

ALAMO HEIGHTS INDEPENDENT SCHOOL DISTRICT
ALAMO HEIGHTS HIGH SCHOOL
Anatomy and Physiology Curriculum Framework

1st NINE WEEKS

Unit: "Levels of Organization"

Approximate Time Frame: 7 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(1) The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices.	(A) demonstrate safe practices during laboratory and field investigations; and (B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials	Laboratory Safety Laboratory Procedures	AHHS Safety Contract
(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:	(A) know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section; (F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures; (H) Communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.	Orientation of Human Body Terminology Levels of Organization	Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities) Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW) Lab 1: Scientific Method and Measurements Lab 2: Body Organization and Terminology

Unit: "Basic Chemistry"

Approximate Time Frame: 4 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(4) The student evaluates the energy needs of the human body and the processes through which these needs are fulfilled. The student is expected to:	(A) analyze the chemical reactions that provide energy for the body; (C) analyze the effects of energy deficiencies in malabsorption disorders such as diabetes, hypothyroidism, and Crohn's disease; and	Osmosis Cell Make-up Cellular Biochemistry	Lab 3: Cell Structure and Function Lab 4: Osmosis Lab 5: The Cell Cycle

Unit: "Cells and Tissue"

Approximate Time Frame: 9 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
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(4) The student evaluates the energy needs of the human body and the processes through which these needs are fulfilled. The student is expected to:	(A) analyze the chemical reactions that provide energy for the body; (D) analyze the effects of energy excess in disorders such as obesity as it relates to cardiovascular and musculoskeletal systems.	ATP	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)
(5) The student differentiates the responses of the human body to internal and external forces. The student is expected to:	(A) explain the coordination of muscles, bones, and joints that allows movement of the body;	ATP, Negative Feedback	Human skeleton Dissectible torso
(6) The student examines the body processes that maintain homeostasis. The student is expected to:	(A) investigate and describe the integration of the chemical and physical processes, including equilibrium, temperature, pH balance, chemical reactions, passive transport, active transport, and biofeedback, that contribute to homeostasis; and (B) determine the consequences of the failure to maintain homeostasis.	Septicemia pH imbalance pH scale	Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities)

Unit: "Skin and Body Membranes"

Approximate Time Frame: 12 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(5) The student differentiates the responses of the human body to internal and external forces. The student is expected to:	(D) analyze and describe the effects of pressure, movement, torque, tension, and elasticity on the human body; and	Skin Makeup	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)
(6) The student examines the body processes that maintain homeostasis. The student is expected to:	(B) determine the consequences of the failure to maintain homeostasis.	Pathology of Skin	Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities)
(9) The student investigates environmental factors that affect the human body. The student is expected to	(B) explore measures to minimize harmful environmental factors on body systems.	Carcinoma	Lab: Toxicology
(10) The student investigates structure and function of the human body. The student is expected to:	(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal, musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive; (B) evaluate the cause and effect of disease, trauma, and congenital defects on the structure and function of cells, tissues, organs, and	Organization of skin cells Layers of the skin	

	systems; (C) research technological advances and limitations in the treatment of system disorders; and (D) examine characteristics of the aging process on body systems.		

Unit: "The Skeletal System"

Approximate Time Frame: 10 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:	(F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;	Bone density	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)
(10) The student investigates structure and function of the human body. The student is expected to:	(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal, musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive; (B) evaluate the cause and effect of disease, trauma, and congenital defects on the structure and function of cells, tissues, organs, and systems; (D) examine characteristics of the aging process on body systems.	Axial vs. Appendicular Identification of Bones	Lab: Identify the Sex

2nd NINE WEEKS

Unit: "The Muscular System"

Approximate Time Frame: 12 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(1) The student conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also	(A) demonstrate safe practices during laboratory and field investigations; and (B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.	Male vs. Female Bone Density Muscle Movement	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)

involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. The student is expected to:			
(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:	(A) know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section; (F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;	Movement Terminology	Lab 9: Muscle and Nervous Tissues Lab: Cat Dissection
(4) The student evaluates the energy needs of the human body and the processes through which these needs are fulfilled. The student is expected to:	(D) analyze the effects of energy excess in disorders such as obesity as it relates to cardiovascular and musculoskeletal systems.	Muscle and nervous system interplay	Student Presentations
(5) The student differentiates the responses of the human body to internal and external forces. The student is expected to:	(A) explain the coordination of muscles, bones, and joints that allows movement of the body;	Joint movement	Lab ATP
(10) The student investigates structure and function of the human body. The student is expected to	(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal, musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive; (B) evaluate the cause and effect of disease, trauma, and congenital defects on the structure and function of cells, tissues, organs, and systems; (D) examine characteristics of the aging process on body systems.		

Unit: "The Nervous System and Senses"
Approximate Time Frame: 12 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(1) The student conducts investigations, for at least 40% of	(A) demonstrate safe practices during laboratory and field investigations; and (B) demonstrate an understanding of the use	Autonomic vs. Somatic	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th

<p>instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. The student is expected to:</p>	<p>and conservation of resources and the proper disposal or recycling of materials.</p>		<p>Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)</p> <p>Lab: Sheep Brain Lab: Reactions Times Lab: Senses</p>
<p>(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:</p>	<p>(F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;</p>	<p>Cerebral Hemispheres</p> <p>Functions of Brain</p>	<p>Lab: Sheep Brain Lab: Reactions Times Lab: Senses</p>
<p>(5) The student differentiates the responses of the human body to internal and external forces. The student is expected to:</p>	<p>(C) interpret normal and abnormal contractility conditions such as in edema, glaucoma, aneurysms, and hemorrhage;</p>	<p>Homeostatic imbalances</p>	<p>Student Project</p>
<p>(6) The student examines the body processes that maintain homeostasis. The student is expected to</p>	<p>(B) determine the consequences of the failure to maintain homeostasis.</p>		<p>Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities)</p>
<p>(7) The student examines the electrical conduction processes and interactions. The student is expected to:</p>	<p>(A) illustrate conduction systems such as nerve transmission or muscle stimulation; (B) investigate the therapeutic uses and effects of external sources of electricity on the body system; and (C) evaluate the application of advanced technologies such as electroencephalogram, electrocardiogram, bionics, transcutaneous electrical nerve stimulation, and cardio version.</p>		
<p>(10) The student investigates structure and function of the human body. The student is</p>	<p>(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal,</p>		<p>Student Project</p>

expected to:	<p>musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive;</p> <p>(B) evaluate the cause and effect of disease, trauma, and congenital defects on the structure and function of cells, tissues, organs, and systems;</p> <p>(C) research technological advances and limitations in the treatment of system disorders; and</p> <p>(D) examine characteristics of the aging process on body systems.</p>		
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Unit: "Immunity"

Approximate Time Frame: 10 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:	<p>(B) communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;</p> <p>(C) draw inferences based on data related to promotional materials for products and services</p>	<p>Lymphatic System</p> <p>Lymph Nodes</p>	<p>Cummings: Marieb's Essentials of Human Anatomy & Physiology 7th Edition</p> <p>Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)</p>
(6) The student examines the body processes that maintain homeostasis. The student is expected to:	(B) determine the consequences of the failure to maintain homeostasis.	Rhinovirus	Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities)

3rd NINE WEEKS

Unit: "Blood & Cardiovascular System"

Approximate Time Frame: 13 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(1) The student conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. The student is expected to:	<p>(A) demonstrate safe practices during laboratory and field investigations; and</p> <p>(B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.</p>	<p>Circulation</p> <p>Erythrocytes</p> <p>Leukocytes</p>	<p>Cummings: Marieb's Essentials of Human Anatomy & Physiology 7th Edition</p> <p>Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)</p> <p>Lab: Blood Type</p>

(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:	(F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures; (G) analyze, evaluate, make inferences, and predict trends from data; and	Chambers of the heart Overall makeup of the heart	Lab: Build A Heart
(4) The student evaluates the energy needs of the human body and the processes through which these needs are fulfilled. The student is expected to:	(D) analyze the effects of energy excess in disorders such as obesity as it relates to cardiovascular and musculoskeletal systems.	Myocardial infarction	
(6) The student examines the body processes that maintain homeostasis. The student is expected to:	(B) determine the consequences of the failure to maintain homeostasis	Embolus vs. Thrombus	Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities)
(7) The student examines the electrical conduction processes and interactions. The student is expected to:	(C) evaluate the application of advanced technologies such as electroencephalogram, electrocardiogram, bionics, transcutaneous electrical nerve stimulation, and cardio version.	Label the EKG wave	Lab: EKG
(8) The student explores the body's transport systems. The student is expected to:	(A) analyze the physical, chemical, and biological properties of transport systems, including circulatory, respiratory, and excretory; (B) determine the factors that alter the normal functions of transport systems; and (C) contrast the interactions among the transport systems.		
(10) The student investigates structure and function of the human body. The student is expected to:	(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal, musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive; (D) examine characteristics of the aging process on body systems.	Knowledge of BP	Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities)

Unit: "Digestion and Nutrition"

Approximate Time Frame: 20 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
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(1) The student conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. The student is expected to:	(A) demonstrate safe practices during laboratory and field investigations; and (B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.	Order of digestion	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)
(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:	(F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;	Location of organs Digestion vs. Ingestion vs. Absorption	Lab: Cat Dissection
(4) The student evaluates the energy needs of the human body and the processes through which these needs are fulfilled. The student is expected to:	(B) evaluate the means, including the structure and function of the digestive system, by which energy is processed and stored within the body; (C) analyze the effects of energy deficiencies in malabsorption disorders such as diabetes, hypothyroidism, and Crohn's disease; and (D) analyze the effects of energy excess in disorders such as obesity as it relates to cardiovascular and musculoskeletal systems.	Breakdown of nutrients	Lab: Digestive Enzymes
(8) The student explores the body's transport systems. The student is expected to:	(B) determine the factors that alter the normal functions of transport systems; and (C) contrast the interactions among the transport systems.	Homeostatic imbalances	Student Project: Digestive Diseases

Unit: "Excretory Systems"

Approximate Time Frame: 12 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(8) The student explores the body's transport systems. The student is expected to:	(A) analyze the physical, chemical, and biological properties of transport systems, including circulatory, respiratory, and excretory;		Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition

	(B) determine the factors that alter the normal functions of transport systems; and (C) contrast the interactions among the transport systems.		Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)
(10) The student investigates structure and function of the human body. The student is expected to:	(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal, musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive; (B) evaluate the cause and effect of disease, trauma, and congenital defects on the structure and function of cells, tissues, organs, and systems;		

4TH NINE WEEKS

Unit: "Respiratory System"

Approximate Time Frame: 8 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(5) The student differentiates the responses of the human body to internal and external forces. The student is expected to:	(D) analyze and describe the effects of pressure, movement, torque, tension, and elasticity on the human body; and (E) perform an investigation to determine causes and effects of force variance and communicate findings.	Oxygen transportation	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)
(8) The student explores the body's transport systems. The student is expected to:	(A) analyze the physical, chemical, and biological properties of transport systems, including circulatory, respiratory, and excretory; (B) determine the factors that alter the normal functions of transport systems; and (C) contrast the interactions among the transport systems.	Oxygen vs. Carbon Dioxide	Lab: VO2 Max
(9) The student investigates environmental factors that affect the human body. The student is expected to:	(A) identify the effects of environmental factors such as climate, pollution, radioactivity, chemicals, electromagnetic fields, pathogens, carcinogens, and drugs on body systems; and (B) explore measures to minimize harmful environmental factors on body systems.	Size of individual vs. amount of oxygen uptake	
(10) The student investigates structure and function of the human body. The student is expected to:	(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal, musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive;		

Unit: "Reproduction and Development"

Approximate Time Frame: 17 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(1) The student conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. The student is expected to:	(A) demonstrate safe practices during laboratory and field investigations; and (B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.	Male vs. Female	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW)
(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:	(F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures; (H) communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.		Lab: AIDS and Transmission Lab Cat Dissection Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities)
(10) The student investigates structure and function of the human body. The student is expected to:	(A) analyze the relationships between the anatomical structures and physiological functions of systems, including the integumentary, nervous, skeletal, musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine, and reproductive; (B) evaluate the cause and effect of disease, trauma, and congenital defects on the structure and function of cells, tissues, organs, and systems; (C) research technological advances and limitations in the treatment of system disorders;	Ovarian Cycle vs. Menstrual Cycle	Online Learning Center (OLC) (quizzes, website links, clinical applications, interactive activities, labeling activities) Student Pamphlet: STDs
11) The student	(A) explain embryological development of		Diagram of Embryonic

describes the process of reproduction and growth and development. The student is expected to:	tissues, organs, and systems; (B) identify the functions of the male and female reproductive systems; and (C) summarize the human growth and development cycle.		Development
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Unit: "Disease and Microbiology"

Approximate Time Frame: 18 days

TEKS	Student Expectations	Key Concepts	Resources and Activities
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:	(D) evaluate the impact of scientific research on society and the environment; (E) evaluate models according to their limitations in representing biological objects or events; and	Biotechnology career outlook	Cummings: Marieb's Essentials of Human Anatomy & Physiology 7 th Edition Marieb, Elaine N., anatomy and Physiology Coloring Workbook (CW) Lab: Microbiology and U
(6) The student examines the body processes that maintain homeostasis. The student is expected to:	(B) determine the consequences of the failure to maintain homeostasis	Pathology	Student Project: Diseases
(9) The student investigates environmental factors that affect the human body. The student is expected to:	(B) explore measures to minimize harmful environmental factors on body systems.	Prevention of Pathogens	
(10) The student investigates structure and function of the human body. The student is expected to:	(B) evaluate the cause and effect of disease, trauma, and congenital defects on the structure and function of cells, tissues, organs, and systems; (C) research technological advances and limitations in the treatment of system disorders; and	Identification of classes of bacteria Bacteria vs. Viruses	Lab: Microbiology and U
(12) The student recognizes emerging technological advances in science. The student is expected to:	(A) recognize advances in stem cell research such as cord blood utilization; and (B) Recognize advances in bioengineering and transplant technology.		Lab: Jobs of the Future