

Subject Area Living Environment **Grade Level** 10

Mission Statement: It is the mission of the Elba Central School District to actualize the phrase “Elba Equals Educational Excellence for Everyone.” We are committed to providing both quality and equity. Every student will have the opportunity to develop to the best of his/her ability.

Elba Standards: In addition to the knowledge and basic skills they need in order to participate in society, graduates of Elba Central School will develop:

1. Empowering skills: decision making, goal setting, creative thinking and problem solving abilities;
2. Communication and social interaction skills;
3. Technological literacy;
4. Total wellness (social, physical, emotional health and self-esteem);
5. The values necessary to participate in society.

As a result of achieving these outcomes, our students will embrace lifelong learning.

New York State Standards:

Standard 4- Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

Key Idea 1- Living things are both similar to and different from each other and from nonliving things.

Key Idea 2- Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.

Key Idea 3- Individual organisms and species change over time.

Key Idea 4- The continuity of life is sustained through reproduction and development.

Key Idea 5- Organisms maintain a dynamic equilibrium that sustains life.

Key Idea 6- Plants and animals depend on each other and their physical environment.

Key Idea 7- Human decisions and activities have had a profound impact on the physical and living environment.

National Standards:

Performance Indicators:

- 1.1- Explain how diversity of populations within ecosystems relates to the stability of ecosystems.
- 1.2- Describe and explain the structures and functions of the human body at different organizational levels.
- 1.3- Explain how a one-celled organism is able to function despite lacking the levels of organization present in more complex organisms.
- 2.1- Explain how the structure and replication of genetic material result in offspring that resemble their parents.
- 2.2- Explain how the technology of genetic engineering allows humans to alter genetic make-up of organisms.
- 3.1- Explain the mechanisms and patterns of evolution.
- 4.1- Explain how organisms, including humans, reproduce their own kind.
- 5.1- Explain the basic biochemical processes in living organisms and their importance in maintaining dynamic equilibrium.
- 5.2- Explain disease as a failure of homeostasis.
- 5.3- Relate processes at the system level to the cellular level in order to explain dynamic equilibrium in multi-celled organisms.
- 6.1- Explain factors that limit growth of individuals and populations.
- 6.2- Explain the importance of preserving diversity of species and habitats.
- 6.3- Explain how the living and nonliving environments change over time and respond to disturbances.
- 7.1- Describe the range of interrelationships of humans with the living and nonliving environment.
- 7.2- Explain the impact of technological development and growth in the human population on the living and nonliving environment.
- 7.3- Explain how individual choices and societal actions can contribute to improving the environment.

| Assessment: | Acceptable Performance Level |
|---|---|
| 1. NYS Living Environment Regents Exam | Students must score at a 65 or better to pass. |
| 1. Teacher made exams, quizzes, mid-terms, and final. 2. Homework and labs | Students must score at a 70 or better on all forms of assessment. |

Scope: Chronologically organized study of scientific concepts, principles, and theories pertaining to the living Environment divided into 17 units. Concepts, theories, and inquiry investigations range from the basic scientific methods to a more advanced level of study such as human impacts on the environment.

Sequence:

Unit 1: Scientific Inquiry

- Scientific Methods
- Designing Experiments

Unit 2: Similarities and Differences Among living organism

- Characteristics of living organisms
- Life Processes
- Classification

Unit 3: Cells

- Cell Structure and Function
- Diffusion and Osmosis

Unit 4: Homeostasis in Organism

- Organic compounds
- Photosynthesis/Respiration
- Enzymes/Feedback Mechanisms
- The Immune system

Unit 5: Intro to Genetics

- Punnett Squares
- Genes, Chromosomes, and DNA structure

Unit 6: Human Genetics

- DNA replication
- Protein Synthesis
- Mutations

Unit 7: Applied Genetics

- Genetic Engineering
- Karyotypes
- Cloning

Unit 8: Reproduction

- Asexual/Sexual reproduction
- Mitosis/Meiosis
- Female Reproductive system
- Male Reproductive system

Unit 9-14 Body Systems

- Digestive
- Circulatory
- Respiratory
- Excretory
- Locomotion
- Regulation

Unit 15: Evolution

Unit 16: Ecology

Unit 17: Environmental Issues

Methodology:

1. Use of a lecture strategy in order to present the scientific concepts and theories.
2. Use of demonstrations in order to enhance student thinking and problem-solving skills.
3. Inquiry based investigations to order to enhance students' abilities to use prior knowledge to problem solving.\
4. Collaboration in groups to analyze new concepts and principles.
5. Homework assignments consisting of multiple choice and writing questions.
6. Use of labs the enhance understanding and inquiry.
7. Use of technology to order to incorporate the theories of bloom's taxonomy and multiple intelligences in learning.