**Overview:**

Science 8, 9 and 10 are courses which survey all of the branches of science (biology, chemistry, physics, earth/space science). In grades 11 and 12 students have the opportunity to choose which of the sciences they want to study.

All of the senior science courses are challenging. Students must be prepared to spend considerable time working outside of class. Approximately 30 – 60 minutes previewing, reviewing, studying and completing homework assignments for each scheduled class should be expected. It is easy to fall behind in any of these courses, so regular attendance is a requirement as well as regular studying. Students are evaluated on regular homework assignments, laboratory activities as well as quizzes and tests. Quizzes and tests count for a greater proportion of the overall mark. Many of the courses have midyear and final exams.

**Things to consider when choosing your science courses:**

* You must have passed Science 10 before you can register for grade 11 science courses.
* You must complete one science 11 to graduate.
* Colleges and universities have specific science requirements depending on the program you apply for. Check with your counsellor for details.
* In order to take Biology, Chemistry or Physics 12, you must complete the corresponding grade 11 course.
* In order to take Geology 12 you must have completed at least 1 science 11 (it does not matter which one).
* In order to be eligible for science 11 honours courses it is recommended the student has an average of 80% or higher in all courses and “G” work habits for all courses. There is limited space in these courses and students will be chosen according to their term 1 and 2 marks in Science 10. An honours application form is no longer required.
* In order to take AP Biology 12 or AP Chemistry 12 it is expected that you have completed the corresponding grade 11 honours course. The prerequisite for AP Physics 2 is AP Physics 1.
* Students who complete an AP Science course have the option to pay to write an AP exam. If the mark on this exam is high enough, the student will be given credit for the first year university course. Please see Mr. Amos Lee or your counsellor for details.
* AP courses finish in April so the pace is accelerated.

**Course Information:**

**Biology 11** – Students will study cells, evolution, classification of living things, ecology and the five kingdoms of living things.

**Biology 12 (prerequisite Biology 11)** – Students will study biochemistry (biological molecules, DNA, protein synthesis, the cell membrane and enzymes) and human biology (digestive, circulatory, respiratory, nervous, reproductive and urinary systems).

**Biology 11 Honours** – All of the material from Biology 11 in more detail, plus a genetics unit and an in depth botany unit. There is also a mandatory summer project. The volume of material covered in this course is much greater than in Biology 11.

**Biology 12 AP (prerequisite Biology 11 Honours)** – All of the material from Biology 12 in more detail, plus a detailed study of cellular respiration, photosynthesis and the immune system. The volume of material covered in this course is much greater than in Biology 12.

**Chemistry 11** – Topics covered in this course include matter and naming, mole and chemical equation calculations and basic atomic theory.

**Chemistry 12 (prerequisite Chemistry 11)** – This course builds on material from Chemistry 11 and new topics include rates of reaction and equilibrium, acid and base chemistry and electrochemistry.

**Chemistry 11 Honours** – Covers all of the material from Chemistry 11 but in greater depth. New topics include nuclear chemistry, gas laws and detailed atomic theory.

**Chemistry 12 AP (prerequisite Chemistry 11 honours)** – Covers all of the material from Chemistry 12 but in greater detail plus thermochemistry.

**Earth Science 11** – Topics include astronomy, rocks and minerals, geologic time, plate tectonics and surface processes. This course has less of an emphasis on test scores and is recommended for students who have struggled in Science 10.

**Geology 12 (prerequisite any grade 11 science)** – There is some overlap between this course and Earth Science 11, but the detail is greater in Geology 12. Topics include rocks and minerals, mining and the environment, plate tectonics (including earthquakes and volcanoes), the Earth’s geologic history and surface processes (including weathering, erosion, ground water, rivers and glaciers).

**Physics 11** – Topics include kinematics, mechanics (forces, gravity, momentum, energy, power, heat), waves and optics (sound, refraction, reflection, lenses, mirrors), nuclear energy and relativity.

**Physics 12 (prerequisite Physics 11)** – Topics include kinematics and mechanics (building on material from Physics 11), circular motion, torque, electricity and magnetism.

**AP Physics 1**– Covers all material from Physics 11 but in greater detail. The main difference is an increase in mathematical difficulty.

**AP Physics 2 AP (prerequisite is AP Physics 1)** – Covers all material from Physics 12 in greater detail. Extra material includes thermodynamics and fluids, quantum and nuclear physics and more optics.