SOMERSET COUNTY VOCATIONAL & TECHNICAL SCHOOLS
P.O. Box 6350 • 14 Vogt Drive • Bridgewater, NJ 08807-0350 • (908) 526-8900 • www.scvths.org

Anatomy and Physiology 2

Topic	Lymphatic System (3 weeks)	Blood (3 weeks)	Cardiovascular System (4 weeks)	Respiratory System (4 weeks)
NJSLS	LS1-2 LS1.A	LS1-2 LS1.A	LS1-2 LS1.A	LS1-2 LS1.A
ELA	SL.11-12.5	SL.11-12.5	SL.11-12.5	SL.11-12.5
Technology Ed.	8.1.12.DA.1,5	8.1.12.DA.1,5	8.1.12.DA.1,5	8.1.12.DA.1,5
21st Century Knowledge & Skills	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4
Skills (SWBAT)	Describe the functions of the lymphatic system Describe the parts of the lymphatic system and list their functions Locate and describe the various chains of lymph nodes	Describe the functions of blood and describe the basic characteristics of blood List the components of blood Describe the composition of plasma and discuss its importance in the body	Describe the function of the cardiovascular system Describe the location of the heart and identify its major anatomical areas including the wall, chambers, and all vessels and valves of the heart	Describe the general functions of the respiratory system List and describe the structures and organs of the respiratory system Describe the protective mechanisms of the respiratory system

	Describe the formation and composition of lymph Describe the lymphatic vessels and lymph circulation Differentiate between nonspecific and specific immunity Differentiate between active and passive immunity List and describe examples of each type of defense Describe the roles of antigen presenting cells, T cells, and B cells in a cell mediated and antibody mediated immunity Describe the development of the lymphatic system Explain how allergic reactions and tissue rejections are related to the immune system Describe the clinical disorders related to the immune system such as cancer, AIDS, and autoimmune diseases	Distinguish between the formed elements found in the blood Define and describe normal blood indices Define hematopoiesis as a process Describe the stages in the blood clotting process and explain factors that promote and inhibit blood clotting Explain A B O and Rh blood grouping Explain why a person is called a universal donor or recipient Define anemia, polycythemia, leukopenia, leukocytosis, hemophilia and list the possible causes for each Describe the factors involved in physiological jaundice Describe how blood reactions may occur between the fetal and maternal tissues	Compare the structures and functions of arteries, capillaries, and veins Trace the pathway of the blood through the heart and vessels of the coronary circulation Compare the pulmonary and systemic circuits Explain the mechanism that helps in the return of venous blood Define blood pressure, pulse, and identify the nine major pulse sites Describe what factors create and control blood pressure Describe the phases, timing and sounds associated with a cardiac cycle Explain how heart rate is regulated List and describe the disorders associated with the circulatory system	Trace a breath of air through the respiratory system from nose to alveoli Describe the events involved in inspiration and expiration Describe the process of gas exchanges in the lungs and tissues Explain how respiration gases are carried by the blood Explain what is meant by cellular respiration and describe how oxygen is used by cells List and describe each of the respiratory air volumes Describe alveoli respiration List and describe the various nonrespiratory air movements that occur in addition to breathing Explain how the respiratory muscles cause volume changes that lead to air flow into and out of the lungs

	Define important terminology related to the immune system	Define important terminology related to the blood	Define important terminology related to the circulatory system.	Describe pH changes and respiratory acidosis alkalosis Name the brain areas involved in the control of respiration Name three factors that influence respiratory rate Describe all the diseases disorders associated with the respiratory system Define important terms related to the respiratory system
Activities	PowerPoint Presentations Lab Activities: Microscopic Observation of Lymph Nodes	PowerPoint Presentations **Formative Assessment:** Describe the difference between the four blood groups and explain how a blood transfusion can be rejected if the blood types are not compatible (use a specific blood type example). Lab Activities: Blood Smear Analysis; Blood Type Simulation	PowerPoint Presentations **Formative Assessment:** With a partner, test the effects of exercise on pulse rate and blood pressure. Create an Excel document (using tables and charts) that displays the results. Write a formal report which will be presented to the class Lab Activities: Sheep Heart Dissection; Measuring Pulse and Heartbeat	PowerPoint Presentations Lab Activities: Microscopic Observation of Trachea Cross-Section; Measuring Lung Capacity; Comparing Healthy Lung Tissue with Smoker's Cancerous Tissue

Evaluation	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook
Resources	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos

Topic	Digestive System (4 weeks)	Nutrition and Metabolism (3 weeks)	Urinary System (4 weeks)	Water, Electrolyte and Acid/Base Balance (3 weeks)
NJSLS	LS1-2 LS1.A	LS1-2 LS1.A	LS1-2 LS1.A	LS1-2 LS1-3 LS1.A PS1.B
ELA	SL.11-12.5	SL.11-12.5	SL.11-12.5	WHST.9-12.7 WHST.11-12.8 SL.11-12.5
Technology Ed.	8.1.12.DA.1,5	8.1.12.DA.1,5	8.1.12.DA.1,5	8.1.12.DA.1,5

21st Century Knowledge & Skills	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4
Skills (SWBAT)	Describe the functions of the digestive system Name, describe and locate the structures, organs and accessory structures of the digestive system Describe the basic anatomy of the teeth and oral cavity and explain their functions in the digestive system List and describe the four layers of the wall of the G.I. tract Describe the structure and function of the liver and gallbladder Describe the pancreatic structure and functions Describe the structure and function of the small and large intestines and the rectum	Explain the regulation of food intake Distinguish between nutrition, nutrients, and essential nutrients Define metabolism and contrast anabolism and catabolism List several factors that influence metabolic rate Describe basal metabolic rate List the forms of carbohydrate utilized by cells List how amino acids are utilized by cells List the forms of lipids utilized by cells Identify the major sources of carbohydrates, proteins, and fats in food sources.	Describe the functions of the urinary system Name, describe and locate the structures of the urinary system Describe the anatomical differences in the male and female urinary system Describe the pathway of blood through the major vessels within the kidney Describe the renal processes of glomerular filtration, tubular reabsorption, and tubular secretions List and describe diseases/ disorders associated with the digestive system Define important terms related to the urinary system	Describe the various fluid compartments of the body Explain what is meant by water and electrolyte balance and discuss the importance of this balance Explain how electrolytes enter and leave the body Explain what is meant by acid/base balance Explain the importance of electrolyte substances in the electrolyte balance Explain the importance of calcium, phosphate, and magnesium Explain the role of buffers with regard to carbon dioxide and the excretion of Hydrogen ions in maintaining pH of body fluids List and describe the diseases/disorders associated

	Describe the composition and function of saliva. List the enzymes secreted by the various digestive organs and describe the functions of each Explain how gastric secretions are regulated List and explain the digestive functions of the pancreatic secretions List and describe the functions of the intestinal secretions Describe how digestive secretions are regulated Describe the mechanism of swallowing, vomiting, and defecating Describe the mechanism of peristalsis and its role in the G.I. tract Explain how the processes in the stomach, liver, pancreas, gallbladder, and small intestines	Recognize the importance of carbohydrates, fats, and proteins in cell metabolism Describe the difference between vitamins and minerals Describe the characteristics of an adequate diet Compare and contrast primary and secondary malnutrition List and describe diseases/ disorders associated with nutritional status Define important terminology related to nutrition		with fluid, acid/base and electrolyte balance

	Describe the absorption of nutrients in the small intestines Define enzyme, metabolism, anabolism, and catabolism List and describe diseases/ disorders or clinical applications associated with the digestive system Define important terms related to the digestive system			
Activities	PowerPoint Presentations **Formative Assessment:** "Digestive System Theme Park" project Using Microsoft Publisher, create a pamphlet describing the organs of the digestive system. Research the organs and relate them to a ride or facility in a theme park. Incorporate pictures of both the organ and the ride/facility. Lab Activities: Fetal Pig Dissection; Effects of Salivary	PowerPoint Presentations Lab Activities	PowerPoint Presentations Lab Activities: Kidney Dissection; Dialysis Lab; Urinalysis	PowerPoint Presentations Lab Activities

	Amylase on Carbohydrates; Microscopic Observation of Small Intestine			
Evaluation	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook
Resources	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos

Topic	Female Reproductive System (4 weeks)	Male Reproductive System (4 weeks)	Human Growth and Development (4 weeks)
NJSLS	LS1-2 LS1.A	LS1-2 LS1.A	LS1-2 LS1.A
ELA	SL.11-12.5	SL.11-12.5	SL.11-12.5
Technology Ed.	8.1.12.DA.1,5	8.1.12.DA.1,5	8.1.12.DA.1,5

21st Century Knowledge & Skills	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4	9.4.12.CI.1 9.4.12.CT.2,4 9.4.12.IML.2,3,8 9.4.12.TL.1,3,4
Skills (SWBAT)	List and describe the parts of the female reproductive system Describe the function of the parts of the female reproductive system Describe the structure and functions of the mammary glands Describe the structure and function of the ovary and how egg cells and follicles are formed Describe the process of fertilization Describe the sequence of events occurring during pregnancy Describe the functions of the amnion and the placenta. Describe the stages of birth Describe the role that hormones play in the control	List and describe the parts of the male reproductive system Describe the functions of the parts of the male reproductive system Discuss the importance of semen and name the glands that produce it Describe the role of hormones in the control of the male reproductive system Describe the structure of a sperm and relate the structure to function. List and describe diseases/disorders associated with the male reproductive system Define important terminology related to the male reproductive system	Explain how the placenta is formed and its function Describe the formation of the primary germ layers Distinguish between a fetus and an embryo Differentiate between growth and development Explain why the embryonic period is extremely critical Describe the major circulatory and physiological adaptations that occur in the newborn Describe the stages of development that occur between the neonatal period through maturation Define important terminology related to growth and development

	of the female reproductive system Describe the sequence of events that occur during uterine and ovarian cycles Describe the stages of birth and the role that hormones play Identify several methods of birth control and the effectiveness of each Explain the symptoms and causes of STDs List and describe diseases/disorders or clinical applications associated with the female reproductive system Define important terms related to the female reproductive system		
Activities	PowerPoint Presentations Lab Activities: Microscopic Observation of Ovaries	PowerPoint Presentations Lab Activities: Microscopic Observation of Testes	PowerPoint Presentations Lab Activities

Evaluation	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook	Class Participation Homework Lab activities Tests Quizzes Notebook
Resources	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos	*The Human Body in Health and Disease* Power point Worksheets Lab materials Notes Videos

Board Approved: August 27, 2012