LOS MEDANOS COLLEGE

ARTICULATION AGREEMENT

DATE DRAFTED: December 2, 2020
VALID ACADEMIC YEAR(S): 2020-21 & 2021-22

LMC COURSE: BIOSC-030 Introduction to Anatomy and Physiology

HIGH SCHOOL COURSE: Anatomy & Physiology

School: Freedom High School
Address: 1050 Neroly Rd., Oakley, CA 94561

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. **REQUIRED CONTENT FOR ARTICULATION:**
    1) **Introduction to Body Systems** – the student will:
        a) Identify important fields of study that comprise the biological sciences.
        b) Know the nine body systems and understand their major functions and the complexity of their organization.
        c) Identify and use the prefixes, suffixes, and roots in science terminology.
        d) Understand the basic concepts of homeostasis and feedback loops.
    2) **Principles of Chemistry** – the student will:
        a) Understand the subatomic and bonding level.
        b) Understand what an organic compound is and how the human body uses it (macromolecules); to include major, minor and trace elements
        c) Understand acids and bases and how they apply to the human body.
        d) Understand how enzymes function in the different types of chemical reactions found in the body.
    3) **Cellular and Intercellular Organization** – the student will:
        a) Understand the structure and function of the microscope.
        b) Compare normal and abnormal cellular organization.
        c) Understand DNA/RNA roles in the cell and body and describe new technology involving DNA/RNA.
        d) Understand Cell structure & function with respect to their organelles and cell transport
        e) Define and distinguish the various types of tissue and how tissue makes up organs.
    4) **Skeleton** – the student will:
        a) Describe structure and functions of bone development in the human skeleton.
        b) Understand the role the skeletal system has in calcium homeostasis.
        c) Identify and describe joints and joint connections.
        d) Lab Practical: Identify names & locations of bone between the major divisions of the skeleton.
    5) **Muscles** – the student will:
        a) List and identify major parts of skeletal muscle both at the macro and microscopic levels including types of muscular tissue.
        b) Explain the mechanism and sequence of events of muscle fiber contraction and how energy is supplied.

c) Compare and contrast isotonic and isometric contraction as well as other types of muscle movements.
d) Understand the terms "origin" and "insertion".
e) Describe the movement of specific skeletal muscles and explain the function of antagonistic muscle groups.
f) Understand how homeostasis is maintained during exercise.
g) Lab Practical: Identify name, location & action of major muscles of the body.

6) **Nervous System and Sense Organs** – the student will:
a) Describe the general structure and classification of neuron types.
b) Name and describe the three physiological properties of nerve tissue.
c) Describe the process in how neurons function.
d) Name and describe the two major divisions of the nervous system.
e) Describe the somatic senses explaining receptors associated with the sense of touch, pressure, temperature, and pain.
f) Explain the relationship between the sense of smell and taste.
g) Name the parts of the ear and explain the function of each.
h) Lab Practical: Identify and name the different parts of the brain.

7) **Digestive Systems and Nutrition** – the student will:
a) Identify the nutrients required for metabolic activity including the results of vitamin deficiencies.
b) Trace the events of digestion from the mouth to the stomach and through the intestines, including the study of enzymes and other components that aid digestion.
c) Predict the processing of a medicine throughout the digestive system including uses of vitamins, minerals, proteins, carbohydrates, and fats as structured energy products.
d) Lab Practical: Identify, name and give function to the digestive system to include accessory organs.

8) **Respiratory System** – the student will:
a) Describe the structures of the nose, nasal cavities, and pharynx and relate the structure of the respiratory organs to the function of the air conducting passages.
b) Locate the pleural membrane and define its function.
c) Explain the gas laws and relate these to the respiratory system including inspiration, and expiration during various breathing conditions.
d) Compare the composition of respired and alveolar air and how these changes occur.
e) Deduce respiratory diseases by identifying vulnerable structures of the respiratory system.
f) Lab Practical: Identify, name and give a function of the different structures in respiratory system.

9) **Circulatory System** – the student will:
a) Identify and state the function of erythrocytes, leukocytes, platelets, and list components of blood plasma.
b) Explain hemostasis.
c) Distinguish between blood types and identify bold groups.
d) Describe the pathway of the blood naming chambers, valves, and connecting vessels including the heart.
e) Identify three layers of the heart.
f) Understand the cardiac conduction cycle by explaining what an EKG represents.
g) Relate the effects of various chemicals and physical factors to the rate of the heart-beat.
h) Describe how the body maintains normal blood pressure.
i) Lab Practical: Identify and name the different parts of the heart and blood flow.

10) **Excretory System** – the student will:
a) Identify the anatomy of the kidney.
b) List the structure of the nephron and its filtration mechanisms and relate each of the parts with its function; to include urine formation.
c) Sequence the pathway of blood plasma from the renal artery to the renal vein.

11) **Endocrine System and Hormone Functions** – the student will:
    a) Compare structure and function of the exocrine, endocrine, and heterocrine glands.
    b) Identify the primary functions of major endocrine glands and describe the physiological effects of hormones on target cells.
    c) Describe the sequence of events in feedback control of hormone production by using an example.
    d) Explain the terms hyperfunction and hypofunction and deduce related diseases.
12) **Reproduction and Development** – the student will:
    a) Describe the structure and function of both male/female reproductive systems and their organs.
    b) Order the physiological events of the male/female reproductive systems.
    c) Sequence events that occur in fetal development.
    d) Compare the sequence of events between spermatogenesis and oogenesis.
13) **Lymph & Immune System** – the student will:
    a) Describe the principle functions of the lymphatic organs and the entire lymph system.
    b) Distinguish between lymph and plasma fluid.
    c) Compare active immunity to passive immunity and state an example of each.
    d) Explain how two major types of lymphocytes are formed and how they function in immune mechanisms.
    e) Explain specific diseases caused by immune system malfunction (including AIDS).
14) **Study Skills** – the student will:
    a) Express ideas in note taking form.
    b) Analyze graphs, charts, and maps.
    c) Use SQ3R method of reading and remembering.
    d) Organize information by outlining or mapping.
    e) Use the library including the Internet for research.
    f) Use survey of books, assignment schedules, and working assignment sheets to manage time.
15) **Disease and Health Careers** – the student will:
    a) Explore at each system, related health careers and requirements involved in preparing for those careers.
    b) Investigate different diseases and medical conditions relating to the systems of the human body.

E. REQUIRED COMPETENCIES (PERFORMANCE OBJECTIVES) FOR ARTICULATION

General Student Learning Outcomes

- Dissecting terminology and skills
- Lab Practical's to demonstrate knowledge
- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Constructing explanations and designing solutions
- Engaging argument from evidence
- Obtaining, evaluating, and communicating information

F. METHODS FOR END OF COURSE ASSESSMENT:

Homework	10%	A+	97% – 100%	B –	83%- 80%	D+	67% - 69%
Labs, Projects & Participation	25%	A	96% -- 94%	C+	77% - 79%	D	66% - 64%
Tests, Quizzes and Lab Practicals	65%	A –	93% - 90%	C	76% - 74%	D-	63% - 60%
		B+	87% – 89%	C –	73%- 70%	F	Below 60%
		B	86%-- 84%				

G. TEXTBOOKS OR OTHER SUPPORTING MATERIALS

- **Human Anatomy & Physiology, 11th Edition**
  Elaine N. Marieb, Holyoke Community College
  Katja Hoehn, Mount Royal University

H. PROCEDURES AND/OR CRITERIA FOR COURSE ARTICULATION:

a. Complete the **Anatomy & Physiology** class at Freedom High School with a grade of "B" or better.
b. Receive a "B" or better on the agreed upon college/high school final exam* procedure.
c. Be recommended for credit by your high school teacher.
d. Apply for admission at Los Medanos College.
e. Register for CATEMA for electronic submission of college credit **OR** obtain copy of high school transcript and articulation agreement and submit to the LMC Office of Admissions & Records **within the academic year in which credit was earned.**
f. Upon completion of the above, the student will receive on his/her LMC and CCCCD (California Community College District) transcripts the units of credit for LMC's CHDEV-0O1 "**BIOSC-030 Introduction to Anatomy and Physiology**" course.

College transcripts will reflect the **FINAL EXAM GRADE earned and will be notated as *Credit by Exam.*

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COLLEGE SIGNATURES

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Natalie Hannum (Dec 8, 2020 16:55 PST)

Natalie Hannum Date
LMC Vice President of Instruction

Ryan Pedersen
Ryan Pedersen (Dec 8, 2020 16:43 PST)

Ryan Pedersen Date
Dean of Math & Physical Sciences

Roy "Kyle" Hanks Date
LMC Biology Department Chair

James Clark
James Clark (Dec 8, 2020 15:43 PST)

James Clark Date
Faculty, Los Medanos College

HIGH SCHOOL/ROP/DISTRICT SIGNATURES

Kelly Manke
Kelly Manke (Dec 8, 2020 17:22 PST)

Kelly Manke Date
Principal, Freedom High School

Erik Faulkner
Erik Faulkner (Dec 9, 2020 13:17 PST)

Erik Faulkner Date
LUHSD Asst. Superintendent, Educational Services

Cynthia Bruins (Dec 9, 2020 13:16 PST)

Cynthia Bruins Date
Faculty, Freedom High School

FHS BIOSC-030 Articulation 2020-22 FINAL

Final Audit Report 2020-12-09

Created:	2020-12-08
By:	Colleen Grim (cgrim@losmedanos.edu)
Status:	Signed
Transaction ID:	CBJCHBCAABAAs6FLTfvYD-jDIFJSTZAZNfS_pl_vO5kN

"FHS BIOSC-030 Articulation 2020-22 FINAL" History

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2020-12-08 - 11:18:30 PM GMT- IP address: 99.161.170.246

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2020-12-08 - 11:20:16 PM GMT

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2020-12-09 - 9:16:18 PM GMT- IP address: 169.199.155.65

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