

El Monte Union High School District

Course Outline

High School El Monte

Title: Animal Biology 1P

This course meets
graduation requirements:

Department/Cluster Approval

Date

Transitional* _____ (Eng. Dept. Only)

Sheltered (SDAIE)* ☒ Bilingual* _____

AP** _____ Honors** _____

Department: Science

Grade Level (s): 9-10

Semester _____ Year X

Year of State Framework Adoption 1998

Next Generation Science Standards 2013

- ☐ English
- ☐ Fine Arts
- ☐ Foreign Language
- ☐ Health & Safety
- ☐ Math
- ☐ Physical Education
- ☒ Science
- ☐ Social Science
- ☐ Elective

_____	_____
_____	_____
_____	_____
_____	_____
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_____	_____

Interpersonal Skills: Students will be productive community members by learning to respect diversity, exercise rights, accept responsibility and work cooperatively with others while doing work for the class and while working cooperatively in labs.

Personal Skills: Students will make informed decisions, set goals, take actions and evaluate results while exhibiting honesty, integrity and personal accountability as they complete work for the course.

C. Tools, Equipment, Technology, Manipulatives, Audio-Visual:

Visual presentations will be made using overhead transparencies, videos, models and/or presentations with a LCD projector. A variety of standard glassware, biological equipment and laboratory equipment including electronic scales, microscopes and chemicals, etc. will be used during the laboratories. Standard computer technologies including MS Office, web browsers and 3rd party software will be used as necessary.

8. Objectives of the Course

- 1) Students will learn laboratory skills and safety procedures as demonstrated by their use during practical laboratory activities and experiments.
- 2) Students will learn concepts in biochemistry, cell theory and processes, genetics, ecology, evolution, classification, and animal anatomy and physiology.
- 3) Students will collect, organize, and present data.
- 4) At the end of this course students will have a good understanding of the structure and processes within living organisms, the interactions, energy, and dynamics occurring within the environment, heredity and inheritance, and the unity and diversity occurring of living organisms.

9. Pacing Plan with California Science Standards and NGSS/CCSS

Fall Semester

NGSS: HS-LS1-1, HS-LS1-3, HS-LS1-6

CaSS: IE 1 a, b, c, d, f, k, n, Biology 1 b, h,

Scientific Method

Microscopy safety and proper usage

Characteristics of Life

Chemistry of Life atoms, molecules, bonds, macromolecules

NGSS: HS-LS1-1-7, HS-LS3-1, HS-LS3-2

CaSS: Biology 1a, c, d, e, f, g, 2 a, b, c, d, e, f, g, 3 a, b, 4 a, b, c, d, e, 5 a, b, c

Cell Structure, Function, and Processes cell theory, organelles, cellular transport, cell cycle, photosynthesis, cellular respiration, fermentation, mitosis, and meiosis

Genetics: Mendelian through Genetic Expression traits, genes, inheritance, DNA replication, transcription, translation, gene expression

NGSS: HS-LS2-1-8, HS-LS3-3, HS-LS4-1-6,

CaSS: Biology 6 a, b, c, d, e, f, 7 a, b, c, d, 8 a, b, c, d, e

Evolution: Natural Selection, Population Evolution, and Speciation

Ecology: Interactions, the Biosphere and Human Impact ecosystems, biomes, resource cycling, interactions, threats to the environment

Spring Semester

NGSS: HS-LS4-1, HS-LS1-2

CaSS: Physiology 9 a

Classification: Linnaean and Cladistics

Domains and Kingdoms

Physiological Systems (Movement, respiration, sensitivity, growth, reproduction, excretion, nutrition)

NGSS: HS-LS1-2

CaSS: Biology 1 c, Physiology 9 a

Viruses and Prokaryotes

Protists and Fungi

Invertebrate Zoology (comparative anatomy and physiology) (sponges, cnidarians, worms, mollusks, echinoderms, arthropods)

NGSS: HS-LS1-2

CaSS: Physiology 9 a

Vertebrate Zoology (comparative anatomy and physiology) (fish, amphibians, reptiles, birds, mammals)

Animal Behavior

10. Laboratory Investigation and Experimentation

All students are expected to have an understanding of common laboratory safety procedures as demonstrated by their use during practical laboratory activities. Practical laboratory activities must consist of a minimum of 20% of the regular instructional time. (Ex. 2-3 days of a traditional schedule per 2-3 week period).

The following are some suggested labs, to be supplemented, by additional labs preferred by the instructor.

Unit: Investigative Skills

Manipulating Plant Growth Students use inquiry skills to determine how the independent variable affects the dependent variable by using plants in various growing conditions.

Unit: Microscopy

Comparing Cells - Students will use a microscope to examine and compare cells from different organisms.

Unit: Characteristics of Life

Life Under a Microscope Students will observe the diversity of life while examining samples from the surface of pond water.

Unit: Chemistry of Life

Testing pH Students will use pH indicator paper to investigate the pH of several common household substances.

Unit: Cell Structure, Function, and Processes

Cellular Respiration Students will compare respiration rates in dormant and germinated seeds to see that plant cells use cellular respiration to make ATP from the sugars that are produced during photosynthesis.

Mitosis in Onion Root Cells Students will examine cells from onion root tissues under the microscope and identify the different stages of cell division

Unit: Genetics

Modeling Meiosis Students will create and demonstrate meiosis of homologous chromosomes.

Pedigree Analysis Students will create a pedigree for their family using a known trait and infer the genotype from the pedigree and predict the genotype of future offspring.

Allele Combinations and Punnett Squares Students will calculate and analyze the probability of the inheritance of traits of a dihybrid cross using a Punnett square.

Design a Baby
of various traits with known and unknown genetic make up of the parents.

Unit: Evolution

Adaptation in Beaks Students will model feeding behavior of various beaks (tools) to determine the effect of natural selection, adaptation, and survival.

Investigating an Anole Lizard Population Students will model the succession of genotypes and phenotypes through 4 generations and analyze the allele frequency through time.

Unit: Classification

Human Behavior Students will observe some aspect of human behavior and form a hypothesis that explains the behavior.

Pill Bug Behavior Students will design an experiment to determine how manipulating a variable changes the behavior of pill bugs.

11. Student Performance Standards for Animal Biology 1P

- d) describe why cells need chemical energy.
- e) explain photosynthesis, cellular respiration, and fermentation.

Domains a

12. Evaluation/ Assessment/ Rubrics including Attainment for Students to Pass Animal Biology 1P

"A"-level work (90-100%): (Excellence overall; no major weaknesses). This student demonstrates real achievement in grasping scientific thinking, along with development of specific biological science thinking skills and abilities. This student's work is clear, precise, and well reasoned.

"B"-level work (80-89%): (Moderate level of understanding and skill in scientific thinking with some distinctive weaknesses, showing more strengths than weaknesses). This student demonstrates a good level of achieving scientific thinking with occasional areas of weakness. This student's work is essentially clear and precise with occasional lapses into weak reasoning.

"C"-level work (70-79%): (More than a minimum level of understanding and skill in scientific thinking, but highly inconsistent with as many weaknesses as strengths.) This student demonstrates a mediocre level of achieving scientific thought with pronounced areas of weakness. This student's work is inconsistent, showing only modest skills and reasoning.

"D"-level work (60-69%): (Minimal level of understanding and skill in scientific thinking). This student demonstrates a lack of clarity and discipline. This student's work does not show good scientific reasoning and skills, only rarely showing any attempt to take charge of ideas.

"F"-level work (<59%): (Far below minimal level of understanding and skill in scientific thinking). This student does not display any discernible scientific reasoning. This student failed to do the required work of the course.

Assessment is an ongoing process that is used to check for understanding at the beginning, during and at the end of a unit. Some possible methods of assessment include:

1. Daily written (for vocabulary and concept understanding) and/or calculations for experiments/activities.
2. Student presentations using multimedia tools/ daily class participation/ cooperative group work.
3. Laboratory hands-on activities or lab reports for experiments for every unit that will include Title, Purpose, Materials, Procedures, Observation/Data, and Conclusion. There will be a clear statement of the problem, data representation and analysis, graphs and thoughtful discussions as it relates to the topic and current situations.
4. Weekly quizzes on material will be given.
5. Unit tests on material will be given.