

## **Anatomy & Physiology Study Recommendations**

Study your lecture notes and associated diagrams and related information in the textbook to review and learn the following information in preparation for the exam.

### **Blood**

- What are the major functions of the circulatory system?
- Compare and contrast the cardiovascular and lymphatic divisions of the circulatory system.
- Describe the general sequence of blood vessels in which blood flows from the heart to body tissues, then back to the heart again.
- Describe the composition of blood, including plasma, erythrocytes, leukocytes, and platelets.
- Know the structure & function of red blood cells, their percent in whole blood, and their life span. Describe the oxygen carrying protein in RBCs.
- How do white blood cells differ from RBCs? What's the difference between granulocytes & agranulocytes? Know the relative percentages and functions of the different WBCs.
- Describe platelets and their functions.
- Where are blood cells formed?
- What are the 4 major blood types? Why is it dangerous for a person to receive a transfusion of a blood type other than their own? What is the universal donor type? What is the universal recipient type? Why is it dangerous for a woman who is Rh- to have an Rh+ baby?
- Describe the major blood disorders and their treatments mentioned in lecture.
- Describe the three main types of blood cell counts, and what abnormalities in each indicate

### **Heart**

- Know what is meant by the term mediastinum.
- Know the main functions of the right side of the heart vs. the left side.
- Know the two types of pericardium surrounding the heart and their functions. What is pericarditis and why is it dangerous?
- What are the three layers of the heart wall and of what tissues are they composed? What is endocarditis?
- Know the internal & external structures of the heart, such as valves, muscles, septa, etc.
- Know what is meant by systemic vs. pulmonary circulation and the sequence of blood flow involved in each.
- Know the major coronary arteries and veins mentioned in class, as well as the main function of coronary arteries and veins. What can block the arteries? What can happen if they're blocked?
- Know what is meant by systolic and diastolic. What occurs during each?
- What are the valvular auscultatory areas? What causes the "lub," "dup" sounds of the heart?
- What is a heart murmur and are some types of murmurs?
- Describe the conduction system of the heart, particularly the locations and functions of the nodes, bundles, branches, and fibers.
- Know what the P, QRS, and T waves of an EKG represent.
- What is meant by tachycardia, bradycardia, flutter, heart block, and ventricular fibrillation?
- Describe the factors that regulate heart rate.
- What is cardiac output, and what two main factors control it?

### **Blood Vessels**

- Know the general routes by which blood circulates through the body.

- Know the structural differences between arteries, arterioles, capillaries, venules, and veins.
- Know the three tunics of blood vessels, and how they differ in arteries and veins.
- How do sympathetic and parasympathetic nerves affect blood vessels and blood pressure?
- If blood pressure is low in veins, how is blood returned to the heart?
- Know the difference between systolic and diastolic blood pressure, how they are measured, and what constitutes hypertension.
- Know the principle arteries of the body, and the sequence of blood flow through the arteries.
- Know the principle veins of the body, and the sequence of blood flow through the veins.
  - Know the components of the hepatic portal system, where the blood comes from, and to what organ it is taken. Why must the blood from the digestive organs be processed in the liver before entering general circulation?
- Know the blood vessel disorders mentioned in class.
- Know the main ways in which fetal circulation differs from adult circulation.

### **The Respiratory System**

- Know the major functions of the respiratory system
- Know how the respiratory and circulatory systems work together in gas exchange
- Know the structures and functions of the conductive and respiratory airways
- Know the path of air from the oral/nasal cavity to the alveoli
- Know the 3 regions of the pharynx and the structures therein
- Know the structures of the larynx
- Know the structures of the trachea and the type of tissue lining the trachea & bronchi
- Know the structures & functions of the alveoli, including the cell types lining them, and the characteristics of the membrane shared by the alveoli and surrounding capillaries that allows gas exchange
- Know the similarities and differences of the left and right lung
- Know the muscles main nerves that control inspiration and expiration
- Know what serous membranes line the lungs and thoracic cavity
- Know what Boyle's law is, and how it relates to the mechanics of breathing
- What type of instrument is used to measure respiratory volumes? Know what is meant by TV, IRV, ERV, RV, VC, TLC, and FEV, as well as the normal values for each.
- Know the where the respiratory centers and chemoreceptors involved in breathing regulation are located, as well as their functions
- Know the types of respiratory problems mentioned in the lecture handout

### **Endocrine System**

- Know the major endocrine structures, their locations, and functions
- Know which glands are entirely endocrine, vs. which have mixed function
- Distinguish between hormones derived from amino acids vs. those derived from cholesterol. How do these types of hormones differ in the way they affect target cells?
- How are hormone levels controlled in the body? Describe how negative feedback works.
- Know the hormones produced by the hypothalamus and pituitary gland, their target organs, and their effects, including hypo- and hyper-secretion of those mentioned in class
- Describe the hormone producing structures of the thyroid gland, parathyroids, pancreas, adrenal glands, ovaries, and testes, as well as the hormones they produce and abnormalities

- Know the endocrine functions of other organs, such as the placenta, pineal gland, thymus, stomach, small intestines, kidneys, liver, and heart