

SENIOR SCIENCE COURSES 2019/2020

[MUST TAKE]

SCIENCE 10: Science 10 is a continuation of the junior science program. The big ideas to be developed in this course include: genetics (biology), chemical reactions (chemistry), conservation of energy (physics), and formation of the universe (earth science). The big ideas will be taught with an emphasis on developing analytic skills, scientific processes and critical thinking while learning about more advanced scientific topics.

[MUST TAKE A MINIMUM OF ONE]

CHEMISTRY 11: Chemistry 11 is an introductory course that will give students an understanding of the composition, classification, properties and behavior of matter. Problem solving, critical thinking and experimentation are skills that will be used throughout this course. The big ideas to be explored in this course include: atoms and molecules, organic chemistry, the mole, chemical reactions and energy conservation, and solubility. Daily review, homework completion and strong study skills are required to be successful in Chemistry 11. Course assessment and assignments are based on classroom lessons, discussions, projects, and laboratory based inquiry work.

Who: Chemistry 11 is strongly recommended for students pursuing a career in the Sciences, Engineering or Health Sciences.

Pre-requisites: Students are strongly recommended to have a C+ or higher in Science 10, and Pre-Calculus 10.

EARTH SCIENCE 11: Earth Science 11 will focus on the Earth both in relation to its place in the Solar System, and its composition. We will consider the processes that affect both the internal structure and the surface of the planet. Whenever possible students will draw on examples and case studies from British Columbia. The big ideas to be explored in this course include: earth's resources, plate tectonic theory, energy and weather, distribution of water, and the solar system.

Who: This is a Science course, however, there is less of a Math focus than in other Science 11 courses. This course is ideal for students moving into either science or non-science programs after high school.

Pre-requisites: A minimum C+ in Science 10 is recommended before enrolling in this course.

ENVIRONMENTAL SCIENCE 11: This course is an introduction to environmental science. It deals with the issues of making the planet sustainable. The key idea includes looking at the diversity within local ecosystems. The inquiry based focus will be from biological, chemical and physical considerations. Processes of change is an important topic considering the need for energy in our society. Sustainability and the necessary restoration, including First Peoples principles will be studied and projects initiated. The focus is on local ecosystems. The big ideas to be explored in this course include: biodiversity, ecosystems, human impacts on ecosystems and sustainability, stewardship, and the resoration of ecosystems.

Who: This is a science course offering a foundation for many future careers in science and non-science areas, as green issues are becoming a part of many careers, including law, politics, business, and the arts and sciences.

Pre-requisites: A minimum C+ in Science 10 is recommended before enrolling in this course.

LIFE SCIENCES 11: Life Sciences is a course surveying the biodiversity that exists on Earth. Students will have an opportunity to communicate their learning through classwork, tests, projects, article reviews and lab work. They will be challenged to think critically and creatively. In the lab setting, students will need to have strong microscope skills. Dissections are a required component of this course and students must be willing to participate. The big ideas to be explored in this course include: life interactions at the molecular and cellular levels, evolution, and characteristics of organisms (Microbiology, Botany and Zoology).

Who: Life Sciences 11 is an introductory course preparing students for first year biology courses in college or university and is recommended for students wishing to pursue a career in science.

Pre-requisites: Students are strongly recommended to have a C+ or higher in Science 10.

PHYSICS 11: Physics 11 focuses on the principles and theories of motion and energy, through the study of 1 and 2 dimensional kinematics, dynamics, energy, work, electric circuits and waves. There is a focused emphasis on lab skills, data analysis, scientific method, scientific inquiry, and applications of physics. Students will develop critical thinking skills in a meaningful, creative environment. This course will strengthen your problem solving abilities in all areas.

Who: Students going into the sciences, math or engineering in post-secondary (including pharmacy and pre-med).

Pre-requisites: Students are strongly recommended to have a B or higher in Science 10 and Foundations of Math and Pre-Calculus 10.

SCIENCE FOR CITIZENS II: Science for Citizens 11 deals with inventions and discoveries, and the way in which science and technology affect the well being of individuals and the global society. The big ideas explored in this course include: how scientific knowledge informs our every day lives, understanding how humans respond and adapt to change, and science and technology and their application to the work place.

Who: This course is meant to act as a final science course for students who do not wish to continue studies within the field of science.

Pre-requisites: Completion of Science 10.

[CAN TAKE IF DESIRED]

ANATOMY AND PHYSIOLOGY I2: Anatomy and Physiology 12 is a course focussing on the human body. Students will have the opportunity to communicate their learning through classwork, tests, projects, article reviews and lab work. The big ideas developed in this course include: homeostasis, biological molecules, gene expression fro protein synthesis, and organ systems. Students must have strong skills for using the microscope. Dissections are a required component of this course and students must be willing to participate.

Who: Anatomy and physiology 12 is a recommended course for students wishing to continue in the life sciences in post-secondary.

Pre-requisites: Students are strongly recommended to have a C+ or higher in Life Sciences 11 and Chemistry 11.

CHEMISTRY I2: Chemistry 12 is an advanced course that will give students the foundation needed for Chemistry at the post-secondary level. This is a demanding course for those that have succeeded in Chemistry 11 and plan to pursue further studies in this field. The big ideas to be explored in this course include: reaction rates, dynamic equilibrium, solutions, acid-base chemistry, and oxidation/reduction. Daily review, homework completion and strong study skills are required to be successful in Chemistry 12. Course assessment and assignments are based on classroom lessons, discussions, projects, and laboratory based inquiry work.

Who: Chemistry 12 is strongly recommended for students pursuing a career in the Sciences or Health Sciences.

Pre-requisites: Students are strongly recommended to have a B or higher in Chemistry 11 and Pre-Calculus 11.

ENVIRONMENTAL SCIENCE I2: This is an advanced course for students wanting to understand and influence our community and the world on city planning, water use, and the prevention of further global warming. The program covers the science behind the issues of having clean water globally and global warming. The focus is on world issues to do with sustainable practices. Projects will include inquiry based projects to discover what is really happening in climate change today. Environmental science is an increasing part of many careers and opportunities in the increasing green industries. The program will relate to analytical lab work, field studies, engineering and technological applications and health industries. The big ideas to be developed in this course include: how human actions affect the quality of water and its ability to sustain life, human activities and their influence on global climate, sustainable land useage and living sustainably.

Who: Recommended for students going into the sciences, arts or business, with an interest or focus on the environment.

Pre-requisites: It is strongly recommended that participants have at least a B or higher in Physics, Chemistry or Biology 11

PHYSICS I2: Physics 12 is an advanced course for those students who plan to continue studying science at a post secondary institution. It builds upon the conceptual framework created in Physics 11. Lab skills, data analysis, scientific method, and scientific inquiry continue to be emphasized. Topics of study include: vectors, relative motion, momentum, equilibrium, circular motion, gravitation, electrostatics, and electromagnetism.

Who: Recommended for students going into the sciences, engineering, pharmacy or medicine.

Pre-requisites: It is strongly recommended that students have a B or higher in Physics 11.

GEOLOGY I2: Geology 12 will draw upon prior knowledge of all scientific disciplines to better understand and explain the processes that make up the Earth. Topics of study include: The history of the Earth, Resource Extraction, Rocks and Minerals, and Internal and Surface Processes. This course will develop lab skills and scientific inquiry, as well as introduce students to the work that Geologists do in the world. Hands on, experiential learning is an integral part of this course. Whenever possible, topics and examples will relate to British Columbia and our environment. The big ideas explored in this course include: minerals, rocks and mining, earth's geological history as seen in fossil evidence, plate tectonic theory and the earth's changes through geological time, and the form, arrangement, weathering and erosion, and structures of rocks, and how they are affected by forces.

Who: Recommended for students going into the sciences or with an interest in Geology.

Pre-requisites: A minimum C+ in any Science 11 course is recommended.