

# **Burnaby Mountain Secondary School**

## **Science Department Elective Course Options**

### **Science 8 Honours**

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

Although covering regular curriculum at this level this honours course requires students to work at a faster pace to accommodate enrichment activities and topics.

### **Science 9 Honours**

Acceptance is based on an application. Students should have 80% or better in Science 8 plus their teacher's recommendation.

Although covering regular curriculum at this level this honours course requires students to work at a faster pace to accommodate enrichment activities and topics.

### **Science 10 Honours**

Acceptance is based on an application. Students should have 80% or better in Science 9 plus their teacher's recommendation.

On top of preparing for the Provincial Exam in June, this honours course requires students to work at a faster pace to accommodate enrichment activities and topics.

## **Life Sciences 11**

Recommendation: 65% or better in Science 10.

Students will examine the characteristics of organisms from each of the living kingdoms and their relationships with each other and the world through evolution and ecology.

This course involves regular microscope work and numerous dissections.

Students are expected to:

- read and draw 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.

## **Biology 11 Honours**

Acceptance is based on an application. Students should have 80% or better in Science 10 plus their teacher's recommendation.

An in-depth, intensive course that moves at a faster pace than regular Life Sciences 11 and prepares students for AP Biology 12. As Biology 11H covers topics with greater depth and at a faster pace than regular Biology (Life Sciences) 11 it is very important for students to commit to effective and regular work routines.

This course is the first half of the AP Biology curriculum and leads into AP Biology 12.

## **Chemistry 11**

Recommendation: 65% or better in Science 10 and 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 behavior 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 Honours

Acceptance is based on an application. Students should have 80% or better in Science 10 plus their teacher's recommendation.

An in-depth, intensive course that moves at a faster pace than regular Chemistry 11 and prepares students for AP Chemistry 12. As Chemistry 11H 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 work routines.

This course is the first half of the AP Chemistry curriculum and leads into AP Chemistry 12.

## Physics 11

Recommendation: 65% or better in Science 10 and 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 things move; dynamics – why things move; energy – kinetic, potential, thermal, and nuclear; as well as waves – sound and light. Nuclear physics, Einstein's Special Theory of Relativity, and other perplexing and interesting problems are explored. Of all the senior science courses offered, Physics is the most reliant on strong mathematical skills.

## AP Physics 1

Recommendation: 80% or better in Science 10 and Math 10.

AP Physics 1 is the first half of the AP Physics curriculum. 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.

Explore topics such as Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory simple circuits.

## 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**

Recommendation: C+ or better in Life Sciences 11.

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 draw 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**

Requires an application. Students should have an 80% or better in Biology 11 Honours plus the teacher's recommendation.

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 and regular work routines.

## **Chemistry 12**

Recommendation: C+ or better in Math 11 and Chemistry 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 it. 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 (see percentage recommendation)
- 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**

Requires an application. Students should have an 80% or better in Chemistry 11 Honours plus the teacher's recommendation.

AP Chemistry 12 is an enriched course that provides students with the equivalent 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 and regular work routines.

## **Physics 12**

Recommendation: B or better in Math 11 and Physics 11.

Physics 12 builds directly upon the concepts and skills developed in Physics 11 with an emphasis on mechanics and electromagnetism. Capitalizing on the growing sophistication of students' mathematical skills, kinematics and dynamics are studied in two dimensions. This course also explores concepts in electromagnetism, electric and magnetic fields, current electricity, motors and generators, and their applications in real-world situations.

## **AP Physics 2**

Requires an application. Students should have an 80% or better in AP Physics 1 and Math 11 plus the teacher's recommendation.

AP Physics 2 is an enriched course that 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.

Explore topics such as fluid statics and dynamics; thermodynamics with kinetic theory; PV diagrams and probability; electrostatics; electrical circuits with capacitors; magnetic fields; electromagnetism; physical and geometric optics; and quantum, atomic, and nuclear physics.