

Anatomy & Physiology — NGSS Alignment

Course: Human Anatomy & Physiology (Science-2-U), 2026–2027 | Textbook: Anatomy & Physiology 2e, OpenStax (ISBN 978-1-711494-06-7)

This document maps NGSS High School Life Science Performance Expectations to the units, weeks, and labs of the Human Anatomy & Physiology course, UC A-G approved as a Category D (Laboratory Science) course. Note: Unit and week references are drawn from the 2026–2027 syllabus. As this is a pilot-program course, specific labs may shift slightly during the year, but NGSS coverage by unit will remain consistent.

NGSS PE	Standard (Summary)	A&P Application	Syllabus Unit / Week	Lab/Activity
HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life.	Structural proteins (collagen, keratin in skin) and functional proteins (actin, myosin, hemoglobin) built from DNA instructions and expressed in tissue and muscle function.	Unit 2 (Wk 3–4): Chemical Essentials & Cell Differentiation; Unit 4 (Wk 9): Muscular System	Processes of Life Activity; Chicken Quarter Dissection
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	Modeling the progression from anatomical planes and cells to tissues, organs, and organ systems as an interacting whole.	Unit 1 (Wk 1–2): Life & The Human Body; Anatomical References & System Homeostasis	Gummy Bear Dissection Lab (anatomical orientation practice)
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	Investigating negative feedback loops in blood pressure regulation, hormone signaling, and cardiac/respiratory response to exertion.	Unit 1 (Wk 2): System Homeostasis; Unit 5 (Wk 13): Endocrine System; Unit 6 (Wk 18): Blood Vessels & Circulation	Signal & Response Activity; Blood Pressure Lab
HS-LS1-6	Construct and revise an explanation for how carbon, hydrogen, and oxygen from sugar molecules combine with other elements to form amino acids and other carbon-based molecules.	Digestive and metabolic breakdown of macronutrients into subunits used to build and maintain body structures.	Unit 7 (Wk 20–21): Digestion & Metabolism; Urinary System	Nutrition Activity; Digestive Enzyme Lab
HS-LS1-7	Use a model to illustrate that cellular respiration is a chemical process where bonds of food and oxygen molecules are broken and re-formed, resulting in a net transfer of energy.	Connecting oxygen delivery and glucose metabolism to ATP production that powers muscle contraction and training adaptation.	Unit 4 (Wk 10): Cellular Respiration & Training Adaptations; Unit 6 (Wk 19): Respiratory System	Aerobic vs. Anaerobic Mini-Experiment; Lung Capacity Lab
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	Cell differentiation into tissue types (epithelial, connective, muscle, nervous) and its role in bone growth, remodeling, and repair.	Unit 2 (Wk 3–4): Cell Differentiation; Tissues; Unit 3 (Wk 5–8): Skeletal System & Bone Composition	Tissue Microscopy Lab; Osteoporosis Case Studies
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.	How chromosomal and genetic instructions passed from parents shape inherited traits and fetal development.	Unit 9 (Wk 27): Epigenetics & Development — Development & Genetic Inheritance	Fetal Model Analysis; Video Discussion — Conception to Birth, Visualized
HS-LS3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from alterations in DNA sequence or environmental factors.	Evaluating how genetic mutation and environmental/epigenetic factors (stress, nutrition, exposure) alter physiological and developmental outcomes.	Unit 9 (Wk 27): Epigenetics & Development; Unit 8 (Wk 24): Acute & Chronic Neurological Injuries — Stress Response	Epigenetics & Development Discussion; Stress Response Analysis (Huberman)
HS-LS4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.	Comparative anatomy across dissection specimens (chicken, sheep heart, sheep brain) as empirical evidence of shared structural ancestry with humans.	Unit 4 (Wk 9): Muscular System; Unit 6 (Wk 17): The Heart & Cardiac Cycle; Unit 8 (Wk 22): The Nervous System	Chicken Quarter Dissection; Sheep Heart Dissection; Sheep Brain Dissection