

FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

**Final Course Outline
Life Science**

Date: November 2003

Subject Area: Life Science

Proposed Grade Level(s): 9-12

Course Length: 1 Year

Grading: A-F

Number of Credits: 5/Semester

Prerequisites: Physical/Earth Science suggested

BRIEF COURSE DESCRIPTION:

Life Science is a laboratory science course covering topics in cells, chemistry, energy, photosynthesis, cell division, genetics, ecology, taxonomy, physiology, and evolution. Modern advances in cellular biology and biochemistry form the basis for the “visualizing life” attempted by this course. There is much work in the laboratory where students are asked to form conclusions on the basis of their own observations. This course meets the state of California graduation requirements. Elements of critical thinking are indicated throughout the outline.

GENERAL GOALS/PURPOSES:

The unifying principles of life science were developed to emphasize the knowledge of concepts, facts, generalization, science process skills and critical thinking skills that assist in interpreting the natural environment. Life Science is designed to help students realize the important roles that life science will play in their personal and professional lives, and use life science knowledge to think through and make informed decisions about issues involving science and technology, and develop a lifelong awareness of potential and limitations of science and technology.

STUDENT READING COMPONENT:

The text for this course is **Biology: Visualizing Life**, published by Holt, Rinehart and Winston (1998, or newer edition). Reading and interpreting textual material and/or following laboratory directions are daily components of this class.

STUDENT WRITING COMPONENT:

Students will be expected to write complete, grammatically correct sentences to answer questions about textual material. They will follow a prescribed format to write lab reports. Some assessments will require short essay answers. There will be at least one research paper.

STUDENT ORAL COMPONENT:

Students will be expected to participate in class discussions. Periodically, they will present information (i.e. whiteboard, PowerPoint, video) to the rest of the class about selected life science concepts. There will be at least one formal presentation, which will be about the topic selected for the research paper.

DETAILED UNITS OF INSTRUCTION:

Unit 1- Study of Life

1. The Science of Biology
2. Discovering Life
3. Chemistry of Life
4. The Living Cell
5. Energy and Life

Unit 2- Continuity of Life

1. Cell Reproduction
2. Genetics and Inheritance
3. How Genes Work
4. Gene Technology
5. DNA/RNA
6. Protein Synthesis

Unit 3- Principles of Evolution

1. Evolution and Natural Selection
2. History of Life on Earth
3. Human Evolution

Unit 4- Diversity of Life

1. Classifying Living Things
2. Bacteria and Viruses
3. Protists
4. Fungi and Plants
5. Animals

Unit 5- Human Life

1. The Body Human
2. The Nervous System
3. Hormones and the Endocrine System
4. Circulation and Respiration
5. The Immune System
6. Digestion and Excretion
7. Reproduction and Development

Unit 6- Exploring the Environment

1. Introduction to Ecology
2. Conservation Science
3. Environmentalism: science or politics?
4. Ecosystems and Biomes
5. How Ecosystems Change
6. The Fragile Earth

THIS COURSE WILL PREPARE STUDENTS FOR THE HSEE AND/OR FCUSD EXIT EXAM IN:

Science

LAB FEE, IF REQUIRED: None

SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:

Specific Biology/Life Content Standards covered are listed within the units of instruction.

Unit 1- Study of Life

- A. The Science of Biology
- B. Discovering Life
- C. Chemistry of Life- 1b, 1h
- D. The Living Cell 1a, 1b, 1c, 1e, 1g, 1i, 1j
- E. Energy and Life- 1f, 1g, 1i

Unit 2- Continuity of Life

- A. Cell Reproduction-2a, 2b, 2c, 2d, 2e, 2f
- B. Genetics and Inheritance 2g, 3a, 3b, 3c, 3d
- C. How Genes Work 4a, 4b, 4c, 4d, 5a
- D. Gene Technology 5c, 5d, 5e
- E. DNA/RNA 4a, 4b, 4c, 5a, 5b, 5c
- F. Protein Synthesis 4c, 4d, 5c

Unit 3- Principles of Evolution

- A. Evolution and Natural Selection 6g, 7a, 7b, 7c, 7d, 8a, 8b, 8c, 8d
- B. History of Life 8e, 8g
- C. Human Evolution- 8e, 8f, 8g

Unit 4- Diversity of Life

- A. Classifying Living Things 8f, 8g
- B. Bacteria and Viruses 10d
- C. Protists 10b,10d
- D. Fungi and Plants 10d
- E. Animals 8b, 8f, 6e

Unit 5- Human Life

- A. The Body Human 9a
- B. The Nervous System 9b, 9c, 9d, 9e
- C. Hormones and the Endocrine System 9c, 9i
- D. Circulation and Respiration 9a, 9g
- E. The Immune System 10a, 10b, 10c, 10d, 10e, 10f
- F. Digestion and Excretion 9a, 9f, 9g
- G. Reproduction and Development 9i

Unit 6- Exploring the Environment

- A. Introduction to Ecology 6a, 6d
- B. Conservation Science 6a, 6d
- C. Environmentalism: Science or Politics? 6a
- D. Ecosystems and Biomes 6a, 6e
- E. How Ecosystems Change 6b, 6c
- F. The Fragile Earth 6d, 6e, 6f

DISTRICT ESLR's TO BE ADDRESSED:

- All students will be expected to have assignments turned in on time and be prepared for class on any given day. In this respect, success depends on being a **self-directed learner**.
- Written and oral communications are both important in this class. Students will be expected to **communicate effectively** as they explain life science concepts and their relationships to daily life.
- Assessment of written and oral work requires students to be **quality producers** in order to be successful in this class.
- The lab activities that students are involved in require analysis and application of concepts to other situations. In order to synthesize and apply information, students need to be **constructive thinkers**.
- Lab activities and several other projects are done in cooperative groups. Students need to be **collaborative workers** in order to complete these tasks efficiently.
- In order to become **responsible citizens**, students use life science knowledge and scientific inquiry skills to make informed decisions about issues related to life science and biotechnology.