

Utah	Human Anatomy Standards	Fundamentals of Anatomy & Physiology 12e Page Reference
Standard HUMA.1.1	Develop and use models to demonstrate the orientation of anatomical structures and regions of the human body. Emphasize how size, orientation, and location within the human body supports the function of the anatomical structures.	Ch. 1.5-1.6 anatomical terminology, body regions, planes, and directional terms; p. 6 Spotlight Figure 1-2; p. 25 Chapter Review Questions
Standard HUMA.1.2	Obtain, evaluate, and communicate information about how the scale, proportion, and quantity of different body structures affects their functions within the human body. Emphasize the roles of cells, tissues, organs, and organ systems.	Ch. 1.3 Levels of organization progress from chemicals to a complete organism; Chs. 3-4 cells and tissues; organs and systems presented throughout text
Standard HUMA.2.1	Construct an explanation about the relationship between the structures of the integumentary system and their role in protection, eliminating waste products, and regulating body temperature.	Ch. 5 The Integumentary System
Standard HUMA.2.2	Develop and use models to relate the structure of the skeletal system to its functional role in movement, protection, and support.	Chs. 6-9 bones, skeletal system, joints and movement
Standard HUMA.2.3	Plan and carry out an investigation to determine the cause and effect relationship between structures of the muscular system and their role in movement and support.	Chs. 10-11 muscle tissue and muscular system, including a Clinical Case for each chapter
Standard HUMA.2.4	Engage in argument from evidence about how the integumentary, skeletal, and muscular systems make support, protection, and movement possible. Emphasize the homeostatic mechanisms, as well as the effects of and responses to nutrition, aging, diseases, and disorders.	Chs. 5-11 integumentary, skeletal and muscular systems. System summaries and interdependencies are highlighted in Build Your Knowledge features (pp. 176, 287, and 384) and sections 9.8 & 11.8.
Standard HUMA.3.1	Plan and carry out an investigation to determine how the structures of the nervous system support the function of information processing (detection, interpretation, and response) within the body.	Chs. 12-16 nervous system organization, signaling, sensory/motor pathways, and autonomic control

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Standard HUMA.3.2	Analyze and interpret data to explain how the hormones of the endocrine system regulate physical and chemical processes to maintain a stable internal environment, support general health, and promote growth and development throughout the lifespan. Emphasize both positive and negative feedback mechanisms. Examples of feedback mechanisms could be heart rate, blood sugar, childbirth, temperature, and growth.	Ch. 18 Endocrine System (includes <i>negative feedback</i> examples of thyroid hormones, blood calcium regulation, blood glucose regulation, ADH regulation, and cortisol regulation; <i>positive feedback</i> : oxytocin release during labor
Standard HUMA.3.3	Construct an explanation about how the cause and effect relationship of the endocrine and nervous systems makes information processing (detection, interpretation and response) possible. Emphasize homeostatic mechanisms and their effects and responses to nutrition, aging, diseases, and disorders.	Ch. 18.1 mechanisms of endocrine and nervous communication; p. 651 Spotlight Figure 18-20 General Adaptation Syndrome
Standard HUMA.4.1	Analyze and interpret data to identify patterns that explain how the cardiovascular and respiratory systems obtain oxygen, transport nutrients, and remove waste.	Chs. 19–21 blood and cardiovascular system; Ch. 23 respiratory system
Standard HUMA.4.2	Obtain, evaluate, and communicate information about the relationship between the structure and function of the digestive and urinary systems as they utilize matter to derive energy and eliminate waste.	Ch. 24 digestive system; Ch. 26 urinary system
Standard HUMA.4.3	Ask questions to construct an explanation about the interdependence of the cardiovascular, respiratory, urinary, and digestive systems. Emphasize homeostatic mechanisms, as well as the effects of and responses to nutrition, aging, diseases, and disorders.	Chs. 21, 23, 24, 26 (cardiovascular, respiratory, digestive, and urinary systems), especially Ch. 21 Build Your Knowledge cardiovascular integration, Ch. 23.12 respiratory system integration, Ch. 24.10 digestive system integration, and Ch. 26.9 urinary system integration

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Standard HUMA.4.4	Use mathematics and computational thinking to design a device which measures the exchange of matter and energy used by the cardiovascular, respiratory, digestive, and urinary systems to determine health of those systems and to prevent potential health issues. Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data to make improvements from iteratively testing solutions, and optimize a solution. Examples of measurements could include caloric input to the digestive system, respiratory gas output, respiratory rates, respiratory volumes, digestive rates, heat lost by urine output, blood pressure, and heart rate.	p. 779 (Ch. 21 Build Your Knowledge) integrates the cardiovascular system with other body systems; Ch. 20.4 heart rate and cardiac output; Ch. 23.7 respiratory rates and volumes; Ch. 24.8 nutrient absorption; Ch. 26.6 urine composition and regulation
Standard HUMA.5.1	Obtain, evaluate, and communicate information about how the structures of the male and female reproductive system provide a stable yet changing environment to allow for the production of egg and sperm, fertilization, implantation, and the development of human fetus. Emphasize the role of hormones in the male and female reproductive process.	Ch. 28 The Reproductive System
Standard HUMA.5.2	Develop and use models to describe the stability and change in the stages of human embryology and gestation, including fertilization and embryo and embryo and fetal development. Emphasize the embryological changes through the different stages of development.	29.1-29.1 fertilization; embryonic and fetal development
Standard HUMA.5.3	Ask questions about how the reproductive system uses matter and energy to make growth and development possible. Emphasize homeostatic mechanisms, as well as the effects of and responses to nutrition, aging, diseases, and disorders.	28.6-28.8 reproductive hormones, growth, metabolism, disorders and diseases; 29.6 maternal organ system changes during gestation