



St. Bernard's High School

Science Department

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4 Year Science Progression by Level

Level	Level 2 <i>Average</i>	Level 1 <i>Accelerated</i>	Honors
Freshmen	Integrated Science	Integrated Science	Biology
Sophomore	Biology	Biology	Chemistry
Junior	Chemistry* Environmental Science Or Health	Chemistry	Physics
Senior	Environmental Science Or Health Physiology	Physics Physiology	TBD

* *Determined by Math Pre-requisite*

Science

The Science Department challenges the student to appreciate the wonders of the universe through the interrelationships of the courses presented in the curriculum. Growth and development of critical thinking within the field of scientific inquiry direct the students to become enlightened citizens capable of responding to the challenges of accelerated changes in science, technology and society.

Requirements for Graduation: 3 Years of Science

Freshmen Year

Biology, *Honors Level*

Biology is the study of life processes. Students will be introduced to the fundamental concepts: cells (including structures, respiration and division), body systems, the plant cell, and photosynthesis, as well as basic concepts in genetics. Students will engage in cooperative learning, demonstrations, discussions, and presentations. Laboratory exercises are an integral component to the biology course.

Prerequisite:

At least an 85 average in Honors Integrated Science.

Full year / 1 Credit

Integrated Science *Level 1, Level 2*

Integrated Science is designed to give students a strong physical science background and prepare them for higher-level science courses. Although a foundation in basic physics and chemistry is emphasized, other sciences (including earth science, biology, astronomy, and environmental issues) are incorporated into the curriculum to give students a greater appreciation for the connections between all the sciences and to the world around us. The course emphasizes the application of fundamental scientific concepts by developing analytical and critical thinking skills.

Prerequisite:

None.

Full year / 1 Credit

Sophomore Year

Chemistry, Honors Level

Chemistry is the study of the relationship between the structure and properties of matter. This course follows a logical, sequential and experimental development of the major principle in chemistry. Such topics as the “mechanics” of chemistry, atomic structure, atomic theory, the periodic table and atomic properties, the mole concept, chemical bonding, stoichiometry, acids and bases, the gas laws and extensive descriptive material are covered.

Prerequisite:

Honors: At least an 85 average in Honors Biology, Honors Advanced Algebra

Full year / 1 Credit

Biology, Level 1, Level 2

Biology is the science that seeks to understand the living world. In this course, students will be introduced to many fundamental concepts: ecology, cells, (structure, function, growth and division), basic concepts of genetics, the human body systems, as well as plant diversity. Students will engage in cooperative learning, demonstrations, discussions, and presentations. Laboratory exercises are an integral component to the biology course.

Prerequisite:

Level 1: At least an 80 average in Level 1 Integrated Science.

Level 2: Integrated Science Level 2.

Full year / 1 Credit

Junior Year

Physics, Honors

Physics introduces the student to the core concepts in college physics. Topics covered include kinematics, Newtonian dynamics, work, energy, momentum, rotational, mechanics, fluid statistics and physics. An emphasis is placed on understanding the concepts through demonstrations, activities and laboratories. Level I introduces the students to formulas in physics as a way to supplement understanding of the concepts. Honors students solve in-depth mathematical problems in physics.

Prerequisite:

At least an 85 average in Honors Advanced Algebra, Honors Geometry/Trigonometry

Full year / 1 Credit

Chemistry *Level 1, Level 2*

Chemistry is the study of the relationship between the structure and properties of matter. This course follows a logical, sequential and experimental development of the major principle in chemistry. Such topics as the “mechanics” of chemistry, atomic structure, atomic theory, the periodic table and atomic properties, the mole concept, chemical bonding, stoichiometry, acids and bases, the gas laws and extensive descriptive material are covered.

Prerequisite:

Level 1: At least an 80 average in Level 1 Biology, Level 1 Algebra 1.

Level 2: At least a 75 average in Level 2 Biology, Level 2 Algebra II.

Full year / 1 Credit

Senior Year

Anatomy & Physiology, *Level 1, Level 2*

This course examines the structure and function of the human body in detail. Most major body systems will be covered. Activities include lectures, demonstrations, microscopic examination of the human tissues and dissections of pigs, frogs, and sheep hearts for the comparative study of the human body.

Prerequisite:

Level 1: At least an 80 average in Level 1 Chemistry.

Level 2: Pass Integrated Science, Biology, Chemistry.

Full year / 1 Credit

Physics, *Level 1*

Conceptual physics engages students with analogies and imagery from real-world situations to build a strong conceptual understanding of physical principles ranging from classical mechanics to modern physics. With this strong conceptual foundation, students are enabled to understand the equations and formulas of physics, and to make connections between the concepts of physics and their everyday world. Various topics of physics including one and two dimensional motion, work and energy, magnetism, liquid, gases and solids, rotational motion, relativity are studied. Students learn from labs, group work, and projects.

Prerequisite:

At least an 80 average in Level 1 Algebra 1, Level 1 Geometry, Level 1 Chemistry.

Full year / 1 Credit

***Environmental Science, Level 2**

Environmental Science introduces students to the basic principles of environmental science and to current environmental issues. The course seeks to foster an appreciation of the natural world and to encourage students to adopt practices in their everyday life that will help to preserve the environment. The course includes a study of ecology, air, water, land energy, and waste management. The Catholic perspective on care for the environment is an integral part of the course.

Prerequisite:

Open to all students in grades 11 and 12.

Full year / 1 Credit

***Health, Level 2**

Health is the well-being of body, mind, and relationships with other people. This course will take an in-depth look at mental health, social health, human development, nutrition and fitness, substance abuse, and preventing disease. The course consists of lectures, demonstrations, class activities, and student participation.

Prerequisite:

Open to all students in grades 11 and 12.

Full year / 1 Credit

** Environmental Science and Health courses are offered alternating years.*