Anatomy & Physiology
At-A-Glance - Lamar CISD

Ongoing Skills Imbedded All Year	**Professional Standards/Employability Skills/Technical Skills**		
	A&P 1(A) The student will demonstrate verbal and non-verbal communication in a clear, concise, and effective manner. A&P 1(B) The student will exhibit the ability to cooperate, contribute, and collaborate as a member of a team. A&P 2(H) The student will distinguish among scientific hypotheses, theories, and laws. A&P 2(B) The student will apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems. A&P 2(D) The student will use appropriate tools such as lab notebooks or journals, calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, meter sticks, electronic balances, micro pipettors, hand lenses, Celsius thermometers, hot plates, timing devices, Petri dishes, agar, lab incubators, dissection equipment, reflex hammers, pulse oximeters, stethoscope, otoscope, blood pressure monitors (sphygmomanometers), pen lights, ultrasound equipment, and models, diagrams, or samples of biological specimens or structures. A&P 2(F) The student will organize quantitative and qualitative data using lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports. A&P 5(A) The student will analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student.		
Ongoing Ways to Show	A&P 5(A) The student will analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student. **Anatomy & Physiology expected standards:** The student will know that hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories. 5A The student will know scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly reliable explanations, but they may be subject to change as new areas of science and new technologies are developed.5B Scientific practices. Students should be able to ask questions, plan and conduct investigations to answer questions, and explain phenomena using appropriate tools and models. 6A Engineering practices. Students should be able to identify problems and design solutions using appropriate tools and models.6B		
Grading Period	**Unit Name**	**Estimated Time Frame**	**TEKS**
Grading Period 1 **29 Days**	**Introduction to Lab Safety**	**4 Days**	1A, 1B, 2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 3A, 3B, 3C, 3D
	A&P 1(A) The student will demonstrate verbal and non-verbal communication in a clear, concise, and effective manner. A&P 1(B) The student will exhibit the ability to cooperate, contribute, and collaborate as a member of a team. A&P 2(A) The student will ask questions and define problems based on observations or information from text, phenomena, models, or investigations. A&P 2(B) The student will apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems. A&P 2(C) The student will use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards. A&P 2(D) The student will use appropriate tools such as lab notebooks or journals, calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, meter sticks, electronic balances, micro pipettors, hand lenses, Celsius thermometers, hot plates, timing devices, Petri dishes, agar, lab incubators, dissection equipment, reflex hammers, pulse oximeters, stethoscope, otoscope, blood pressure monitors (sphygmomanometers), pen lights, ultrasound equipment, and models, diagrams, or samples of biological specimens or structures. A&P 2(E) The student will collect quantitative data using the International System of Units (SI) and United States customary units and qualitative data as evidence. A&P 2(F) The student will organize quantitative and qualitative data using lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports. A&P 2(G) The student will develop and use models to represent phenomena, systems, processes, or solutions to engineering problems. A&P 2(H) The student will distinguish among scientific hypotheses, theories, and laws. A&P 3(A) The student will identify advantages and limitations of models such as their size, scale, properties, and materials. A&P 3(B) The student will analyze data by identifying significant statistical features, patterns, sources of error, and limitations. A&P 3(C) The student will use mathematical calculations to assess quantitative relationships in data. A&P 3(D) The student will evaluate experimental and engineering designs.		

	Introduction to Anatomy & Physiology - 1	**7 Days**	2A, 4A, 4B, 4C, 5A, 5B
	A&P 2(A) The student will ask questions and define problems based on observations or information from text, phenomena, models, or investigations. A&P 4(A) The student will develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories. A&P 4(B) The student will communicate explanations and solutions individually and collaboratively in a variety of settings and formats. A&P 4(C) The student will engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence. A&P 5(A) The student will analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student. A&P 5(B) The student will relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists and engineers as related to the content.		
	Biochemistry, Cellular Biology – 2, 3	**6 Days**	6A, 6B, 6C, 6D, 6E
	A&P 6(A) The student will distinguish between the six levels of structural organization in the human body, including chemical, cellular, tissue, organ, system, and organism, and explain their interdependence. A&P 6(B) The student will identify and use appropriate directional terminology when referring to the human body, including directional terms, planes, body cavities, and body quadrants. A&P 6(C) The student will identify and describe the major characteristics of living organisms, including response to stimuli, growth and development, homeostasis, cellular composition, metabolism, reproduction, and the ability to adapt to the environment. A&P 6(D) The student will research and describe negative and positive feedback loops as they apply to homeostasis. A&P 6(E) The student will research and identify the effects of the failure to maintain homeostasis as it relates to common diseases in each of the body systems.		
	Histology/Tissue - 5	**6 Days**	7A, 7B, 7C, 7D
	A&P 7(A) The student will define tissue and identify the four primary tissue types, their subdivisions, and functions. A&P 7(B) The student will compare epithelial tissue and connective tissue in terms of cell arrangement and interstitial materials. A&P 7(C) The student will describe the process of tissue repair involved in the normal healing of a superficial wound. A&P 7(D) The student will describe the general metabolic pathways of carbohydrates, lipids, and proteins.		
	Integumentary System - 6	**6 Days**	9A, 9B, 9C, 9D
	A&P 9(A) The student will identify and describe the structures of the integumentary system, including layers of the skin, accessory organs within each layer, and glandular components in each layer. A&P 9(B) The student will describe the factors that can contribute to skin color. A&P 9(C) The student will describe and explain the process of tissue repair and scar formation. A&P 9(D) The student will identify and describe common diseases and disorders of the integumentary system such as skin cancer and psoriasis.		
Grading Period 2 27 Days	**Skeletal System & Joints** – 7	**20 Days**	8A, 8B, 8C, 8D, 8E, 8F, 8G
	A&P 8(A) The student will identify and differentiate between the axial skeleton and appendicular skeleton. A&P 8(B) The student will identify the types of joints, including gliding, hinge, pivot, saddle, and ball and socket, and describe the movements of each. A&P 8(C) The student will identify and locate the anatomy of bone, including spongy and compact tissue, epiphysis, diaphysis, medullary cavity, periosteum, bone marrow, and endosteum. A&P 8(D) The student will explain the major physiological functions of the skeletal system. A&P 8(E) The student will describe the role of osteoblasts, osteocytes, and osteoclasts in bone growth and repair. A&P 8(F) The student will identify and describe the different types of fractures such as compound, complete, simple, spiral, greenstick, hairline, transverse, and comminuted. A&P 8(G) The student will identify and describe common diseases and disorders of the skeletal system such as scoliosis, osteoporosis, and bone cancer.		
	Joints & Muscular System - 8	**7 Days**	10A, 10B, 10C, 10D
	A&P 10(A) The student will explain the major physiological functions of the muscular system, including voluntary movement, involuntary movement, heat production, and maintaining posture. A&P 10(B) The student will explain the coordination of muscles, bones, and joints that allows movement of the body, including the methods of attachment of ligaments and tendons.		

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	A&P 10(C) The student will examine common characteristics of muscle tissue, including excitability, contractibility, extensibility, and elasticity. A&P 10(D) The student will identify and describe the appearance, innervation, and function of the three muscle types, including cardiac, skeletal, and smooth.		
Grading Period 3 **28 Days**	**Joints & Muscular System** - 8 continues	**11 Days**	10E, 10F, 10G, 10H, 10I
	A&P 10(E) The student will examine the microscopic anatomy of a muscle fiber, including sarcomere, actin, and myosin. A&P 10(F) The student will describe the mechanisms of muscle contraction at the neuromuscular junction. A&P 10(G) The student will name, locate, and describe the action of major voluntary muscles in regions of the body, including the head and neck, trunk, upper extremity, and lower extremity. A&P 10(H) The student will identify and describe common diseases and disorders of the muscular system such as muscle strains and muscular dystrophy. A&P 10(I) The student will analyze and describe the effects of pressure, movement, torque, tension, and elasticity on the human body.		
	Nervous System - 9	**11 Days**	11A, 11B, 11C, 11D, 11E, 11F, 11G, 11H, 11I, 11J
	A&P 11(A) The student will summarize and distinguish between the major physiological functions of the nervous system, including sensation, integration, and motor response. A&P 11(B) The student will identify the senses and explain their relationship to nervous system. A&P 11(C) The student will investigate and explain the interdependence between the cranial and spinal nerves with the special senses of vision, hearing, smell, and taste. A&P 11(D) The student will describe the anatomy of the structures associated with the senses, including vision, hearing, smell, taste, and touch. A&P 11(E) The student will identify the anatomical and physiological divisions of the peripheral nervous system and central nervous system. A&P 11(F) The student will explain the glial cells within the central nervous system and peripheral nervous system and their associated functions. A&P 11(G) The student will analyze the functional and structural differences between gray and white matter relative to neurons. A&P 11(H) The student will distinguish between the types of neurons and explain the initiation of a nerve impulse during resting and action potential. A&P 11(I) The student will categorize the major neurotransmitters by chemical and physical mechanisms. A&P 11(J) The student will identify and describe common diseases and disorders of the nervous system such as epilepsy, neuralgia, Parkinson's disease, and Alzheimer's disease.		
	Special Senses - 10	**6 Days**	
	A&P 11(B) The student will identify the senses and explain their relationship to nervous system. A&P 11(C) The student will investigate and explain the interdependence between the cranial and spinal nerves with the special senses of vision, hearing, smell, and taste. A&P 11(D) The student will describe the anatomy of the structures associated with the senses, including vision, hearing, smell, taste, and touch.		
Grading Period 4 **31 Days**	**Endocrine System** - 11	**10 Days**	12A, 12B, 12C, 12D, 12E, 12F
	A&P 12(A) The student will identify and locate the nine glands associated with the endocrine system, including the ovaries, testes, pineal gland, pituitary gland, thyroid gland, parathyroid glands, thymus, pancreas, and adrenal glands. A&P 12(B) The student will compare and contrast endocrine and exocrine glands and identify the glands associated with each. A&P 12(C) The student will describe the hormones associated with each endocrine gland. A&P 12(D) The student will research the impact of the endocrine systems on homeostatic mechanisms and other body systems such as the integration between the hypothalamus and the pituitary gland. A&P 12(E) The student will explain how the endocrine glands are regulated, including neural, hormonal, and humoral control. A&P 12(F) The student will identify and describe common diseases and disorders of the endocrine system such as hypothyroidism, pancreatic cancer, and diabetes.		
	Blood - 12	**11 Days**	13A, 13B, 13C, 13D, 13E, 13F, 13G
	A&P 13(A) The student will identify and describe the anatomical structures and functions of the urinary system, including the kidney, ureters, bladder, and urethra. A&P 13(B) The student will compare and contrast the anatomical structures and describe the functions of the male and female urinary system.		

	A&P 13(C) The student will summarize and illustrate the structures, functions, and types of nephrons. A&P 13(D) The student will examine the methods of fluid balance and homeostasis in the urinary system, including fluid intake and output. A&P 13(E) The student will analyze the composition of urine and the process of urine formation, including filtration, reabsorption, and secretion. A&P 13(F) The student will describe the relationship between the nervous system, renal system, and muscular system before and during micturition. A&P 13(G) The student will identify and describe common diseases and disorders of the urinary system such as chronic kidney disease, kidney stones, urinary tract infections, and renal cancer.		
	Cardiovascular System - 13	**10 Days**	14A, 14B, 14C, 14D, 14E, 14F
	A&P 14(A) The student will identify the major functions of the cardiovascular system, including transport, maintaining homeostasis, and immune response. A&P 14(B) The student will compare and contrast the anatomical structure of arteries, arterioles, capillaries, venules, and veins. A&P 14(C) The student will investigate and illustrate how systemic circulation transports blood, gasses, and nutrients from the heart to the internal anatomy of the heart, including tissue layers, chambers, and valves, and external anatomy of the heart, including coronary vessels. A&P 14(D) The student will describe the relationship between blood flow and blood pressure, including systolic and diastolic pressure, pulse pressure, and mean arterial pressure. A&P 14(E) The student will compare and contrast coronary, pulmonary, and systemic circulation, and describe the major vessels of each. A&P 14(F) The student will illustrate how the PQRST waves of an electrocardiogram (EKG) demonstrate the conduction of electricity through the structures of the heart.		
Grading Period 5 **30 Days**	**Cardiovascular System –** 13 continue	**5 Days**	14F, 14G, 14H
	A&P 14(F) The student will illustrate how the PQRST waves of an electrocardiogram (EKG) demonstrate the conduction of electricity through the structures of the heart. A&P 14(G) The student will describe the relationship between the cardiovascular system, nervous system, and muscular system in regulating cardiac output. A&P 14(H) The student will identify and describe common diseases and disorders of the cardiovascular system such as heart disease, myocardial infarction, ischemia, and hypertrophic cardiomyopathy.		
	Lymphatic System - 14	**6 Days**	15A, 15B, 15C, 15D, 15E, 15F, 15G
	A&P 15(A) The student will evaluate the interaction of the lymphatic system with other body systems such as the circulatory system. A&P 15(B) The student will describe the structure and function of the lymphatic organs and explain how lymph moves through the body. A&P 15(C) The student will identify and describe the role and function of the immune cells, including T cells and B cells, within the lymphatic system structures. A&P 15(D) The student will identify and determine antigens associated with ABO blood typing, including Rhesus (Rh) factor. A&P 15(E) The student will summarize the ways the body protects and defends against disease, including inflammation, barrier defenses, and active and passive immunity. A&P 15(F) The student will describe the role of antigens and antibodies in the immune response. A&P 15(G) The student will identify and describe common diseases and disorders associated with the lymphatic and immune systems such as inherited or acquired immunodeficiencies, autoimmune diseases, and lymphomas.		
	Respiratory System - 16	**6 Days**	17A, 17B, 17C, 17D, 17E, 17F
	A&P 17(A) The student will identify and sequence the anatomical structures and functions of the respiratory system. A&P 17(B) The student will compare and contrast the functions of upper and lower respiratory tract. A&P 17(C) The student will describe the physiology of respiration, including internal and external respiration and gas exchange. A&P 17(D) The student will describe the relationship between the respiratory and cardiovascular systems during pulmonary circulation. A&P 17(E) The student will investigate factors that affect respiration, including exercise and environmental changes such as altitude. A&P 17(F) The student will identify and describe common diseases of the respiratory system such as asthma, emphysema, pneumonia, viruses, and allergies.		
	Digestive System - 15	**6 Days**	16A, 16B, 16C, 16D
	A&P 16(A) The student will examine the anatomical structures and function of the alimentary canal and accessory organs. A&P 16(B) The student will compare and contrast mechanical and chemical digestive processes.		

	A&P 16(C) The student will evaluate the modes by which energy is processed and stored within the body, including ingestion, propulsion, absorption, and elimination. A&P 16(D) The student will identify and describe common diseases and disorders of the digestive system such as gallstones, Crohn's disease, irritable bowel syndrome, and gastroesophageal reflux disorder.		
	Urinary System - 17	**7 Days**	13A, 13B, 13C, 13D, 13E, 13F, 13G
	A&P 13(A) The student will identify and describe the anatomical structures and functions of the urinary system, including the kidney, ureters, bladder, and urethra. A&P 13(B) The student will compare and contrast the anatomical structures and describe the functions of the male and female urinary system. A&P 13(C) The student will summarize and illustrate the structures, functions, and types of nephrons. A&P 13(D) The student will examine the methods of fluid balance and homeostasis in the urinary system, including fluid intake and output. A&P 13(E) The student will analyze the composition of urine and the process of urine formation, including filtration, reabsorption, and secretion. A&P 13(F) The student will describe the relationship between the nervous system, renal system, and muscular system before and during micturition. A&P 13(G) The student will identify and describe common diseases and disorders of the urinary system such as chronic kidney disease, kidney stones, urinary tract infections, and renal cancer.		
Grading Period 6 **27 Days**	**Reproductive System –** 19/20	**22 Days**	18A, 18B, 18C, 18D, 18E, 18F
	A&P 18(A) The student will explain embryological development of cells, tissues, organs, and systems. A&P 18(B) The student will describe and examine the location, structure, and functions of the internal and external female and male reproductive organs and accessory glands. A&P 18(C) The student will describe and compare the process of oogenesis and spermatogenesis. A&P 18(D) The student will research and discuss the physiological effects of hormones on the stages of the menstrual cycle. A&P 18(E) The student will identify and distinguish the hormones involved in maturation and development throughout the life cycle, including puberty, gestation, and menopause. A&P 18(F) The student will identify and describe common diseases and disorders of the reproductive system such as sexually transmitted diseases and cancers of the female and male reproductive systems.		
	Emerging Technology	**5 Days**	1C, 5C, 19A, 19B
	A&P 1(C) The student will investigate necessary skills for health careers related to anatomy and physiology. A&P 5(C) The student will research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) or health science field in order to investigate careers. A&P 19(A) The student will research and discuss advances in science and medicine at the organ and tissue level such as bionics and wearable monitoring technologies. A&P 19(B) The student will research and describe advances in science and medicine at the cellular level such as stem cells and gene therapy.		