

Williston High School Science Requirements

Three credits of science are needed to graduate.

Most Universities require 3 or 4 credits **including physical science, biology and chemistry**. It is highly recommended that college bound students take both chemistry and Honors biology in their sophomore year to make scheduling additional sciences possible in their Jr. and Sr. year. Standards and benchmarks can be discussed with any instructor or viewed at the ND State Department of public Instruction website (Note * indicates college preparation recommended course)

<p>Freshman Year Chose one 1 credit Physical science OR 1 credit Honors Physical science*</p> <p>Note: Physical science or Honors physical science is required for graduation</p> <p>Students may be placed in other sciences if recommended by the counselors.</p>	<p>Sophomore Year Chose one or two 1 credit Biology OR 1 credit Honors Biology* And/OR 1 credit Chemistry* Note: most college bound students take both chemistry* and Honors Biology* in their sophomore year. Note: (Bio or Honors Bio* is required to graduate)</p>
<p>Junior Year Chose one or two 1 credit Chemistry * And/OR 1 credit Physics * 1 credit Anatomy and Physiology* 1 credit Ecology/Environmental Science 1 credit Biology II</p>	<p>Senior Year Be sure your minimum 3 credit requirement is met. 1 credit Physics* 1 credit Chemistry* 1 credit Anatomy and Physiology* 1 credit Ecology/Environmental Science 1 credit Biology II And/OR College chemistry or physics as a 5th science * pending course approval Williston State College</p>

Freshman taking Introduction Algebra are advised to take physical science during sophomore year to strengthen math background. . If no science is taken freshmen year both physical science and biology should be take during the sophomore year. Students can take Ecology their freshmen year with a counselor's approval.

◆ **Physical Science**

Class Type: Required
Grade Level: 9
Credit: 1
Pre-requisite: None
Extra Costs: None

NOTE: Only one Physical Science may be taken for science credit.

The word "Science" comes from the Latin word "Scire" which means "to know". The word "physical" comes from the Greek word "physika", which means "natural things". Thus physical science can really involve scientific knowledge of anything found in the universe. Physical science is divided into two main branches. Physics the study of the properties and changes of matter and energy, and Chemistry, the study of different substances and the reactions through which they are changed. Each involves scientific knowledge of a particular area. In your study of physical science you will learn facts and methods that are useful in gaining scientific knowledge of these interesting areas.

◆ **Honors Physical Science***

Class Type: Elective
Grade Level: 9
Credit: 1
Pre-requisite: Algebra
Extra Costs: None

NOTE: Only one Physical Science may be taken for the science credit

Honors Physical Science is a course designed for the student who has a "special" interest in science. This is the first class in the recommended in the college science prep series. The basic purpose of the course seeks to give all students a beginning knowledge of physical science and to offer insight into the means by which scientific knowledge is acquired. The theme of the course is the development of evidence for an atomic model of matter. The method employed to achieve the course goals is one of experimentation and guided reasoning based on the results of student experiments. The HPS course helps students understand some of the basic principles of physical science and acquire useful laboratory skills. It also encourages the exercise of reasoning skills. See Mrs. Fisketjon for more information.

◆ **Biology I**

Class Type: Required
Grade Level: 10-12
Credit: 1
Pre-requisite: Physical Science
Extra Cost: None

Biology is the basic study of living things, their structure, development, evolution, and relationship to the environment. Major topics in biology include human heredity, plants, invertebrate animals, vertebrate animals, the human body, health, and ecological relationships. Emphasis will be placed on learning characteristics of organisms and comparing them to those of other organisms.

◆ **Honors Biology***

Class Type: Required or must take Biology I
Grade Level: 10-12
Credit: 1
Pre-requisite: Physical Science or Honors Phy Sci grade B or better
Extra Costs: None

NOTE: Students that have taken regular Biology cannot take Honors Biology.

Honors Biology is an accelerated course designed for students that intend to go to college or take other high school science classes. Class content expands topics in regular biology and there is increased emphasis on laboratory procedures, critical thinking, and hands on learning. It will help students develop good reasoning, listening and thinking skills. Topics of special interest to individual students are often incorporated into the class program. Students completing this class will be well prepared for taking college science classes. See Mr. Nelson for more information.

◆ **Chemistry I***

Class Type: Elective
Grade Level: 10-11-12
Credit: 1
Pre-requisite: Physical Science
Extra Costs: None

Chemistry I is an inorganic course designed for students interested in increasing their knowledge of science. **Chemistry is an important science choice for most college bound students.** Students who complete this course are generally prepared for college chemistry. Some of the topics covered are: an in-depth study of the periodic chart, chemical bonds, formulas and equations, gas laws, solutions, and oxidation-reduction reactions. Students are also introduced to qualitative analysis – this is the identification of unknown compounds through laboratory procedures. Problem solving is emphasized throughout the course. Laboratory work reinforces the principles. See Mr. Nelson or Mrs. Olson for more information.

◆ **Anatomy and Physiology***

Class Type: Elective
Grade Level: 11-12
Credit: 1
Pre-requisite: Biology
Extra Costs: None

The course includes a study of structures, functions, and dysfunctions of the major systems of the human body. Includes the microscopic and gross anatomy of all systems: skeletal, muscular, circulatory, respiratory, digestive, excretory, nervous, endocrine, reproductive and integumenty. Major topics include anatomical terminology, the molecular and cellular basis of physiologic processes, and tissues. Laboratory work includes histological observations using microscopes, CD's and websites, anatomy studies using models and dissections, and physiology exercises. The course is intended for students who wish to study how the human body operates and will be beneficial for those planning a career in a **health related field.** See Mrs. Olson for more information.

◆ **Physics***

Class Type: Elective
Grade Level: 11-12
Credit: 1
Pre-requisite: Strong math background, chemistry recommended
Extra Costs: None

Physics is the study of the natural laws that govern the behavior of matter. Many of the every day events we observe can be better understood by mathematical analysis and physics provides the tools to do this. Topics studied include force, work acceleration, velocity, kinetic energy, electricity, sound and light. **Colleges for nearly all technical degrees require physics.** See Mr. Fleck for more information

▲ Ecology/Environmental Science

Class type: Elective

Grade Level 11-12

Credit: 1

Prerequisite none

Note: This class will be a 2 hr block for one semester

This course deals with living organisms and their relationships with the environments they live in. Understandings of ecosystems, populations and biodiversity are presented. This course introduces students to major ecological concepts and the environmental problems that affect the world in which we live. **Topics include pollution, population growth, limited resources, and land preservation.** The two hour block is to make it easier to schedule possible fieldtrips. This class may also be offered in the summer as a field class pending funding. See Mrs. Fisketjon for more information. *This class is designed to meet the third science requirement for graduation without the level of background required for the college preparatory science courses.*

▲ Biology II

Class type: Elective

Grade Level 11-12

Credit 1

Prerequisite none

This course is continuation of the topics in regular biology. **There will be an emphasis on animals and plants, biology films, reading biology related articles, local field experiences and popular topics in biology.** *This class is designed to meet the third science requirement for graduation without the level of background required for the college preparatory science courses.*