

HUMAN ANATOMY AND PHYSIOLOGY NXG SCIENCE STANDARDS

HIGH SCHOOL

HUMAN ANATOMY AND PHYSIOLOGY CONTENT

S.HS.HAP.1	apply directional terminology to locate human body structures:				
	• proximal				
	• dorsal				
	• medial				
	• visceral				
	• superficial				
S.HS.HAP.2	describe the organizational levels, interdependency and the interaction of:				
	• cells				
	• tissues				
	• organs				
S.HS.HAP.3	describe the organizational levels, interdependency and the interaction of:				
	• organ systems.				
	categorize, by structure and function, the various types of human tissue:				
	• muscle				
S.HS.HAP.4	• epithelial				
	• connective				
	• nervous.				
	relate the structure of the integumentary system to its function as a/an:				
S.HS.HAP.5	• sensory organ				
	• environmental barrier				
	• temperature regulator.				
S.HS.HAP.6	relate how bone tissue is important to the development of the human skeleton.				
S.HS.HAP.7	correlate the structure and function of the elements of the skeletal system:				
	• bone				
	• articulations				
S.HS.HAP.8	• insertions.				
	model the mechanisms of muscular contraction on the cellular and molecular levels.				
S.HS.HAP.9	integrate the skeletal, muscular and nervous systems to the functioning of the organism.				
S.HS.HAP.10	model the muscular system including:				
	• locations				
	• origins				
	• insertions				
	• muscle groups				
S.HS.HAP.11	• types of muscles.				
	classify the various types of neurons emphasizing the relationship of structure and function.				
S.HS.HAP.12	model the mechanism of a nerve impulse at the cellular and molecular levels.				
S.HS.HAP.13	compare and contrast the parts and functions of the central and peripheral nervous system including the autonomic portions.				
S.HS.HAP.14	apply the structure of the ear and eye to their function/dysfunction in relation to environmental perception.				
S.HS.HAP.15	apply the action of specific enzymes to their roles in bodily functions.				
S.HS.HAP.16	incorporate the role of endocrine glands and their hormones into the overall functions and dysfunctions of the body.				

S.HS.HAP.16	analyze the role of components and processes of the digestive system in supplying essential nutrients.				
S.HS.HAP.17	explain how structures of the respiratory system are essential to cellular respiration, gas exchange and communication.				
S.HS.HAP.18	illustrate the structures of the circulatory and lymphatic systems and the function of blood to the role of:				
	• transportation				
	• cellular support				
S.HS.HAP.19	compare the compatibility of blood types and assess the molecular basis for blood functions.				
S.HS.HAP.20	integrate the functions of the excretory system to the maintenance of the other body systems.				
S.HS.HAP.21	compare and contrast the structure and function of male and female reproductive systems.				
S.HS.HAP.22	outline the events of reproduction for the formation of gametes through fertilizations and embryological development.				
S.HS.HAP.23	assess the role of components of the immune system in defending the body.				
S.HS.HAP.24	research disease causative factors, symptoms, prevention and treatment.				

HIGH SCHOOL

ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE

Topic	Engineering Design				
S.HS.ETS.1	analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.				
S.HS.ETS.2	design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.				
S.HS.ETS.3	evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.				
S.HS.ETS.4	use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.				

HIGH SCHOOL

SCIENCE LITERACY

Topic	Reading- Key Ideas and Details				
S.11-12.L.1	cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.				
S.11-12.L.2	determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.				
S.11-12.L.3	follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.				
Topic	Reading- Craft and Structure				
S.11-12.L.4	determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.				
S.11-12.L.5	analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.				
S.11-12.L.6	analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.				
Topic	Reading- Integration of Knowledge and Ideas				
S.11-12.L.7	integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.				
S.11-12.L.8	evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.				
S.11-12.L.9	synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.				
Topic	Reading- Range of Reading and Level of Text Complexity				

S.11-12.L.10	by the end of grade 12, read and comprehend science/technical texts in the grades 11–CCR text complexity band independently and proficiently.				
Topic	Writing- Text Types and Purposes				
S.11-12.L.11	write arguments focused on <i>discipline-specific content</i> :				
	introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons and evidence.				
	develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience’s knowledge level, concerns, values and possible biases.				
	use words, phrases and clauses, as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.				
	establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.				
	provide a concluding statement or section that follows from or supports the argument presented.				
S.11-12.L.12	write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes:				
	<ul style="list-style-type: none"> introduce a topic and organize complex ideas, concepts and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures and tables), and multimedia when useful to aid comprehension. 				
	<ul style="list-style-type: none"> develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic. 				
	<ul style="list-style-type: none"> use varied transitions and sentence structures to link the major sections of the text, create cohesion and clarify the relationships among complex ideas and concepts. 				
	<ul style="list-style-type: none"> use precise language, domain-specific vocabulary and techniques such as metaphor, simile and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. 				
	<ul style="list-style-type: none"> provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). 				
Topic	Writing- Production and Distribution of Writing				
S.11-12.L.13	produce clear and coherent writing in which the development, organization and style are appropriate to task, purpose and audience.				
S.11-12.L.14	develop and strengthen writing as needed by planning, revising, editing, rewriting or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.				
S.11-12.L.15	use technology, including the Internet, to produce, publish and update individual or shared writing products in response to ongoing feedback, including new arguments or information.				
Topic	Writing- Research to Build and Present Knowledge				
S.11-12.L.16	conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.				
S.11-12.L.17	gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.				
S.11-12.L.18	draw evidence from informational texts to support analysis, reflection and research.				
Topic	Writing- Range of Writing				
S.11-12.L.19	write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes and audiences.				