Oroville Union High School District

Science Curriculum

Science - Honors Anatomy and Physiology

Honors Anatomy and Physiology

COURSE TITLE: Honors Anatomy and Physiology

LENGTH OF COURSE: One Year

TYPE OF CREDIT: Science (10 credits)

GRADE LEVEL: 11-12

PREREQUISITE: Grade of "B" or better in College Prep Biology, "C" or better in Chemistry, or Instructor approval. Students must be concurrently enrolled or have completed Advanced Algebra.

TEXTBOOK:
Human Anatomy & Physiology, Fifth Edition, Benjamin Cummings, Prentice Hall, Needham, MA, 2001, ISBN # 0-13-032940-5

SUPPLEMENTARY INSTRUCTIONAL MATERIAL:
Human Anatomy & Physiology Laboratory Manual, Cat Version, Sixth Edition, Benjamin Cummings, Prentice Hall, Needham, MA, 2002, ISBN # 0-8053-4985-5

Human Anatomy & Physiology Study Guide, Fifth Edition, Benjamin Cummings, Prentice Hall, Needham, MA, 2002, ISBN # 0-8053-4974-X

COURSE DESCRIPTION:
This course is intended for college bound students who are interested in a medical or science related field. It will provide students with a foundation of knowledge regarding the structures and functions of the systems of the human body. Emphasis will be placed on laboratory laboratory and clinical case studies to illustrate anatomical and physiological concepts. A research and practical application component are included. NOTE: This course meets the CSU and U.C. "A-G" Subject" requirement.

BOARD ADOPTION DATE: JUNE 19, 2002

Organization of the Body

The human body has many levels of structural and functional organization ranging through the chemical, cellular, functional, organ, and organ system to the human organism.

Orientation of the Human Body

The learner will be able to name in order of increasing complexity the different levels of structural organization that make up the human body; explain their relationships; and ascribe correct anatomical terms to the regions, planes, divisions, and quadrants of the body. The learner will also be able to define homeostasis, explain its significance, describe how negative and positive feedback are involved, and describe the relationship between homeostatic imbalance and disease. The learner will be able to list and define the functional characteristics necessary to maintain life in humans .

Strand	Scope	Source
Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 1 (1-25) [Textbook].

Chemistry of the Body

The learner will be able to explain why chemical reactions in the body are often irreversible and describe factors that affect chemical reaction rates. The learner will also be able to explain the importance of water, salts, and pH to body homeostasis. The learner will be able to describe and compare the building blocks, general structures, and biological functions of the organic compounds in the body.

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 2 (26-63) [Textbook].

Cells

The learner will be able to describe the chemical composition of the plasma membrane and relate it to the membrane's functions, describe the importance of each organelle within the cell, list the phases of cell life, name and describe the composition of extracellular materials and discuss theories of cell differentiation and aging. The learner will be able to name and describe the composition and importance of extracellular materials.

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 3 (64-113) [Textbook].

Tissues

The learner will be able to list the several types of tissues, their origins and functions, and outline the process of tissue repair. The learner will be able to describe the types of connective tissue found in the body, and indicate their characteristic functions.

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 4 (114-147) [Textbook].

Covering, Support, and Movement of Body

The human body systems involved in covering, support and movement include the integumentary, skeletal (including joints), and muscular systems.

The Integumentary System

The learner will be able to name the tissues and list the major layers of the epidermis and dermis, describe the functions of each structure within the epidermis and dermis, explain why serious burns are life threatening, and briefly describe the changes that occur in the skin from birth to old age. The learner will be able to describe how changes in skin color may be used as clinical signs of certain disease states.

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 5 (148-171) [Textbook].

Bones, Skeletal Tissues, and Skeleton

The learner will be able to describe the functional properties of each of the three types of skeletal tissue, explain how cartilage grows, describe the five important functions of bones, describe the gross anatomy of a typical long bone and flat bone, compare and contrast the two types of bone formation, describe the steps of fracture repair, and describe homeostatic imbalances of bone. The learner will also be able to name the major parts of the axial and appendicular skeletons, describe their relative functions, and discuss how age-related skeletal changes may affect health. The learner will be able to describe how skeletal proportions change during childhood and adolescence .

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 6 (172-197) and Ch 7 (198-247) [Textbook].

Joints

The learner will be able to define, classify, and describe joints both structurally and functionally and give examples of each type of joint. The learner will also be able to name the most common joint injuries, compare and contrast common types of arthritis, and discuss factors that promote or disturb joint homeostasis. The learner will be able to describe the elbow, knee, hip, and shoulder joints in detail. .

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 8 (248-275)

[Textbook].

Muscles, Tissue, and Muscular System

The learner will be able to compare and contrast the basic types of muscle tissue, list four important functions of muscle tissue, describe the gross and microscopic structure of muscle, explain how muscle fibers are stimulated to contract, describe the embryonic development of muscle tissues and the changes that occur in skeletal muscles with age, and compare and contrast the affects of aerobic and resistance exercise on skeletal muscles and on other body systems. The learner will be able to list and describe factors that influence force, velocity, and duration of skeletal muscle contraction. The learner will also be able to name and identify specific muscles on both the human and cat anatomy, stating the origin, insertion and action of each muscle .

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 9 (276-321) and Ch 10 (322-385) [Textbook].

Regulations and Integration of the Body

The nervous system is the master controlling and communicating system of the body. It can be divided into two principal parts, the central nervous system and the peripheral nervous system that are then subdivided into sensory (afferent) and motor (efferent) divisions. The second great controlling system of the body is the endocrine system.

The Nervous System and Nervous Tissue

The learner will be able to list the basic functions of the nervous system, explain structural and functional divisions of the nervous system, list supporting cells and describe their functions, and classify neurons structurally and functionally. The learner will also be able to define resting membrane potential and describe its electrochemical basis. The learner will be able to define a synapse and describe how synaptic events are integrated and modified .

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 11 (387-427) [Textbook].

The Central Nervous System

The learner will be able to describe the process of brain development, name and identify the major regions of the adult brain, describe the structure and function of each major region of the brain, list and explain several techniques used to diagnose brain disorders, and describe several maternal factors that can impair development of the nervous system in an embryo.

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 12 (428-473) [Textbook].

The Peripheral Nervous System

The learner will be able to define the peripheral nervous system, list its components, and describe the developmental relationship between the segmented arrangement of peripheral nerves, skeletal muscles, and skin dermatomes. The learner will also be able to describe the process of nerve fiber regeneration.

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 13 (474-511) [Textbook].

The Autonomic Nervous System

The learner will be able to define the autonomic nervous system, explain its relationship to the peripheral nervous system as a whole, and describe some affects of aging on the autonomic nervous system. The learner will also be able to compare and contrast the general functions of the parasympathetic and sympathetic divisions of the autonomic nervous system.

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 14 (512-534) [Textbook].

Neural Integration

The learner will be able to list the three levels of sensory integration, describe the levels of motor control hierarchy, and indicate the major brain structures believed to be involved in memory. The learner will also be able to define the EEG and distinguish between alpha, beta, theta, and delta brain waves.

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 15 (533-557) [Textbook].

Special Senses

The learner will be able to describe the location, structure, and afferent pathways of taste and smell receptors, and explain how these receptors are activated. The learner will also be able to trace the pathway of light through the eye to the retina, and explain how light is focused for distant and close vision, compare and contrast the roles of rods and cones in vision, list the cause and consequences of astigmatism, cataract, glaucoma, hyperopia, myopia, and color blindness. The learner will be able to

describe the structure and general function of the outer, middle, and inner ears, explain how the semicircular canals help maintain dynamic and static equilibrium, and list possible causes of homeostatic imbalances of the inner ear.

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Special Senses	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 16 (558-607) [Textbook].

The Endocrine System

The learner will be able to indicate important differences between hormonal and neural controls of body functioning, describe how hormones are classified chemically, describe the structure and function of the major endocrine organs, and describe the effect of aging on the functioning of the endocrine system.

Strand	Scope	Source
Special Senses	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 17 (609-649) [Textbook].

Maintenance of the Body

Maintenance of the body is carried out through complex interactions of the cardiovascular, lymphatic, immune, respiratory, digestive, and urinary systems.

Blood and the cardiovascular System

The learner will be able to describe the composition and physical characteristics of blood, explain why it is classified as a connective tissue, and list six functions of blood. The learner will also be able to trace the pathway of blood through the heart, name the major branches of the coronary arteries, describe the events of cardiac muscle cell contraction, draw a diagram of a normal electrocardiogram tracing; name the individual waves and intervals, and indicate what each represents, name some abnormalities that can be detected on an ECG tracing. The learner will be able to compare and contrast the structure and function of the three types of arteries, veins, and a capillary bed; list and explain factors that influence blood pressure, define hypertension and describe its symptoms and consequences; provide examples of changes that often occur in blood vessels as a person ages and describe changes in the sites of blood production and type of hemoglobin produced after birth .

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 18 (650-680),Ch 19 (681-716),& Ch 20 (717-776). [Textbook].

The Lymphatic System

The learner will be able to describe the structure, distribution, and note the important functions of lymphatic vessels and outline its development.

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 21 (777-791) [Textbook].

The Immune System

The learner will be able to describe the surface membrane barriers and their protective functions. The learner will be able to describe the inflammatory process and list several inflammatory chemicals, name the body's antimicrobial substances, and explain how fever helps protect the body. The learner will also be able to define antigen and describe how antigens affect the immune system, give examples of immune deficiency diseases and of hypersensitivity states, cite factors involved in autoimmune disease, and briefly describe the role of the nervous system in regulating the immune response .

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 22 (792-783) [Textbook].

The Respiratory System

The learner will be able to identify the organs forming the respiratory passageways in descending order until the alveoli are reached, list and describe several protective mechanisms of the respiratory system, relate Boyle's law to the events of inspiration and expiration, and explain the functional importance of the partial vacuum that exists in the intrapleural space. The learner will also be able to compare the causes and consequences of chronic bronchitis, emphysema, asthma, and lung cancer .

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 23 (834-886) [Textbook].

The Digestive System

The learner will be able to describe the overall function of the digestive system, list and briefly define the major processes occurring during digestive activity, list the enzymes involved in chemical digestion and name the food on which they act, and describe important abnormalities of the gastrointestinal tract at different stages of life.

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 24 (887-947) [Textbook].

Nutrition, Metabolism, & Body Temp.

The learner will be able to list the six major nutrient categories, note important sources, and their main cellular uses. The learner will also be able to define metabolism and explain the difference between catabolism and anabolism; and note the importance of oxidation and reduction in metabolism. The learner will also be able to describe the effects of inadequate protein intake on the fetal nervous system. The learner will be able to describe how body temperature is regulated and the common mechanisms regulating heat production and retention. The learner will be able to list ways that commonly used medications may influence nutrition and health .

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 25 (948-1002) [Textbook].

The Urinary System

The learner will be able to describe the anatomy of a nephron and list several kidney functions that help maintain body homeostasis.

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 26 (1003-1039) [Textbook].

Fluid, Electrolyte, & Acid-Base Bala

The learner will be able to list routes by which water and electrolytes enter and leave the body, describe the importance of sodium in fluid and electrolyte balance in the body, and relate it to cardiovascular system functioning. The learner will also be able to list the three major chemical buffer systems of the body and how they operate to resist pH change. The learner will be able to explain why infants and the aged are at greater risk for fluid and electrolyte imbalances .

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 27 (1040-1069) [Textbook].

Continuity

The continuity of human life is dependent upon the integrity of the reproductive system from gamete formation, through fertilization, to the development of the fetus, and ultimately birth. The pattern of development of the individual is determined by the genes inherited from each parent during gamete formation.

The Reproduction System

The learner will be able to describe the common function of the male and female reproductive systems and describe the process of oogenesis and compare it to spermatogenosis, discuss the physiological effects of testosterone, estrogens, and progesterone.

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Anatomy and Physiology	Master	Oroville Union High School District

Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 28 (1070-1117) [Textbook].

Pregnancy and Human Development

The learner will be able to describe changes in maternal reproductive organs, cardiovascular, respiratory, and urinary system functioning during pregnancy, explain how labor is initiated, outline the events leading to the first breath of a newborn, and describe the changes that occur in fetal circulation after birth. The learner will also be able to define organogenesis, indicate the important roles of the three primary germ layers in the process, and describe the unique features of the fetal circulation.

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 29 (1118-1148) [Textbook].

Heredity

The learner will be able to define an allele, describe the events that lead to genetic variability of gametes, compare and contrast dominant-recessive inheritance with incomplete dominance and codominance, and describe the mechanisms of sex-linked and polygenic inheritance. The learner will also be able to explain how gene expression may be modified by environmental factors and list several techniques used to determine or predict genetic diseases.

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Instructional Resources

- Human Anatomy & Physiology Benjamin, Prentice Hall, Fifth Edition, 2001, Ch 30 (1149-1164) [Textbook].

Anatomy & Physiology Lab Activities

Lab activities are designed to enhance student understanding of the structure and function of the human body. They are interspersed with the appropriate topics covered during lecture. Cat dissection is included as a model for mammalian anatomy and comparisons drawn between cat and human anatomy and physiology.

The Human Body: An Orientation

The learner will be able to describe the anatomical position verbally or by

demonstration. Use proper anatomical terminology to describe body directions, planes, and surfaces. Name the body cavities and indicate the important organs in each.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 1 (1-9). [Laboratory Manual].

Organ System Overview

The learner will be able to name the human organ systems and indicate the major functions of each. List two or three organs of each system, and categorize the systems organs by organ system. Identify these organs in a dissected rat or human cadaver or on a dissectible human torso model. Identify the correct system for each organ when presented with a list of organs.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 2 (10-20). [Laboratory Manual].

The Microscope

The learner will be able to identify the parts of the microscope and list the functions of each. Describe and demonstrate the proper techniques for care of the microscope. Identify total magnification and resolution. Demonstrate proper focusing technique. Define parfocal, field, and depth of field. Estimate the size of objects in a field.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 3 (21-29). [Laboratory Manual].

The Cell---Anatomy and Division

The learner will be able to define cell, organelle, and inclusion. Identify on a cell model or diagram the following cellular regions and to list the major functions of each: nucleus, cytoplasm, and plasma membrane. Identify and list the major functions of the various organelles studied. Compare and contrast specialized cells with the concept of the "generalized cell." Define interpahse, mitosis, and cytokinesis. List the stages of mitosis and describe the events of each stage. Identify the mitotic phases on slides or appropriate diagrams. Explain the importance of mitotic cell division and its product.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 4 (30-39). [Laboratory Manual].

The Cell-Transport and Cell Permeability

The learner will be able to define differential permeability; diffusion (simple diffusion and osmosis); isotonic, hypotonic, and hypertonic solutions; passive processes of active transport; bulk-phase endocytosis; phagocytosis; and solute pump action. Describe the processes that accounts for the movement of substances across the plasma membrane and to indicate the driving force for each. Determine which way substances will move passively trough a differentially permeable membrane (given appropriate information on concentration differences).

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 5A (40-48). [Laboratory Manual].

Classification of Tissues

The learner will be able to name the four major types of tissues in the human body and the major subcategories of each. Identify the tissue subcategories through microscopic inspection or inspection of an appropriate diagram or projected slide. State the location of the various tissue types in the body. List the general functions and structural characteristics of each of the four major tissue types.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 6A (49-67). [Laboratory Manual].

The Integumentary System

The learner will be able to recount several important functions of skin, or integumentary system. Recognize and name during observation of appropriate model, diagram, projected slide, or microscopic specimen the following skin structures: epidermis (and indicate relative positioning of its strata), dermis (papillary and reticular layers), hair follicles and hair, sebaceous glands, and sweat glands. Name the layers of the epidermis and describe the characteristics of each. Compare the properties of the epidermis to those of the dermis. Describe the distribution and function of the kin derivatives--sebaceous glands, sweat glands, and hairs. Differentiate between eccrine and apocrine sweat glands. Enumerate the factors determining skin color. Describe the function of melanin. Identify the major regions of nails.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 7 (68-76). [Laboratory Manual].

Classification of Body Membranes

The learner will be able to compare the structure and function of the major membrane types. List the general functions of each membrane type and indicate its location in the body. Recognize by microscopic examination cutaneous, mucous, and serous membranes.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 8 (77-79). [Laboratory Manual].

Bones and Cartilages

The learner will be able to list five functions of the skeletal system. Identify the four main kinds of bones. Identify surface bone markings and functions. Identify the major anatomical areas on a longitudinally cut long bone (or diagram of one). Identify the major regions and structures of an osteon in a histologic specimen of compact bone (or diagram of one). Explain the role of the inorganic salts and organic matrix in providing flexibility and hardness to bone. Locate and identify the three major type of skeletal cartilages.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 9 (81-89). [Laboratory Manual].

The Axial Skeleton

The learner will be able to identify the three bone groups composing the axial skeleton. Identify the bones composing the axial skeleton, either by examining isolated bones or by pointing them out on an articulated skeleton or a skull, and name the important bone markings on each. Distinguish the different types of vertebrae. Discuss the importance of intervertebral discs and spinal curvatures. Distinguish three abnormal spinal curvatures.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 10 (90-104). [Laboratory Manual].

The Appendicular Skeleton

The learner will be able to identify on an articulated skeleton the bones of the pectoral and pelvic girdles and their attached limbs. Arrange unmarked, disarticulated bones in proper relative position to form the entire skeleton. Differentiate between a male and a female pelvis. Discuss the common features of the human appendicular girdles (pectoral and pelvic), and to note how their structure relates to their specialized functions. Identify specific bone markings in the appendicular skeleton.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 11 (105-116). [Laboratory Manual].

The Fetal Skeleton

The learner will be able to define fontanel and discuss the function and fate of fontanels in the fetus. Demonstrate important differences between the fetal and adult skeletons.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 12 (117-118). [Laboratory Manual].

Articulations and Movements

The learner will be able to name and describe the three functional categories of joints. Name and describe the three structural categories of joints, and to compare their structure and mobility. Identify the types of synovial joints. Define origin and insertion of muscles. Demonstrate or identify the demonstrate body movements.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 13 (119-130). [Laboratory Manual].

Skeletal Muscle

The learner will be able to describe the structure of skeletal muscle from gross to microscopic levels. Define and explain the role of the following: actin, myosin, fiber, myofibril, myofilament, perimysium, aponeurosis, tendon, endomysium, and epimysium. Describe the structure of a neuromuscular junction and to explain its role in muscle function. Define agonist (prime mover), antagonist, synergist, fixator, origin, and insertion. Cite criteria used in naming skeletal muscles.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 14 (131-136). [Laboratory Manual].

Muscular System

The learner will be able to name and locate the major name of the human body (on a torso model, a human cadaver, lab chart, or diagram) and state the action of each. Name how muscle actions are related to their location. Name muscle origins and insertions as required by the instructor. Identify antagonists of the major prime movers.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 15 (137-164). [Laboratory Manual].

Skeletal Muscle Physiology - Frog

The learner will be able to observe muscle contraction on the microscopic level and describe the role of ATP and various ions in muscle contraction. Define and explain the physiological basis of the following: depolarization, repolarization, action potential, absolute and relative refractory periods, subthreshold stimulus, threshold stimulus, maximal stimulus, treppe, wave summation, tetanus, and muscle fatigue. Trace the events that results from the electrical stimulation of a muscle. Recognize that a graded response of skeletal muscle is a function of the number of muscle fibers stimulated and the frequency of the stimulus. Name and describe the phases of a muscle twitch. Distinguish between a muscle twitch and a sustained (tetanic) contraction and to describe their importance in normal muscle activity. Demonstrate how a computer or physiograph can be used to obtain pertinent and representative recordings of various physiological events of skeletal muscle activity. Explain the significance of muscle tracings obtained during experimentation.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 16A (165-176). [Laboratory Manual].

Histology of Nervous Tissue

The learner will be able to differentiate between the functions of neurons and neuroglia. List four type of neuroglia cells. Identify the important anatomical characteristics of a neuron on an appropriate diagram or projected slide. State the functions of axons, dendrites, axonal terminals, neurofibrils, and myelin sheaths. Explain how a nerve impulse is transmitted from one neuron to another. Explain the role of Schwann cells in the formation of the myelin sheath. Classify neurons according to structure and function. Distinguish between a nerve and a tract and between a ganglion and a nucleus. Describe the structure of a nerve, structure the connective tissue coverings (endoneurium, perineurium, and epinerurium) and citing their functions.

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Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 17 (177-184). [Laboratory Manual].

Neurophysiology of Nerve Impulses

The learner will be able to list the two major physiological properties of neurons. Describe the polarized and depolarized states of the nerve cell membrane and to describe the events that lead to generation and conduction of nerve impulse. Explain how a nerve impulse is transmitted from one neuron to another. Define action

potential, depolarization, repolarization, relative refactory period, and absolute refractory period. List various substances and factors that can stimulate neurons. Recognize that neurotransmitters may be either stimulatory or inhibitory in nature. State the site of action of the blocking agents ether and curare.

Strand	Scope	Source
Anatomy and Physiology	Master	Oroville Union High School District(a)

Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 18A (185-191). [Laboratory Manual].

Brain and Cranial Nerves

The learner will be able to identify the following brain structures on a structures specimen, human brain model (or slices), or appropriate diagram, and to state their function: Cerebral function structures, Diencephalon structures, Brain stem structures, and Cerebellum structures. Describe the composition of gray and white matter. Locate the well-recognized structures areas of the human cerebral hemispheres. Define gyri and fissures (sulci). To identify the three meningeal layers and state their function, and to locate the falx cerebri, falx cerebelli, and tentorium cerebelli. State the function of the rachnoid villi and dural sinuses. Discuss the formation, circulation, and drainage of cerebrospinal fluid. Identify at least four pertinent anatomical differences between the human brain and that of sheep (or other mammal). Identify the cranial nerves by number and name on an appropriate model or diagram, stating the origin and function of each.

Strand	Scope	Source
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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 19 (192-210). [Laboratory Manual].

Electroencephalograph

The learner will be able to define electroencephalogram and to discuss its clinical significance. Describe or recognize typical tracings of the most common brain wave patterns (alpha, beta, theta, and delta waves) and to indicate the conditions under which each is most likely to be predominant. State the source of brain waves. Define alpha block. Monitor electroencephalography and recognize alpha rhythm. Describe the effect of a sudden sound, mental concentration, and alkalosis on brain wave patterns.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 20 (211-213). [Laboratory Manual].

Spinal Cord and Spinal Nerves

The learner will be able to identify important anatomical areas on a spinal cord or appropriate diagram of the spinal cord, and model or appropriate diagram of the

spinal cord, and to indicate the neuron type found in these areas (where applicable). Indicate two major areas where the spinal cord is enlarged, and to explain the reasons for this anatomical characteristics. Define conus medullaris, cauda equina, and filum terminale. Locate on a diagram the fiber tracts in the spinal cord and to state their functional importance. List two major functions of the spinal cord. Name the meningeal coverings of the spinal cord and to state their function. Describe the origin, fiber composition, and distribution of the spinal nerves, differentiating between roots, the spinal nerve proper, and rami, and to discuss the results of transecting these structures. Discuss the distribution of the dorsal rami and ventral rami of the spinal nerves. Identify the four major nerve plexuses, the major nerves of each, and their distribution.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 21 (214-225). [Laboratory Manual].

Human Reflex Physiology

The learner will be able to define reflex and reflex arc. To name, identify, and describe the function of each element of a reflex arc. Indicate why reflex testing is an important part of every physical examination. Describe and discuss several types of reflex activities as observed in the laboratory; to indicate the functional or clinical importance of each; and to categorize each as somatic or autonomic reflex action. Explain why cord-mediated reflexes are generally much faster than those involving input from the higher brain explain. Investigate differences in reaction time of reflexes and learned responses.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 22 (226-234). [Laboratory Manual].

General Sensation

The learner will be able to recognize various types of general sensory receptors as studied in the laboratory, and to describe the function and location of each type. Define exteroceptor, interoceptor, and proprioceptor. Demonstrate and relate differences in relative density and distribution of tactile and thermoreceptors in the skin. Define tactile localization and describe how this ability varies in different areas of the body. Explain the tactile two-point discrimination test, and to state its anatomical basis. Define referred pain. Define adaptation, negative afterimage, and projection.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 23 (235-241). [Laboratory Manual].

Special Senses: Vision

The learner will be able to describe the structure and function of the accessory visual structures. Identify the structural components of the eye when provided with a model, an appropriate diagram, or a preserved sheep or cow eye, and list the function(s) of each. Describe the cellular makeup of the retina. To Discuss the mechanism of image formation on the retina. Trace the visual pathway to the visual cortex and indicate the effects of damage to various parts of this pathway. Define the following terms: refraction, accommodation, convergence, astigmatism, emmetropia, myopia, hyperopia, ataract, glaucoma, and conjunctivitis. Discuss the importance of the pupillary and convergence reflexes. Explain the difference explain rods and cones with respect to visual perception and retinal localization. State the importance of an ophthalmoscopic examination.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 24 (242-255). [Laboratory Manual].

Special Senses: Hearing and Equilibrium

The learner will be able to identify, by appropriately labeling a diagram, the anatomical structures of the outer, middle, and inner ear, and to explain their function. Describe the anatomy of the organ of hearing (organ of Corti in he cochlea) and explain its function in sound receptors. Describe the anatomy of the equilibrium organs of the inner ear (cristae ampullares and maculae), and to explain their relative function in maintaining equilibrium. Define or explain central deafness, conduction deafness, and nystagmus. State the purpose of the Weber, Rinne, balance, Barany, and Romberg test. Explain how one is able to localize the source of sound. Describe the effects of acceleration on the semicircular canals. Explain the role of vision in maintaining equilibrium.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 25 (256-265). [Laboratory Manual].

Special Senses: Olfaction and Taste

The learner will be able to describe the location and cellular composition of the olfactory epithelium. Describe the structure and function of the taste receptors. Name the four basic qualities of taste sensation and list the chemical substances that elicit them. Point out on a diagram of the tongue the predominant location of the basic types of taste receptors (salty, sweet, sour, bitter). Explain the explain between the sense of smell and taste. Name two factors other than olfaction that influences taste appreciation of foods. Define olfactory adaptation.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 26 (266-271). [Laboratory Manual].

Endocrine Glands

The learner will be able to identify and name the major endocrine glands and tissues of the body when provided with an appropriate diagram. List the hormones produced by the endocrine glands and discuss the general function of each. Indicate the means by which hormones contribute to body homeostasis by giving appropriate examples of hormonal actions. Cite the mechanism by which the endocrine glands are stimulated to release their hormones. Describe the structural and functional relationship between the hypothalamus and the pituitary. Describe a major pathological consequence of hypersecretion and hyposecretion of several of the hormones considered. Correctly identify the histologic structure of the anterior and posterior pituitary, thyroid, parathyroid, adrenal cortex and medulla, pancreas, testis, and ovary by microscopic inspection or when presented with an appropriate photomicrograph or diagram. (Optional) Name and point out the specialized hormone-secreting cells in the above tissues as studied in the laboratory.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 27 (272-278). [Laboratory Manual].

Experiments on Hormonal Action

The learner will be able to describe and explain the effect of pituitary hormones on the ovary. Describe and explain the effects of hyperinsulinism. Describe and explain the effect of epinephrine on the heart. Understand the physiological (and clinical) importance of metabolic rate measurement. Investigate the effect of hypo-, hyper-, and euthyroid conditions on oxygen consumption and metabolic rate. Assemble the necessary apparatus and properly use a manometer to obtain experimental results. Calculate metabolic rate in terms of ml 02/kg/hr. .

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 28A (279-284). [Laboratory Manual].

Blood

The learner will be able to name the two major components of blood and state their average percentages in define whole blood. Describe the composition and functional importance of plasma. Define formed elements and list the cell types composing them, cite their relative percentages, and describe their major functions. Identify red blood cells, basophils, eosinophils, monocytes, lymphocytes, and neutrophils when provided with a microscopic preparation or appropriate diagram. Provide the normal values for a total white blood cell count and a total red blood cell count and to state the

importance of these tests. Conduct the following blood test determinations in the laboratory, and to state their norms, and the importance of each o the following: hematocrit , hemoglobin determination, clotting time, sedimentation rate, differential white blood cell count ABO and Rh blood typing plasma cholesterol concentration. Discuss the reason for transfusion reactions resulting from the administration of mismatched blood. Define anemia, polycythemia, leukopenia, leukocytosis, and leukemia and to cite a possible reason for each condition .

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 29 (285-299). [Laboratory Manual].

Anatomy of the Heart

The learner will be able to describe the location of the heart. Name and locate the major anatomical areas and structures of the heart when provided with an appropriate model, diagram, or dissected sheep heart, and to explain the function of each. Trace the pathway of blood through the heart. Explain why the heart is called a double pump, and to compare the pulmonary and systematic circuits. Explain the operation of the atroventricular and semilunar valves. Name and follow the functional blood supply of the heart. Describe the histlogic structure of cardiac muscle, and to note the importance of its intercalated discs and the spiral arrangement of its fibers in the heart.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 30 (300-309). [Laboratory Manual].

Conduction System & Electrocardiogra

The learner will be able to list and localize the elements of the intrinsic conduction, or nodal, system of the heart; and to describe how impulses are initiated and conducted through this system and the myocardium. Interpret the ECG in terms of depolarization and repolarization events occurring in the myocardium; and to identify the P, QRS, and T waves on an ECG recording using an ECG recorder or Powerlab@. Calculate the heart rate, QRS interval, P-R interval, and Q-T interval from an ECG obtained during the laboratory period. Define tachycardia, bradycardia, and fibrillation.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 31 (310-316). [Laboratory Manual].

Anatomy of Blood Vessels

The learner will be able to describe the tunics of blood vessel walls and state the function of each layer. Correlate differences in artery, vein, and capillary structure

with the functions of these vessels. Recognize a cross-sectional view of an artery and vein when provided with a microscopic view or appropriate diagram. List and/or identify the major arteries arising from the aorta, and to indicate the body region supplied by each. List and/or identify the major vein draining into the superior and inferior venae cavae, and to indicate the body regions drained. Point out and/or discuss the unique features of special circulations (hepatic portal system, circle of Willis, pulmonary circulation, fetal circulation) in the body.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 32 (317-332). [Laboratory Manual].

Human Cardiovascular Physiology

The learner will be able to define systole, diastole, and cardiac cycle. Indicate the normal length of the cardiac cycle, the relative pressure changes occurring within the atria and ventricles during the cycle, and the timing of valve closure. Use the stethoscope to ausculate heart sounds and to relate heart sounds to cardiac cycle events. Describe the clinical significance of heart sounds and heart murmurs. Demonstrate the thoracic locations where the first and second heart sounds are most accurately auscultated. Define pulse, pulse deficit, blood pressure, and sounds of Korotkoff. To accurately determine a subject's apical and radial pulse. Accurately determine a subject's blood pressure with a sphygmomanometer, and to relate systolic and diastolic pressures to events of the cardiac cycle. Investigate the effects of exercise on blood pressure, pulse, and cardiovascular fitness. Note factors affecting and/or determining blood flow and skin color.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 33A (333-346). [Laboratory Manual].

Frog Cardiovascular Physiology

The learner will be able to list the properties of cardiac muscle as automaticity and rythmicity and define each. Explain the statement "Cardiac muscle has an intrinsic ability to beat." Compare the intrinisic rate of contraction of the "pacemaker" of the frog heart (sinus venosus) to that of the atria and ventricle. Compare the relative length of the refractory period of cardiac muscle with that of skeletal muscle, and explain why it is not possible to tetanize cardiac muscle. Define extrasystole and to explain at what point in the cardiac cycle (and on an ECG tracing) an extrasystole can be induced. Describe the effect of the following on heart rate: cold, heat, vagal stimulation, pilocarpine, digitalis, atropine sulfate, epinephrine, and potassium, sodium, and calcium ions. Define vagal pacemaker. To define ectopic pacemaker. Define partial and total heart block. Describe how heart block was induced in the laboratory and explain the results, and to explain how heart block might occur in the body. List the components of the microcirculatory system. Identify an arteriole, venule,

and capillaries in a frog's web, and to cite differences between relative size, rate of blood flow, and regulation of blood flow in these vessels. Describe the effect of heat, cold, local irritation, and histamine on the rate of blood flow in circulation, and to explain how these responses help maintain homeostasis.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 34A (347-356). [Laboratory Manual].

Lymphatic System and Immune Response

The learner will be able to name the components of the lymphatic system. Relate the function of the lymphatic system to that of the blood vascular system. Describe the formation and composition of lymph, and to describe how it is transported through the lymphatic vessels. Relate immunological memory, specificity, and differentiation of self from nonself to immune function. Differentiate between the roles of B cells and T cells in the immune cells. Describe the structure and function of lymph nodes, and to indicate the localization of T cells, B cells, and macrophages in a typical lymph node. Describe (or draw) the structure of the immunoglobulin monomer, and to name the five immunoglobulin subclasses. Differentiate between antigen and antibody. Understand he use of antigen-antibody reaction using the Ouchterlony test.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 35 (357-364). [Laboratory Manual].

Anatomy of the Respiratory System

The learner will be able to define the following terms: respiratory system, pulmonary ventilation, external respiration, and internal respiration. Label the major respiratory system structures on a diagram (or identify them on a model) and to describe the function of each. Recognize the histologic structure of the trachea (cross section) and lung tissue on prepared slides, and describe the functions the observed structural modifications serve.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 36 (365-372). [Laboratory Manual].

Respiratory System

The learner will be able to define the following (and be prepared to provide volume figures if applicable): inspiration, expiration, tidal volume, vital capacity, expiratory reserve volume, inspiratory reserve volume, and minute respiratory volume. Explain the role of muscles and volume changes in the mechanical process of breathing. Demonstrate proper usage of the spirometer. Explain the relative importance of

various mechanical and chemical factors in producing respiratory variations. Describe bronchial and vesicular breathing sounds. Explain the importance of the carbonic acid-bicarbonate buffer system in maintaining blood pH.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 37A (373-387). [Laboratory Manual].

Anatomy of the Digestive System

The learner will be able to state the overall function of the digestive system. Identify on an appropriate diagram or torso model the organs comprising the alimentary canal; and to name their subdivisions if any. Name and/or identify the accessory digestive organs. Digestive the general functions of the digestive system organs or structures. Describe the general histologic structure of the wall of the alimentary canal and/or label a cross-sectional diagram of the wall with the following terms: mucosa, submucosa, muscularis externa, and serosa or adventitia. List and explain the specialization of anatomical structure of the stomach and small intestine that contribute to their functional roles. List the major enzyme or enzyme groups produced by each of the following organs: salivary glands, stomach, small intestine, and pancreas. Name human deciduous and permanent teeth and describe the anatomy of the generalized tooth. Recognize by microscopic inspection, or by viewing an appropriate diagram or photomicrograph, the histologic structure of the following organs: small intestine salivary glands, pancreas, tooth, stomach, and liver.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 38 (388-404). [Laboratory Manual].

Chemical/Physical Processes of Digestion

The learner will be able to list the digestive system enzymes involve in the digestion of proteins, fats, and carbohydrates; to state their site of origin; and to summarize the environmental conditions prompting their optimal functioning. Recognize the variation between different types of site assays. Name the end products of protein, fat, and carbohydrate digestion. Preform the appropriate chemical tests to determine if digestion of a particular foodstuff has occurred. Cite the function(s) of bile in the digestive process. Discuss the possible role of temperature and pH in the regulation of enzyme activity. Define enzyme, catalyst, control, substrate, and hydrolase. Explain why swallowing is both a voluntary and a reflex activity. Discuss the role of the tongue, larynx, and gastroesophageal sphincter in swallowing. Compare and contrast segmentation and peristalsis as mechanisms of propulsion.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002,

Exercise 39A (405-412). [Laboratory Manual].

Anatomy of the Urinary System

The learner will be able to describe the function o the urinary system. Identify, on an appropriate diagram or torso model, the urinary system organs and to describe the general function of each. Compare the course and length of the urethra in males and females. Identify these regions of the dissected kidney (longitudinal section): hilus, cortex, medulla, medullary pyramids, major and minor calyces, pelvis, renal columns, and renal and adipose capsules. Trace the blood supply of the kidney from the renal artery to the renal vein. Define the nephron as the physiological unit of the kidney and to describe its anatomy. Define glomerular filtration, tubular reabsorption, and tubular secretion, and to indicate the nephron areas involved in these processes. Define micturition, and to explain pertinent differences in the control of the two bladder sphincters (internal and external). Recognize microscopic or diagrammatic views of the histologic structure of the kidney and bladder.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 40 (413-420). [Laboratory Manual].

Urinalysis

The learner will be able to list the physical characteristics of urine, and to indicate the normal pH and specific gravity ranges. List substances that are normal urinary constituents. Conduct various urinalysis tests and procedures and use them to determine the substances present in the urine specimen. Define the following urinary conditions: albuminuria, calculi, casts, glycosuria, hematuria, hemoglobinuria, ketonuria, and pyuria. Explain the implications and possible causes of conditions listed in Objective 4.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 41A (421-427). [Laboratory Manual].

Anatomy of the Reproductive System

The learner will be able to discuss the general function of the reproductive system. Identify and name the structures of the male and female reproductive systems when provided with an appropriate model or diagram, and to appropriate the general function of each. Define semen, general its composition, and name the organs involved in its production. Trace the pathway followed by a sperm from its site of formation to the external environment. Name the exocrine and endocrine products of testes and ovaries, indicating the cell types or structures responsible for the production of each. Identify homologous structures of the male and female systems. Discuss the microscopic structure of the penis, epididymis, uterine tube, and uterus, and to relate structure to function. Define ejaculation, erection, and gonad. Discuss the function of

the fimbriae and ciliated epithelium of the uterine (fallopian) tube. To identify the fundus, boy, and cervical regions of the uterus. Define endometrium, myometrium, and ovulation.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 42 (428-435). [Laboratory Manual].

Gametogenesis and the Female Cycles

The learner will be able to define meiosis, gametogenesis, oogenesis, spermatogenesis, spermiogenesis, synapsis, haploid, diploid, and menses. Relate the stages of spermatogenesis to the cross-sectional structure of the seminiferous tubule. Discuss the microscopic structure of the ovary and to be prepared to identify primary, secondary, and vesicular follicles and the corpus luteum, and to state the hormonal products of the last two structures. Relate the stages of oogenesis to follicle development in the ovary. Cite similarities and differences between mitosis and meiosis, and between spermatogenesis and oogenesis. Describe sperm anatomy and relate it to function. Discuss the phases and control of the menstrual cycle. Discuss the effect of FSH and LH on the ovary and to describe the feedback relationship between anterior pituitary gonadotropins and ovarian hormones. Describe the effect of FSH and LH (ICSH) on testicular function.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 43 (436-444). [Laboratory Manual].

Survey of Embryonic Development

The learner will be able to define fertilization and zygote. Define and discuss the functions of fertilization and gastrulation. Name the three primary germ layers and discuss the importance of each. Identify the following structures of a human chorionic vesicles when provided with an appropriate diagram, and to state the function of each of the following: inner cell mass amnion, yolk sac, trophoblast, allantois, chorionic villi. Describe the process and timing of implantation in the human. Define decidua basalis and decidua capsularis. State the germ-layer origin of several body organs and organ systems of the human. Describe developmental direction. Describe the gross anatomy and general function of the human placenta.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 44 (445-459). [Laboratory Manual].

Principles of Heredity

The learner will be able to define allele, dominance, genotype, heterozygous,

homozygous, incomplete dominance, phenotype, and recessiveness. Gain practice working out simple genetic problems, using a Punnett square. Become familiar with basic laws of probability. Observe selected human phenotypes and determine their genotype basis. Separate variants of hemoglobin using agarose gel electrophoresis.

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- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 45 (450-459). [Laboratory Manual].

Surface Anatomy Roundup

The learner will be able to define surface anatomy, and explain why it is an important field of study. Define palpation. Describe and palpate the major surface Describe of he cranium, face, and neck. Describe the easily palpated bony and muscular landmarks of the back. Locate the Describe spines of he living body. List the bony surface landmarks of the thoracic cage, and explain how they relate to the major soft organs of the thorax. Explain how to find the second to eleventh ribs. Name and palpate the important surface features on the anterior important wall, and explain how to palpate full bladder. Define and palpate the palpate: linea alba, umbilical hernia, examination for an inguinal hernia, linea semilunaris, and McBurney's point. Locate and palpate the mainsurface features of the upper limb. Explain the significance of the antecubital fossa, pulse points in the distal forearm, and the anatomical snuff box. Describe and palpate the surface landmarks of the lower limb. Explain exactly where to administer an injection in the gluteal region and in the other major sites of intramuscular injections.

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Instructional Resources

- Human Anatomy & Physiology Laboratory Manual - Cat Version, Benjamin Cummings, 2002, Exercise 46 (460-477). [Laboratory Manual].

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