic flexure
- E. Descending colon
- F. Sigmoid colon
- G. Rectum
- H. Anus

VII. Exit from the body

Unit 7 – Urinary System

Outline	Student Assignment	Objectives
I. Basic Processes A. Absorption B. Secretion C. Excretion	Thibodeau Chapter 20	**The student will:** 1. Define the basic urinary processes.
II. Kidney A. external structure 1. renal capsule 2. perirenal fat 3. renal fascia	(557)	2. Locate and state the function of the kidney. 3. List the 3 external kidney layers.
B. Internal structure 1. renal cortex 2. renal medulla 3. renal pyramids 4. nephron a. function b. structure 1. Glomerulus 2. Bowman's capsule 3. Proximal convoluted tubule 4. Loop of Henle 5. Distal convoluted tubule c. collecting ducts d. calyx e. renal pelvis	(558)	4. Differentiate between the renal cortex and the renal medulla. 5. State the function of the nephron. 6. List the parts of the nephron. 7. Differentiate between urine and glomerular filtrate. 8. Locate and state the function of the collecting ducts. 9. Locate and state the function of the renal pelvis.
III. Urinary flow A. Ureters 1. function 2. structure	(564)	10. Locate and state the function of the ureters.
B. Bladder 1. function 2. structure	(565)	11. Locate and state the function of the bladder.
C. Urethra 1. function 2. structure a. male and female	(565)	12. Locate and state the function of the urethra. 13. List differences in the male and female urethra.
D. Micturition		14. Define micturition. 15. List voiding controlling factors.

E. Urine 1. Characteristics 2. Constituents F. Abnormalities 1. Cystitis 2. Calculi 3. Strictures 4. Pyuria 5. Glomerular nephritis 6. Dysuria 7. Hematuria	(567) Table 20-2 (556-573)	16. List normal and abnormal characteristics. 17. List normal and abnormal constituents of urine. 18. Define the abnormalities listed in the outline.