LOS MEDANOS COLLEGE

ARTICULATION AGREEMENT **DATE DRAFTED**: April 2024

VALID ACADEMIC YEARS: FA24-SP26

LMC COURSE: BIOSC-030 Introduction to Anatomy and Physiology
HIGH SCHOOL COURSE: Anatomy & Physiology
TEACHER: Don Sanders, Shaun Martins
School: Heritage High School
Address: 101 American Ave., Brentwood, CA 94513

A. **COLLEGE COURSE DESCRIPTION:** This course is designed to cover basic anatomy and physiology. Fundamentals of body structure and function and the elegant interrelationships between body organs and how they perform will be explored. All of the systems of the body, including very basic microscopic anatomy and simple physiological chemistry will be covered in this one semester course.
B. **UNITS: 4**
C. **PRE-REQUISITES: NA**
D. **HIGH SCHOOL CLASS DESCRIPTION:** HHS Anatomy and Physiology is a lab-based course dedicated to the study of human body systems. Students will through lecture, experimentation, projects, and inquiry, develop an understanding of the structures and functions of human organ systems. Students will learn gross and microscopic anatomy which will lead to understanding the relationships between the anatomy and the physiology of the human body. Course lessons will be based on four SLO'S

E. **REQUIRED CONTENT FOR ARTICULATION:**

1. Introduction to Anatomy and Physiology

a. Organization of hierarchy of the body
b. Cellular structure and function
c. Inductive and Deductive method of study, Experimental Design, Peer Review
d. Anatomical Positions and Planes,
e. Anatomical Terminology for directional terms, body cavities and regions.
f. Homeostasis and feedback regulation
g. Metabolism, basal metabolic rate, catabolic and anabolic reactions in the body
h. Membrane Transport concepts, Osmosis and Diffusion
i. Protein structure and Enzyme
j. Macromolecules (Carbohydrates, Lipids, Proteins, Nucleic Acids)

Activities/Labs: What is the Scientific Method, Homeostasis balance of the body, Anatomical Terminology and Identification, Fats lipids carbohydrates does a body good, Show Not tell Histology slides, PhysioEx #1(Pearson)

2. Integumentary System

a. Skin functions and organization of skin layers
b. Functions of Glands, Hair, Nails
c. Melanin protection, UV radiation and types of Skin Cancer

Activities/Labs: Integumentary system structure identification

3. Skeletal System

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a. Functions of skeletal system
b. Tissues of bone
c. Types of bones
d. Anatomical Features of Bones
e. Articulations and identifying common movements
f. Physiology of bone

Activities/Labs: Bone tissue identification, Name that bone in…,

4. Muscular System

a. Functions of muscular systems
b. Anatomy of Muscles (origins and insertions)
c. Sliding Filament theory of Muscle Contraction, Coupling and the Size principle
d. Muscle physiology during stress
e. Naming major muscles and their actions

Activities/labs: PhysioEx #2(Pearson), Muscle Quizlet, Cat dissection analogous muscle identification

5. Nervous System

a. Functions of the nervous system
b. Nervous Tissue Organization, CNS, PNS, and Autonomic Systems
c. Anatomy of Nervous Tissue and types of neurons
d. Synaptic Action of Nerves
e. Transmission of nerve impulse
f. Brain Structure, identification, and description of functions

Special Senses

a. Define sensation and perception and describe differences
b. Sense of Touch and General Senses
c. Chemical Senses of Taste and Smell
d. Hearing and Vision (identification of structures)
e. What is reflex arch and what role does it play in homeostasis

Activities/labs: PhysioEx #3(Pearson), Sheep brain dissection, catch those dollars reflex lab, Find the blind spot lab, Taste test Lab

6. Endocrine System

a. Describe how hormones cause effects in the body
b. How endocrine glands are simulated to release their hormonal products
c. How hormones are used to maintain homeostasis
d. Functions of hormones and what gland produces them

Activities/labs: PhysioEx #4(Pearson),

7. Circulatory System

a. Function to the circulatory system
b. Gross Anatomy of the Heart
c. Anatomy and Physiology of the Major Veins and Arteries
d. Capillary Exchange
e. Blood Pressure and its Control
f. Cardiac Conduction System and Cardiac Muscle
g. Cardiac Cycle, Cardiac Output
h. Electrocardiogram (ECG/EKG)
i. Types of blood cells and their functions
j. Blood types and blood clotting

Activities/labs: PhysioEx #5 & 6(Pearson), Sheep heart dissection, Circulatory system unit Lab

8. Respiratory System

a. Functions of the respiratory system
b. Anatomy of the respiratory system
c. Gas Exchange and Transport

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d. Describe how pH is affected by the respiratory system
e. Define: tidal volume, vital capacity, expiratory reserve volume, inspiratory reserve volume, and residual air

Activities/labs: PhysioEx #7(Pearson), Cat lung dissection

9. Lymphatic System

a. Functions of the lymphatic system
b. What is lymph and where is it produced
c. Give examples of how an individual could develop an immunity
d. How are T and B cells used in the lymphatic system
e. What are the differences between active and passive immunity

Activities/labs: Contagion activity

10. Digestive System

a. Functions of the digestive system
b. Anatomy of the Digestive Processes
c. Pathway and Physiology of Digestion from Mouth, Esophagus, Stomach, Liver, Gallbladder, Pancreas, Small and Large Intestines.
d. Functions of Acids, Bases, Enzymes and Bacteria in the digestive Processes
e. Regulation of hunger
f. Locate where macromolecules are digested and absorbed

Activities/labs: PhysioEx #8(Pearson), Cat digestive system dissection, Dietary analysis, Student Digestion Project

11. Urinary System

a. Functions of the Urinary System
b. Anatomy of the Kidney
c. Physiology of Glomerular Filtration
d. Tubular Resorption and Secretion and Water Homeostasis
e. Acid-Base, Electrolyte Balance and buffers
f. Urine Formation and waste excretion

Activities/labs: PhysioEx #9 & 10 (Pearson), Urine formation Road map project

12. Reproductive System

a. Function of the male and female reproductive systems
b. Basic Anatomy of male and female Reproductive Organs
c. Physiology of Hormone Roles in Various Ages
d. Stages of pregnancy and their physiological changes
e. Describe the three stages of labor dilation, expulsion, and placental stages
f. Preparation and benefits of lactation

F. REQUIRED COMPETENCIES (PERFORMANCE OBJECTIVES) FOR ARTICULATION

LMC Objectives:

It is the expectation that all students successfully completing the course will be able to…

1) Use appropriate terminology to effectively communicate aspects of human anatomy and physiology with various audiences.

2) Identify various anatomical structures (e.g., cells, tissues, organs) and describe the interrelationships between the structure and its function.

3) Explain the various mechanisms used for regulating homeostasis and describe how body systems are integrated to maintain homeostasis.

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4) Propose evidence-based hypotheses to explain how the human body functions in a real-world scenario or provide a conclusion to the functions of various structures or the physiological regulations of the human body tested in laboratory settings.

Additionally, students are expected to develop and work on refining the following cognitive skill development goals:

1. Work with others in small groups toward a common goal(s) and discuss topics related to this course in an intellectual manner.

2. Critically think for yourself and show an ability to approach issues of anatomy and physiology from an evidence-based perspective

3. Recognize that individual differences (ethnicity, gender, culture, etc.) shape our understanding of anatomy and physiology

G. METHODS FOR END OF COURSE ASSESSMENT:

Grades:

Test and Quizzes	70%
Work	30%
A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69
F	59 and Below

* A semester grade of "A" will relieve you from midterm/final

H. TEXTBOOKS OR OTHER SUPPORTING MATERIALS

- Essentials of Human Anatomy and Physiology, Elaine Marieb and Suzanne Keller, 13th Edition
- Pearson - Mastering A&P online textbook

I. PROCEDURES AND/OR CRITERIA FOR COURSE ARTICULATION:

(all of the following must be met)

1. Students **must apply** to Los Medanos College and register in **CATEMA** in order to receive credit recommendations by their high school teacher.
2. Students **must be recommended** for credit by their high/adult ed. School teacher in **CATEMA.** *Teachers recommend credit at their discretion.*
3. Students **must complete** the **Anatomy & Physiology class at Heritage High School** with an overall grade of "B" or better.
   High school/Adult Ed. teachers will enter this grade in CATEMA.
4. Students **must earn** a "B" or better on the agreed upon college/high school final exam procedure.
   High school/Adult Ed. teachers will enter this exam grade in CATEMA.
5. Articulated college credit may only be recommended by the high school teacher and received by the student **within the academic year** in which it was earned.
6. Upon completion of the above, the student will receive on his/her LMC and CCCCD (California Community College District) transcript the units of credit for LMC's **BIOSC-030 Introduction to Anatomy & Physiology** course.
7. College transcripts will reflect the **FINAL EXAM GRADE** earned and will be notated as *Credit by Exam.

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COLLEGE SIGNATURES

A'kilah Moore
A'kilah Moore (Apr 30, 2024 12:31 PDT)

A'kilah Moore Ed. D. Date
LMC Vice President of Instruction

Nicole Trager Date
LMC Dean of Instruction Math & Physical Sciences, Interim

Melissa Wheeler
Melissa Wheeler (Apr 29, 2024 11:22 PDT)

Dr. Melissa Wheeler Date
LMC Biology Department Faculty

HIGH SCHOOL/ROP/DISTRICT SIGNATURES

Casey Lewis
Casey Lewis (Sep 3, 2024 07:45 PDT)

Casey Lewis Date
HHS Principal

Erik Faulkner
Erik Faulkner (Sep 3, 2024 08:56 PDT)

Erik Faulkner Date
LUHSD Asst. Superintendent, Educational Services

Don Sanders
Don Sanders (May 2, 2024 08:45 PDT)

Don Sanders Date
HHS Faculty

Shaun Martins
Shaun Martins (May 1, 2024 09:24 PDT)

Shaun Martins Date
HHS Faculty

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BIOSC-030_HHS_ARTIC_Renewal_FA24-SP26

Final Audit Report 2024-09-03

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