Burnaby Mountain Secondary School

Science Department Elective Course Options

Science 8 Enriched

Acceptance is based on a completed application form that is available online (course selection). This requires recommendation from the student's grade 7 teacher and an exam to be written at Burnaby Mountain Secondary (date TBA).

Although covering regular curriculum, our enriched courses require students to work at a faster pace to accommodate extended learning.

Science 9 Enriched

Students should be proficient (~A) in the Science 8 curricular competencies that include questioning, planning and conducting, processing and analyzing, evaluating, applying and communicating. Students should also have their previous Science teacher's recommendation, and good work habits in all other courses.

Although covering regular curriculum, our enriched courses require students to work at a faster pace to accommodate extended learning.

Science 10 Enriched

Students should be proficient (~A) in the Science 9 curricular competencies that include questioning, planning and conducting, processing and analyzing, evaluating, applying and communicating. Students should also have their previous Science teacher's recommendation, and good work habits in all other courses.

Although covering regular curriculum, our enriched courses require students to work at a faster pace to accommodate extended learning.

Life Sciences 11 (Previously Biology 11)

Recommendation: 65% or better in Science 10.

The key concepts covered in this course examine the interactions required for life at molecular and cellular level, evolution, and the characteristics used to classify organisms. Students will examine trends in complexity among various life forms as well as the relationships between organisms using an ecological and evolutionary lens.

This course involves regular microscope work and numerous dissections.

Students are expected to:

- Read and understand information from readings
- Analyze, apply and draw conclusions from information
- Prepare for and write detailed tests (including a cumulative final)

Students should be aware that Life Sciences 11 contains a great deal of content and requires a commitment to regular study.

Life Sciences 11 Enriched (Previously Biology 11 Enriched)

Students should have 80% or better in Science 10, plus their teacher's recommendation. Student's should also have good work habits in all other courses.

This is an in-depth, intensive course that moves at a faster paced than regular Life Sciences 11 and prepares students for AP Biology 12. Life Science 11, Anatomy & Physiology 12 as well as AP Biology 12 curriculum will be covered in this course with an emphasis on the developing the AP Science practices skills. As Life Sciences 11 Enriched covers topics with greater depth and at a faster pace than regular Life Sciences 11 it is very important for students to commit to effective and regular study routines.

This course is the first half of the AP Biology curriculum and is required to take AP Biology 12. It is also important that students have good work habits in all other courses.

Chemistry 11

Recommendation: 65% or better in Science 10 and Foundation and Pre-Calculus Math 10.

This course is a survey course introducing the branches of chemistry that include physical, inorganic, and organic. Students will learn about what matter is composed of and the characteristics and behaviour of matter at the molecular and atomic level. A focus will be on students learning measurement and lab techniques and performing quantitative calculations.

Students are expected to:

- Have good math skills including unit conversion and algebra
- Operate a scientific calculator (exponents, order of operations, scientific notation)
- Solve word problems systematically
- Prepare for and write detailed tests (including a cumulative final)

Chemistry 11 Enriched

Students should have 80% or better in Science 10, plus their teacher's recommendation. Student's should also have good work habits in all other courses.

An in-depth intensive course that moves at a faster pace than regular Chemistry 11 and prepares students for AP Chemistry 12. As Chemistry 11 Enriched covers topics with greater depth and at a faster pace than regular Chemistry 11 it is very important for students to commit to effective and regular study routines.

This course is the first half of the AP Chemistry curriculum and is required to take AP Chemistry 12.

Physics 11
Recommendation: 65% or better in Science 10 and Foundations and Pre-Calculus Math 10.

Physics is a fundamental science that strives to describe the most basic elements of nature. Through inquiry and problem solving, students survey major themes of Physics such as kinematics – how thing move; dynamics – why things move; energy – kinetic, potential, and thermal; circuits – building and analyzing; as well as waves – sound and light. There is a focus on data collection and analysis through lab work.

Of all the senior science courses offered, Physics is the most reliant on strong mathematical skills.

AP Physics 1
Students should have 80% or better in Science 10 and Foundations and Pre-Calculus Math 10, plus their teacher's recommendation. Student's should also have good work habits in all other courses.

AP Physics 1 is the first half of the AP Physics curriculum, and is required before taking AP Physics 2. It is an enriched course that, together with AP Physics 2, provides students with the equivalent of a first year university physics course. It is a valuable course for students who are strong academically and have a keen interest in the area of physics.

Students will explore topics such as Newtonian mechanics (including rotational motion), dynamics, energy, mechanical waves and sound, and introductory simple circuits. Lab work is a key component of the course, and students will focus on experimental design, data collection, and analysis.

Science for Citizens 11

Requirement: Passing mark in Science 10

Students will be exploring the science that occurs in the everyday world around them. Examination of how technology affects and changes science will be integrated throughout the course.

This course provides students with the pre-requisites required for graduation. It will not allow students entry into university. Some college programs may allow this course for admission but this will vary from college to college and program to program.

Anatomy and Physiology 12 (Previously Biology 12)

Recommendation: C+ or better in Life Sciences 11 and a good understanding of foundational Chemistry.

This course examines basic biochemistry and detailed human physiology. It builds an understanding of chemistry, cells, DNA, and enzymes to lead into in depth comprehension of how animals, and ultimately the human body functions.

Students must be able to:

- Read and understand information from readings
- Analyze, apply information, and draw conclusions

Anatomy and Physiology 12 is a large step up from Life Sciences 11 in terms of difficulty. This is due to the high level of vocabulary and processing involved.

AP Biology 12

Students should have an 80% or better in Life Sciences 11 Enriched, plus the teacher's recommendation. Student's should also have good work habits in all other courses.

AP Biology 12 is an enriched course that provides students with equivalency of a first year university biology course. It is a valuable course for students who are strong academically and have a keen interest in the area of biology.

As AP Biology 12 covers topics with greater depth and at a faster pace than regular Biology (Anatomy and Physiology) 12 it is very important for students to commit to effective regular study routines.

Chemistry 12
Recommendation: C+ or better in Chemistry 11 and Foundations or Pre-Calculus 11

This course is an in-depth study on equilibrium systems (reversible reactions). Students will learn about characteristics of equilibrium and the factors that affect reactions. They will also apply their understanding to reaction rates, solubility, acids and bases, and electrochemistry. This course involves a higher level of application and critical thinking than Chemistry 11.

Students are expected to:

- Have good math skills
- Have completed Chemistry 11 at a highly competent level
- Apply significant figures, the mole concept and molarity in calculations
- Have good study habits and spend more time practicing problems
- Make connections between topics and apply their knowledge to new situations

AP Chemistry 12
Students should have an 80% or better in Chemistry 11 Enriched, plus the teacher's recommendation. Student's should also have good work habits in all other courses.

AP Chemistry 12 is an enriched course that provides students with equivalency of a first year university chemistry course. It is a valuable course for students who are strong academically and have a keen interest in the area of chemistry.

As AP Chemistry 12 covers topics with greater depth and at a faster pace than regular Chemistry 12 it is very important for students to commit to effective regular study routines.

Physics 12
Recommendation: C+ or better in Physics 11 and Pre-Calculus Math 11.

Physics 12 builds on the concepts and skills developed in Physics 11 with an emphasis on momentum, circular motion, non-contact forces, electrostatics, and electromagnetism. Capitalizing on the growing sophistication of students' experimental skills, lab work will focus on experimental design, data collection, and analysis.

Physics 12 is a challenging course meant to prepare students for post-secondary sciences.

AP Physics 2

Students should have 80% or better in AP Physics 1 and Pre-Calculus Math 11, plus their teacher's recommendation. Student's should also have good work habits in all other courses.

AP Physics 2 is an enriched course that, along with AP Physics 1, provides students with equivalency of a first year university physics course. It is a valuable course for students who are strong academically and have a keen interest in the area of physics.

Students will explore topics such as fluid statics and dynamics, thermodynamics with kinetic theory; fluids, electrostatics, electrical circuits with capacitors, electromagnetism, physical and geometric optics, and quantum, atomic and nuclear physics. Capitalizing on the growing sophistication of students' experimental skills, lab work will focus on experimental design, data collection, and analysis.