

SCIENCE DEPARTMENTAL CURRICULUM PROFILE

PROGRAM DESCRIPTION

Our science department offers a core curriculum designed for college prep and a general curriculum option. Program is designed to fulfill Nebraska Star standards by the end of the 10th grade year.

PHILOSOPHY

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OBJECTIVES IN THE SCIENCE PROGRAM

See Course Descriptions

Middle School/High School Science Course Descriptions

Life Science

Length: Year

Grade Levels: 7th Grade

Description: Life Science teaches core knowledge, categorization, and skills related to organisms, their relationships, and the systems upon which they depend.

Earth Science

Length: Year

Grade Levels: 8th Grade

Description: Earth Science focuses teaching core knowledge and skills related to the physical and geological sciences. Each quarter of the school year is separated into a different focus area; 1st quarter Weather and Atmosphere, 2nd quarter Exploring the Universe, 3rd quarter Dynamic Earth, 4th quarter Sound and Light.

Physics

Length: 1 year

Grade Levels: 11-12

Prerequisite: Chemistry, Algebra and Geometry. Algebra II is strongly recommended as a co-requisite

Description: Physics is a science that searches for consistencies (laws) in the natural world. Its objective is to explain why everything happens. The language of physics is mathematics. Therefore students will be expected to express the laws of physics in mathematical terms and to be able to apply those laws to real world problems. Students will also conduct laboratory investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving.

Chemistry

Length: 1 year

Grade Level: 10

Prerequisite: Algebra

Description: Chemistry is the science that examines matter and the interactions that matter undergoes. In this course students will investigate the structure of atoms, physical properties of matter, and the chemical reactions that matter undergoes. Students will also conduct laboratory experiments to investigate the nature of matter. They will be required to use proper laboratory procedures to collect data, which will lead to problem solving based on critical thinking.

Dual Credit Physics:

Length: semester

Grade Level: 12

College Credit: This course offers dual high school and college credit through NECC. Prerequisite: Physics. Advanced math recommended as a co-requisite

Description: Dual Credit physics is an extension of first year physics. Students will do a more in-depth study of motion and forces. Additional labs will also be done to reinforce topics and to provide practice in problem solving. Additional topics such as nuclear physics and electrical circuits will be added to the topics studied in first year physics.

Dual Credit Biology (Advanced Biology):

Advanced Biology objectives:

Upon completion of this course, the student will be able to:

1. Foster critical thinking skills in examining biology related issues as they relate to societal and individual problems.
2. Relate basic biological concepts to common experiences.
3. Illustrate how the process of science can be utilized as part of problem-solving strategies.
4. Introduce students to biological laboratory techniques.
5. Demonstrate and explain scientific theories and methodologies.
6. Describe the characteristics common to living things, and the difference between organism groups in a multi-kingdom classification system.
7. Demonstrate a working knowledge of plant, animal and prokaryotic structure and function.
8. Explain the chemical basis of life, including atomic and molecular structure, bonding, an overview of metabolic pathways, and the molecular basis of genetic material.

Applied Science (Physical):

Length: 1 semester

Grade Level: 10-12

Description: This course will concentrate of Nebraska Physical Science standards. Basic physics and chemistry concepts will be covered. Real time labs will be conducted in which students will use inquiry and problem solving techniques.

Applied Science (Life Science):

Length: 1 semester

Grade Level: 10-12

Description: This course will concentrate on Nebraska Life Science standards. Basic Life Science, Biology, and Inquiry concepts will be covered. Labs will be conducted to supports these standards.

Biology

Length: Year

Grade Levels: 9th & 10th Grades

Description: Biology, much like Life Science, teaches core knowledge, categorization, and skills related to organisms, their relationships, and the systems upon which they depend. Biology teaches concepts at a greater depth of complexity than previously taught in Life Science. STAR science standards addressed in Biology are 12.2.1, 12.4.1, 12.4.2, 12.4.3, 12.4.4, 12.4.5, and 12.4.6.

Anatomy & Physiology

Length: Year

Grade Levels: 11 & 12

Description: Anatomy and Physiology provides students with knowledge about human organ systems, their structures, and how the systems function both independently and interdependently. This course is taught as a college preparatory course with 60% of grade coming from tests, 20% from quizzes, and 20% from daily assignments/projects.

Entomology/Science Inquiry

Length: Year

Grade Levels: 11 & 12

Description: Entomology/Science Inquiry teaches students how to perform the scientific method through a hands-on approach seeking understanding of insect anatomy, physiology, behavior, taxonomy, life history, and adaptation. During the second semester students are required to perform an independent science inquiry. Their research is then presented at a regional science fair.

Introduction to Health Careers

Length: semester; elective

Grade Levels: 11 & 12

Description: This course focuses on developing an awareness of the various health care skill standards needed for employment in health careers. Introduction to Health Careers is designed to give an overview of the therapeutic diagnostic, support, health informatics, and biotechnology research systems of the health care industry.

Med Term

Length: semester; elective

Grade Level: 10-12

Description: This course focuses on developing an awareness of the various health care skill standards needed for employment in health careers. Introduction to Health Careers is designed to give an overview of the therapeutic diagnostic, support, health informatics, and biotechnology research systems of the health care industry.

COURSE SEQUENCE

7th grade:
Life Science

8th grade:
Earth Science

9th grade:
Biology

10th grade:
Chemistry

11th grade:
Physics

Electives (10th -12th Grade):
Medical Terminology; Intro to Health Science;
Entomology/Independent Research;
Applied Science; Anatomy/Physiology

Electives 12th Grade:
Advanced Biology (Dual Credit);
Advance Physics (Dual Credit)