



# BCI Science Department

---

## Biology, Grade 12, University Preparation (SBI4UI)

This course provides students with the opportunity for in-depth study of the concepts and processes that occur in biological systems. Students will study theory and conduct investigations in the areas of biochemistry, metabolic processes, molecular genetics, homeostasis, and population dynamics. Emphasis will be placed on the achievement of detailed knowledge and the refinement of skills needed for further study in various branches of the life sciences and related fields.

**Prerequisite:** Biology, Grade 11, University Preparation  
(Highly Recommended: Grade 11 Chemistry, University)

## Chemistry, Grade 12, University Preparation (SCH4UI)

This course enables students to deepen their understanding of chemistry through the study of organic chemistry, the structure and properties of matter, energy changes and rates of reaction, equilibrium in chemical systems, and electrochemistry. Students will further develop their problem-solving and investigation skills as they investigate chemical processes, and will refine their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in everyday life and on evaluating the impact of chemical technology on the environment.

**Prerequisite:** Chemistry, Grade 11, University Preparation

## Chemistry, Grade 12, College Preparation (SCH4CI)

This course enables students to develop an understanding of chemistry through the study of matter and qualitative analysis, organic chemistry, electrochemistry, chemical calculations, and chemistry as it relates to the quality of the environment. Students will use a variety of laboratory techniques, develop skills in data collection and scientific analysis, and communicate scientific information using appropriate terminology. Emphasis will be placed on the role of chemistry in daily life and the effects of technological applications and processes on society and the environment.

**Prerequisite:** Science, Grade 10, Academic or Applied

## **Earth and Space Science, Grade 12, University Preparation (SES4UI)**

This course develops students' understanding of Earth and its place in the universe. Students will investigate properties of the forces in the universe and solar system and analyse techniques scientists use to generate knowledge about these forces. Students will closely examine the materials of Earth, its internal and surface processes, and its geological history, and will learn how Earth's systems interact and how they have changed over time. Throughout the course, students will learn how these forces, processes, and materials affect their daily lives. The course draws on biology, chemistry, physics, and mathematics in its consideration of geological and astronomical processes that can be observed directly or inferred from other evidence.

**Prerequisite:** Science, Grade 10, Academic

\*Students who achieve a minimum mark of 75% in this course will be given the opportunity to write an online equivalency test to obtain the Earth 121 LEC (lecture) half credit course in the Department of Environmental Science at the University of Waterloo. A student will need a grade of 75% or greater on the equivalency test to be granted the credit.\*

## **Physics, Grade 12, University Preparation (SPH4UI)**

This course enables students to deepen their understanding of physics concepts and theories. Students will continue their exploration of energy transformations and the forces that affect motion, and will investigate electrical, gravitational, and magnetic fields and electromagnetic radiation. Students will also explore the wave nature of light, quantum mechanics, and special relativity. They will further develop their scientific investigation skills, learning, for example, how to analyse, qualitatively and quantitatively, data relating to a variety of physics concepts and principles. Students will also consider the impact of technological applications of physics on society and the environment.

**Prerequisite:** Physics, Grade 11, University Preparation

### **Science, Grade 12, University/College Preparation (SNC4MI)**

This course enables students, including those pursuing post-secondary programs outside the sciences, to increase their understanding of science and contemporary social and environmental issues in health-related fields. Students will explore a variety of medical technologies, pathogens and disease, nutritional science, public health issues, and biotechnology. The course focuses on the theoretical aspects of the topics under study and helps refine students' scientific investigation skills.

**Prerequisite:** Science, Grade 10, Academic, or any Grade 11 university, university/college, or college preparation course in science

### **Advanced Placement Courses (SBI 4UX, SCH 4UX, SPH 4UX)**

An Advanced Placement program is offered in Biology, Chemistry and Physics at the Grade 12 level. Students must take the Grade 11 University Level prerequisites in order to register for these courses.

The content of each AP course is an enrichment of the Ontario curriculum offered at Bluevale.

Any student registered in University Level Biology, Chemistry or Physics can also choose to write an AP exam.

To prepare for the AP exam a student workbook must be purchased.

A student may purchase the workbook while in Grade 11 or Grade 12.