

SAULT COLLEGE NURSING PROGRAM

YEAR 1 SEMESTER 2

UNIT: BIOLOGY 121-5

OBJECTIVES

LEARNING RESOURCES

V. SUPPORT SYSTEMS (cont'd)

B. Circulatory & Lymphatic Systems

1. Blood

- a) define the words associated with the Circulatory System
- b) describe the constituents of blood
- c) state the normal values in the human body of the following:
 - i) erythrocytes
 - ii) leukocytes
 - iii) thrombocytes
 - iv) hemoglobin
 - v) hematocrit
- d) describe the adaptive mechanisms of hemostasis
- e) discuss clotting time, bleeding time and prothrombin time
- f) describe the ABO blood group system on the basis of their antigen-antibody components
- g) describe the Rh factor
- h) explain the significance of cross-matching on the basis of agglutination

Read Unit Four, Chapter 13

Watch filmstrip and complete worksheets

- 1) An Introduction to the Blood
- 2) White Blood Cells - Defenders Against Infection
- 3) Antigenic Properties of RBC
- 4) Normal Hemostasis

2. Heart and Blood Vessels

- a) describe the structure and function of the heart
- b) trace the flow of blood through the heart & lungs from Superior & Inferior vena cavae to the aorta
- c) describe the conduction system of the heart
- d) describe the nervous control of the heart

Read Unit Four, Chapters 14 and 15

Watch filmstrip and complete worksheets

- 1) The Heart: Anatomy I
- 2) The Heart: Anatomy II

OBJECTIVES

LEARNING RESOURCES

2. Heart and Blood Vessels (cont'd)

- e) describe the blood supply of the heart
 - f) explain the structural characteristics & the functions of arteries, capillaries and veins
 - g) identify major arteries and veins in the human body
 - h) describe portal circulation
 - i) describe pulmonary circulation
 - j) describe systemic circulation by tracing the flow of blood from the heart to different areas of the body & back again
 - k) discuss stimuli which influence the P. & B.P. rate
- Dissect a heart

3. Lymphatic System

- a) define the words associated with the Lymphatic System
 - b) describe the structure, location & function of parts of the Lymphatic System
 - i) capillaries
 - ii) vessels
 - iii) ducts
 - iv) nodes
 - c) describe lymphatic circulation and the importance of it
 - d) describe the structure, location & function of the spleen, tonsils & thymus
- Read Unit Four, Chapter 16

4. Development of the Circulatory and Lymphatic Systems

- a) describe the embryonic development
- b) describe the effects of aging
- c) discuss ways to improve life during the aging process

OBJECTIVES

LEARNING RESOURCES

C. Respiratory System

1. Define the words associated with the respiratory system.
2. Describe the structure, location and function of the organs of the respiratory system.
 - a) nose
 - b) pharynx
 - c) larynx
 - d) trachea
 - e) bronchi
 - f) lungs
3. Discuss the function of the diaphragm, intercostal muscles, ribs & sternum in the act of ventilation (breathing).
4. Describe the mechanisms involved in inspiration and expiration.
5. Explain the process of gas exchange:
 - a) external respiration
 - b) internal respiration
6. Explain the transportation of O_2 and CO_2 .
7. Describe the control of respirations:
 - a) nervous stimuli
 - b) chemical & pressure stimuli
8. Explain the importance of cardio-pulmonary resuscitation.

Read Unit Five,
Chapters 17 and 18

Review bones, paranasal
sinuses

Read about Pulmonary
Circulation, p. 444 & 445
and review notes.

OBJECTIVES

9. Development of the respiratory system:
 - a) describe the embryonic development
 - b) describe the effects of aging
 - c) discuss ways to improve life during the aging process

D. The Urinary System

1. Define the words associated with the urinary system.
2. Describe the structure, location & function of the organs of the urinary system:
 - a) kidney
 - b) ureters
 - c) urinary bladder
 - d) urethra
3. Describe the blood and nerve supply.
4. Describe the structure & function of the nephron.
5. Describe the process of urine formation.
 - a) glomerular filtration
 - b) tubular reabsorption
 - c) tubular secretion (excretion)
6. Explain aldosterone and A.D.H. influence on the kidneys.
7. Describe the physical characteristics of normal urine.
8. Discuss the normal & abnormal constituents of urine.

LEARNING RESOURCES

Read Unit Five, Chapter 22

Watch filmstrip and complete worksheets.

- 1) Anatomy of the Kidneys, Ureters, Bladder & Urethra
- 2) Physiology of the Kidney

OBJECTIVES

LEARNING RESOURCES

9. Describe the process of micturition.
10. Development of the Urinary System:
 - a) describe the embryonic development
 - b) describe the effects of aging
 - c) discuss ways to improve life during the aging process

E. The Gastrointestinal (Digestive) System

Read Unit Five,
Chapters 19 & 20

1. Define the words associated with the gastrointestinal system.
2. Describe the location, structure & function of the organs of the digestive system.
 - a) mouth (oral cavity)
 - b) pharynx
 - c) esophagus
 - d) stomach
 - e) small intestine
 - f) large intestine (colon)
3. Discuss the structural layers of the gastrointestinal tract.
4. Describe the location, structure & functions of the accessory organs of the gastrointestinal system.
 - a) teeth & tongue
 - b) salivary glands
 - c) liver
 - d) gallbladder
 - e) pancreas
 - f) vermiform appendix

OBJECTIVES

LEARNING RESOURCES

5. Describe the digestive processes as they relate to the organs & accessory organs of the gastrointestinal system.
 - a) mechanical digestion
 - b) chemical digestion
 - c) absorption
 - d) defecation
6. Describe the absorption from the stomach, small intestine & large intestine.
7. Describe the circulation of absorbed foodstuffs in blood & lymphatics.
8. Describe the normal composition & characteristics of feces.
9. Describe the metabolic processes of fats, carbohydrates & proteins.
 - a) anabolism of each
 - b) catabolism of each
10. Describe the relationship of foods to body heat. Relate to Metabolic rate at various ages
11. Describe the mechanisms of heat gain and loss.
12. Development of the gastrointestinal system.
 - a) describe the embryonic development
 - b) describe the effects of aging
 - c) discuss ways to improve life during the aging process

OBJECTIVES

LEARNING RESOURCES

F. Fluid, Electrolytes & Acid-Base Balance

Read Unit Five, Chapter 23

1. Define the words associated with Fluid, Electrolytes & Acid-Base Balance.
2. Describe the body fluid compartments.
3. Describe water percentage according to age & amount of fat present.
4. Describe fluid intake & output.
5. Differentiate between electrolytes and nonelectrolytes.
6. Describe electrolyte concentration & distribution in the fluid compartments.
7. Explain the functions & regulations of the major electrolytes.
8. Describe the movement of fluid between the 3 body fluid compartments.
9. Describe the mechanisms which regulate body fluids.
10. Explain the buffer systems in maintaining the acid-base balance of the body.
11. Explain the roles of the respiratory & urinary systems in maintaining a normal acid-base balance.
12. Describe briefly respiratory acidosis and alkalosis.
13. Describe briefly metabolic acidosis and alkalosis.

Review diffusion, osmosis, filtration and A.T.

OBJECTIVES

G. The Reproductive System

1. Define the words associated with the reproductive system.
2. Describe the location, structure & function of the male organs of reproduction.
 - a) scrotum
 - b) testes
 - c) epididymis
 - d) vas deferens
 - e) seminal vesicle
 - f) ejaculatory duct
 - g) prostate
 - h) bulbourethral glands
 - i) urethra
3. Describe the components and production of seminal fluid.
4. Describe the structure of the spermatozoa.
5. Explain the hormonal control of the male sex characteristics and the reproductive function.
6. Describe the nervous control of the male reproductive organs.
7. Describe the location, structure & function of the female organs of reproduction.
 - a) vagina
 - b) Bartholin's glands
 - c) uterus
 - d) fallopian tubes
 - e) ovaries
 - f) vulva and perineum
 - g) mammary glands
8. Describe how the uterus and ovaries are supported in the pelvic cavity.

LEARNING RESOURCES

Read Unit Six, Chapters 25, 26 and 27

Consult Reeder/Mastroianni/Martin, Maternity Nursing, 15th ed., Philadelphia, J.B. Lippincott Company

Review the endocrine system (gonadotrophic hormones as well as testosterone, estrogen & progesterone)

OBJECTIVES

LEARNING RESOURCES

9. Identify the major muscles of the perineum and discuss their function.
10. Describe the structure of the ova.
11. Explain the hormonal control of the female sex characteristics and the reproductive functions.
12. Explain the menstrual cycle when:
 - a) fertilization does not occur
 - b) fertilization does occur
13. Describe the nervous control of the female reproductive organs.
14. Development of the Reproductive System:
 - a) describe the embryonic development
 - b) describe the effects of aging
 - c) discuss ways to improve life during the aging process

H. Development and Inheritance

1. Describe the process of gamete formation.
 - a) chromosome number
 - b) spermatogenesis
 - c) oogenesis
2. Discuss the process of sexual intercourse.
3. Identify the bones, landmarks and measurements of the pelvis.
4. Discuss the changes that occur to the articulations & ligaments of the pelvis during pregnancy.

Review meiosis & mitosis

Review bones & articulations of pelvis.

OBJECTIVES

LEARNING RESOURCES

5. Describe the 4 types of female pelvis:
 - a) gynecoid
 - b) anthropoid
 - c) android
 - d) platypelloid
6. Discuss the implications of the pelvis in the mechanism of delivery.
7. Discuss the sequence of events involved in pregnancy.
 - a) fertilization
 - b) implantation
 - c) embryonic growth
 - d) fetal growth
8. Describe the development of the placenta.
9. Describe movement across the placenta.
10. Describe and state the function of the amnion and chorion.
11. Describe fetal circulation.
12. Discuss the hormones of pregnancy.
13. Describe the signs of pregnancy:
 - a) presumptive
 - b) probable
 - c) positive
14. Discuss the physiological changes of the body during pregnancy.

15. Discuss the potential hazards to the developing embryo and fetus.
 - a) chemicals & drugs (include caffeine, alcohol)
 - b) irradiation
 - c) cigarette smoking
 - d) poor nutrition
16. Determine the significance of the following essential factors in the process of labour (4 P's - Psych, power, passenger, passageway).
17. Define, describe and explain the 4 stages of labour.
18. Describe the normal process of involution as it relates to the:
 - a) reproductive system
 - b) circulatory system
 - c) urinary system
 - d) gastrointestinal system
 - e) musculature
 - f) endocrine system
19. Describe the physiological adjustments confronting the newborn in transition from fetus in the:
 - a) respiratory system
 - b) circulatory system
 - c) gastrointestinal system
20. Explain the physiology of lactation.
21. Discuss the basic concepts of the passage of hereditary traits.
22. Discuss the inheritance of sex X-linked inheritance.
23. Describe the common methods of birth control.