

SCIENCE DEPARTMENT

Science is the study of God's creation: the study of matter, energy and their interrelationships. Science is also a systematic method of discovering truth.

The Science curriculum is designed to achieve the following goals. Students will

- Understand the language of science.
- Know the principles which describe the nature of the universe.
- Develop curiosity about their world.
- Comprehend the universality of the application of scientific principles
- Be able to understand cause/effect relationships in the universe
- Apply the scientific method in problem solving
- Make informed decisions based on their knowledge
- Learn safe and optimum use of scientific equipment
- Realize that technology (applied science) should be used according to Christian ideals.

Therefore the Science curriculum is as follows:

Note: 3 credits are required including, one year of Biology and one year of Chemistry are required for graduation.

Biology

Prerequisites: None

Full Year

Grades: 9

This freshman course is a general study of man and the environment. Topics include the physical basis for life, cell structure, function and organization, DNA, genetics, and the interrelationships of living things and their environment.

Special Materials: 1 1/2 " - 2" Three-ring Binder

Honors Biology

Prerequisites: None

Full Year

Grades: 9

Building on the chemical basis of life, this honors course includes in-depth discussion of cell structure, function and organization, human anatomy and physiology, DNA, genetics, and the interrelationships of living things and their environment. Honors Biology is recommended for those freshman students that have shown an interest and ability in science and may be considering college course work and/or a career in a science field.

Special Materials: 1 1/2 " - 2" Three-ring Binder

Chemistry

Prerequisites: Biology

Full Year

Grades: 10-11

Chemistry is one of the physical sciences that explores the physical and chemical changes that occur in our world. Chemistry core concepts are tied to key societal issues. This approach will allow students without advanced math and critical thinking skills to better comprehend and appreciate chemistry.

Special Materials: Goggles

College Prep Chemistry**Full Year****Prerequisites: Algebra 1, Biology****Grades: 10-11**

Chemistry is one of the physical sciences that explores the physical and chemical changes that occur in our world. It is a body of systematized knowledge gained from observation, study and experimentation. Chemistry deals with the structure and composition of matter. Furthermore, it deals with changes in matter, the mechanisms by which these changes occur, the products formed and the energy changes involved. Honors Chemistry is recommended for all college bound students. The lecture material presented in this class will be supplemented by demonstrations and laboratory experiments.

Special Materials: Goggles

Earth and Space Science**Full Year****Prerequisites: Geometry, Chemistry****Grades: 11-12**

This upper level elective is designed to introduce the student to basic concepts in Earth Science including geology, geography, astronomy, oceanography, and meteorology. Topics to be studied include the scientific method, plate tectonics, agents of movement and erosion, weather, climate, and rock and mineral identification. There will be an emphasis on environmental issues throughout the course.

Special Materials: None

Anatomy and Physiology (Honors)**Semester****Prerequisites: C or Better in Biology or Honors Biology and
Chemistry or College Prep Chemistry****Grades: 11-12**

This semester elective is designed for juniors and seniors who have a strong interest in biology and have shown the ability to be successful in meeting the course requirements. It is recommended for those students who are planning a career in biological or biomedical fields. Minks are dissected systematically as the human systems are studied. Students will need a three ring binder.

Biotechnology and Microbiology (Honors)**Semester****Prerequisites: C or Better in Biology or Honors Biology and
Chemistry or College Prep Chemistry****Grades: 11-12**

This semester elective is designed for juniors and seniors who have a strong interest in Biology and have shown the ability to be successful in meeting course requirements. It is recommended for those students who are planning a career in a biological field. Students are introduced to biotechnology techniques through lecture and labs. The ethics of their uses is discussed and debated. Students are also introduced to the field of microbiology with an emphasis on lab techniques. Students will need a three ring binder.

Advanced Biology – (LCCC Bio 130)**Full Year****Prerequisites: Teacher Recommendation****Grade: 12**

This dual credit class covers a broad overview of life science with lab experience. The course is designed to introduce scientific terminology and methods of investigation, as well as introduce basic principles of the cell, reproduction, genetics, ecology, evolution, and biological diversity to prepare you for other college level science classes, a career in science, and give you the knowledge to make wise decisions regarding your own body. The course will emphasize how these topics are related to issues facing today's society. Students will need a three ring binder.

Forensic Science**Semester****Prerequisites: Biology and Chemistry****Grades 11-12**

This course will familiarize students with different aspects of forensic science. Students will be able to use a range of vocabulary pertaining to forensic sciences and correctly, and will be able to apply topics studied to real life applications. Students will gain a basic understanding of and be able to apply the scientific method to lab procedures and critical thinking activities. Students will need a three ring binder.

Conceptual Physics**Full Year****Prerequisites: Pre-calculus Enrollment****Grades:11-****12**

This elective course is the study of matter, energy and how matter and energy are interrelated. Topics examined include: mechanics, sound, light, and electricity.

Special Materials: Scientific Calculator

AP Physics (Honors)**Full Year****Prerequisites: Physics****Grades: 11-****12**

Physics is one of the physical sciences. It is a study of matter, energy, and how matter and energy are inter-related. Topics include motion, force, work, sound, light, and electricity. The lecture materials presented in this class are supplemented by projects and applied problems. The content will be what is typically covered in the first semester of college physics. This course should prepare a student to enter a physics program in college or the possibility of testing out of the first semester of physics.

Special Materials: Scientific Calculator

CHEMISTRY 2 DUAL CREDIT**Full Year****Grades 11,12****Prerequisites: Chemistry or College Prep Chemistry, 3.0 GPA, Algebra II (may be currently enrolled in Algebra II, with instructors permission)**

This course is designed to be a year-long, second year high school chemistry course that explores general principles of Chemistry with an emphasis on Inorganic Chemistry. Students may elect for Dual Credit for this course. The Dual Credit is done in conjunction with Concordia University- Nebraska. Lab work and applications of math skills will be a staple of the curriculum. Some of the topics include atomic theory, chemical reactions, solution chemistry, thermochemistry, gas laws, chemical bonding theory, and reduction and oxidation. Students enrolled in the Dual Credit program will receive 4 semester hours of college credit through Concordia University-Nebraska. The final exam at the end of the course will be a standardized test from the American Chemical Society.

Special Materials: Goggles