

SCIENCE CURRICULUM STANDARDS

- Understands the basic features of the Earth.
- Understands basic Earth processes.
- Understands essential ideas about the structure of the universe and the Earth's place in it.
- Knows about the diversity and unity that characterize life.
- Understands the genetic basis for the transfer of biological characteristics from one generation to the next.
- Knows the general structure and functions of cells in organisms.
- Understands ecosystems within the biosphere.
- Knows the general structure and functions of the human body.
- Understands basic concepts about the structure and properties of matter.
- Understands energy types, sources, and conversions, and their relationship to heat and temperature.
- Understands the principles of motion and the forces that exist between objects.
- Understands the nature of scientific inquiry.
- Identify questions and concepts that guide scientific inquiry
- Design and conduct scientific investigations
- Use technology, including calculators and computers, and mathematics to improve investigations and communications
- Formulate and revise scientific explanations and models based on evidence and logic
- Recognize and analyze alternative explanations and models
- Communicate and defend a scientific argument

EARTH SCIENCE

Subject: Earth Science

Grade: 9 (Required Course)

Length of Course: First and Second Semester

Prerequisite: None

CURRICULUM BENCHMARKS:

1. Understands and applies knowledge of the structure of atoms
2. Understands and applies knowledge of motions and forces
3. Understands and applies knowledge of interactions of energy and matter
4. Understands and applies knowledge of energy in the Earth system
5. Understands and applies knowledge of geochemical cycles
6. Understands and applies knowledge of origin and evolution of the Earth system
7. Understands and applies knowledge of origin and evolution of the universe
8. Understands and applies knowledge of the relationships between bodies in the universe
9. Understands and applies knowledge of the relationship between geologic Earth and life
10. Identify components and processes of the rock cycle

11. Identify the forces of energy that result in weather
12. Identify mechanics of and phenomena of plate tectonics

COURSE DESCRIPTION:

Earth science is the study of the earth and its composition. Topics are investigated through both text and laboratory investigations. The major theme is the connection between the geology of the earth, its processes, and how those together contribute to earth's landforms, climate, and life forms.

WHAT STUDENTS ARE EXPECTED TO DO:

1. Complete reading assignments and work with vocabulary words
2. Complete assignments on time
3. Participate in classroom discussions
4. Perform hands-on laboratory work
5. Complete special projects
6. Conduct and carry out research projects, as assigned

EVALUATION:

1. Students will be evaluated through daily work, lab work, quizzes, projects, and tests
2. Students' work will include worksheets, quizzes, in-class assignments, labs, vocabulary, book questions, and special projects

BIOLOGY

Subject: Biology

Grade: 10 (Required Course)

Length of Course: First and Second Semester

Prerequisite: None

CURRICULUM BENCHMARKS:

1. Know that the variation of organisms within a species increases the likelihood that at least some members of the species will survive under changed environmental conditions.
2. Know that all organisms, including the human species, are part of and depend on two main global food webs.
3. Know that in all organisms, the instructions for specifying the characteristics of the organism are carried in DNA.
4. Know that genes are segments of DNA molecules.
5. Know that the fact that the human body is formed from cells containing 2 copies of each chromosome.
6. Understands the function of the cell membranes.

7. Knows that most cell functions are regulated by reactions.
8. Know that cells store and use information to guide their functions.
9. Know that the number and types of organisms an ecosystem can support.
10. Know that humans are increasingly modifying ecosystems.
11. Know factors that define life.
12. Uses appropriate tools, including computers, and techniques to gather, analyze, and interpret scientific data.
13. Designs and conducts scientific investigations.

COURSE DESCRIPTION:

Biology is intended as a general life biology course to make the student more aware of what life is and how it functions.

WHAT STUDENTS ARE EXPECTED TO DO:

1. Do reading and learning of vocabulary words and questions outside of classroom time.
2. Participate in classroom discussions.
3. Perform hands-on laboratory work.
4. Learn structures and functions of structures.
5. Hand in the daily work of labs and written homework.

EVALUATION:

Students will be evaluated constantly by quizzes and tests throughout each main course of study. Final grades will be determined by the results of daily work, quizzes, and tests.

APPLIED SCIENCE

Subject: Applied Science

Grade: 11, 12

Length of Course: First and Second Semester

Prerequisite: None, though successful completion of earth science and biology are beneficial

CURRICULUM BENCHMARKS:

1. Understands and applies knowledge of the cell
2. Understands and applies knowledge of the molecular basis of heredity
3. Understands and applies knowledge of biological evolution
4. Understands and applies knowledge of inter-dependence of organisms
5. Understands and applies knowledge of the structure of atoms
6. Understands and applies knowledge of chemical reactions
7. Understands and applies knowledge of motions and forces
8. Understands and applies knowledge of interactions of energy and matter

9. Identifies and classifies organisms into a hierarchy of groups reflecting evolutionary relationships

COURSE DESCRIPTION:

Emphasis is placed upon different areas of science – physics, chemistry, biology, earth science, astronomy. This class will also examine how different areas of science are interrelated. Correlations will also be made as to how science applies to everyday experiences.

WHAT STUDENTS ARE EXPECTED TO DO:

1. Complete reading assignments and work with vocabulary words
2. Be responsible for taking notes on classroom lectures and problem solving techniques
3. Complete assigned work on time
4. Complete laboratories in a safe, orderly and scientific manner
5. Conduct and carry out research projects, as assigned

EVALUATION:

1. Students will be evaluated through daily work, lab work, quizzes, projects, and tests
2. Students' work will include worksheets, quizzes, in-class assignments, labs, vocabulary, book questions, and special projects

HUMAN ANATOMY

Subject: Anatomy

Grade: 11, 12

Length of Course: One Semester (1st)

Prerequisite: Biology

CURRICULUM BENCHMARKS:

1. Apply the vocabulary of anatomy
2. Classify human tissues
3. Demonstrate knowledge of the location and structures of human systems
4. Identify structures of the human body

COURSE DESCRIPTION:

Essential principles of human anatomy are presented and studied, including: directional terms, planes of movement, cell and tissue studies, anatomical structures, and an overview of body systems.

WHAT STUDENTS ARE EXPECTED TO DO:

1. Study assigned structures and their locations.
2. Be responsible for taking notes on materials provided.
3. Complete assignments on time.
4. Take part in classroom discussions.
5. Perform hands on laboratory work.

Human Physiology

Subject: Physiology

Grade: 11, 12

Length of Course: One Semester (2nd)

Prerequisite: Human Anatomy

CURRICULUM BENCHMARKS:

1. Apply the vocabulary of anatomy
2. Classify human tissues.
3. Demonstrate knowledge of human organ systems.
4. Describe function of human organ systems and other biological processes.

COURSE DESCRIPTION:

Essential principles of human anatomy and physiology are presented, including basic Chemistry, cell and tissue studies, and an overview of body systems.

WHAT STUDENTS ARE EXPECTED TO DO:

1. Read assigned chapters and learn vocabulary words.
2. Be responsible for taking notes on classroom lectures.
3. Complete assignments on time.
4. Take part in classroom discussions.
5. Perform hands on laboratory work.
6. Perform research to complete a research paper.

CHEMISTRY

Subject: Chemistry

Grade: 11, 12

Length of Course: First and Second Semester

Prerequisite: Biology, Earth Science, and Algebra I

CURRICULUM BENCHMARKS:

1. Know that atoms interact with one another by transferring or sharing electrons that are furthest from the nucleus.
2. Understand the complete mole concept and ways in which it can be used.
3. Know that scientists continue to investigate atoms and have discovered even smaller constituents of which electrons, neutrons, and protons are made.
4. Know that the total energy of the universe is constant.
5. Know that energy tends to move spontaneously from hotter to cooler objects.
6. Design and conduct scientific investigations.
7. Use appropriate tools (including computers) and techniques to gather, analyze, and interpret scientific data.

COURSE DESCRIPTION:

Chemistry is an introductory chemistry program which is comprehensive as well as relevant. The aim is to enable students to develop a better understanding of their physical world. The central theme is the basic principle that the properties of matter are a consequence of the structure of matter. A balanced approach is presented in combining chemical theories and concepts with quantitative problems. Students will find the material challenging and will be encouraged to think independently throughout the course.

WHAT THE STUDENTS ARE EXPECTED TO DO:

1. Be responsible for taking notes on classroom lectures, learn problem-solving skills, and take notes on demonstrations.
2. Complete laboratories in a safe, orderly, and scientific matter.
3. Write formal and informal laboratory reports in an orderly scientific matter.
4. Complete periodic assignments in an orderly matter.
5. Turn in assigned work on time.
6. Maintain and use laboratory protective eyewear.
7. Conduct and carry out a research project, as assigned.

EVALUATION:

1. Final grades will be based on daily work, quizzes, and tests.
2. Evaluations will be over reading assignments, lectures, daily written work, demonstrations, audiovisual, worksheets, and laboratories.

PHYSICS

Subject: Physics

Grade: 12

Length of Course: First and Second Semester

Prerequisite: Chemistry or Permission of Administration/Teacher

Trigonometry or concurrently taking or Permission of Administration/Teacher

INSTRUCTIONAL OBJECTIVES:

1. Understands and applies knowledge of motions and forces
2. Develop an understanding of dynamics and its measurement
3. Develop an understanding of kinematics and its measurement
4. Develop an understanding of the conservation of energy and momentum
5. Develop an understanding of the relationship between work and energy
6. Develop an understanding of wave phenomena
7. Develop an understanding of electricity and magnetism

COURSE DESCRIPTION:

The course is designed to introduce students to topics that may be covered in their first year of college physics. A mathematical approach will be emphasized with the laboratory work being used to reinforce the concepts and relate them to the physical world.

WHAT STUDENTS ARE EXPECTED TO DO:

1. Take notes on lecture and examples problems
2. Complete assignments neatly and on time
3. Actively participate in class
4. Complete laboratories in a safe, orderly and scientific manner
5. Maintain a successful average on tests and quizzes
6. Provide their own TI-83 or other scientific calculator (very highly recommended)

EVALUATION:

1. Students will be evaluated through daily work, lab work, quizzes, projects, and tests
2. Students' work will include worksheets, quizzes, in-class assignments, labs, vocabulary, book questions, and special projects