BIOLOGY 218
HUMAN ANATOMY & PHYSIOLOGY II

EXAM 3 REVIEW SHEET

Material Covered on Exam: Chapters 22 and 25

For this exam, you will be expected to . . .

- Explain how the delicate respiratory exchange surfaces are protected from pathogens, debris, and other hazards.
- Name and describe the primary functions of the respiratory system.
- Identify the organs of the upper respiratory tract and describe the function of each structure.
- Identify the organs of the lower respiratory tract and describe the function of each structure.
- Describe the changes that occur in the mucosa of the respiratory tract as air moves toward the respiratory membrane.
- Summarize the physical principles governing the movement of air into and out of the lungs (Boyle's Law).
- Name the respiratory muscles and describe the actions of the muscles during pulmonary ventilation.
- Explain respiratory rates, respiratory minute volume, alveolar ventilation and anatomical dead space with respect to adapting pulmonary ventilation to meet tissue demands for oxygen.
- Be able to calculate V_E and V_A with a given set of numbers for *f*, V_T, and V_D.
- Name and describe the various respiratory volumes and calculate the four respiratory capacities.
- Summarize the physical principles governing the diffusion of gases into and out of the blood (including Dalton's Law and Henry's Law).
- Discuss the structure and function of hemoglobin, explain the oxygen-hemoglobin saturation curve, and describe the effects of P_{O2}, P_{CO2}, pH, and temperature on this curve.
- Explain how oxygen and carbon dioxide are picked up, transported, and released in the bloodstream.
- Explain how pulmonary diseases (such as asthma, emphysema, and chronic bronchitis) affect compliance and airway resistance.
- Explain the importance of surfactant and name the type of cells that produce surfactant.
- Describe the brain stem structures that influence the control of respiration.
- Explain the events of quiet breathing versus forced breathing.
- Identify and discuss reflex respiratory activity in pulmonary ventilation.
- Describe the various diseases/disorders related to the respiratory system.
- Describe the effects of smoking on respiratory function and the development of lung cancer.
- Name and describe the organs of the urinary system and discuss the major functions of the system.

- Describe the gross structural features of the kidneys.
- Describe the internal anatomy of the kidneys, and distinguish between cortical and juxtamedullary nephrons.
- Describe the regions of the nephron and collecting system, including their general functions and histological appearances.
- Trace the pathway of blood flow through a kidney, and compare the patter of blood flow in cortical and juxtamedullary nephrons.
- Describe the structural features of the renal corpuscle, and explain the functions of the filtration membrane components.
- List and describe the factors that influence glomerular filtration rates and filtrate production.
- Identify the types of transport mechanisms found along the PCT and DCT.
- Describe how hormones affect urine volume and concentrations.
- Summarize the major steps involved in water reabsorption and urine production.
- Describe the structures and functions of the ureters, urinary bladder, and urethra.
- Discuss the roles of local and central pathways in urination and describe the micturition reflex.
- Describe common urinary disorders related to output and frequency.

Additionally, you should be reviewing the following items . . .

- Course Textbook; Chapters 22 and 25
- Course Supplement; Modules 6 & 9
- Human A & P Labs 7-9
- Hole's Anatomy & Physiology; Chapters 19-20
- Anatomy & Physiology (McKinley text); Chapters 23-24
- Principles of Anatomy & Physiology (Tortora text); Chapters 23 and 26
- Seeley's Anatomy & Physiology; Chapters 23 and 26

Also, be sure to take a look at the links and resources on Canvas and my lecture and laboratory webpage. ***This study guide covers the majority of information on the lecture exam, but possibly not all of it. You are still responsible for any information that was covered but not put on this study guide (intentionally or unintentionally). Good Luck and Study Hard!!!***