

# MATH COURSES AT LP

## MATH REQUIREMENTS FOR POST-SECONDARY

<u>INSTITUTION</u>	<u>ARTS (incl. UT)</u>	<u>SCIENCE</u>	<u>BUSINESS</u>	<u>TRADES</u>	<u>NURSING</u>	<u>MUSIC</u>
<u>UVic (Victoria)</u>	FOM 11 OR Pre-Calc 11	Pre-Calc 12	Pre-Calc 12	N/A	No First Year Entry	FOM 11
<u>Camosun (Victoria)</u>	Depends on program but generally FOM 11	Pre-Calc 12	FOM 11 OR Pre-Calc 11	AW 11 preferred but any other 11 accepted *AW 12 is a good idea as well but not required	FOM 12 OR Pre-Calc 11	Any 11
<u>UBC (Vancouver)</u>	FOM 12 OR Pre-Calc 11	Pre-Calc 12	Pre-Calc 12	N/A	FOM 12 OR Pre-Calc 11	FOM 12 OR Pre-Calc 11
<u>SFU (Burnaby)</u>	FOM 11 OR Pre-Calc 11	Pre-Calc 12	Pre-Calc 12	N/A	N/A	FOM 11 OR Pre-Calc 11
<u>BCIT (Burnaby)</u>	N/A	Pre-Calc 12	Any 11	Any 11	'B' in FOM 11	N/A

\*BCIT offers a wide range of specialized programs – each having their unique requirements – consult their webpage

\*This chart is a guideline only. It is the responsibility of the individual to ensure that correct courses are chosen to meet pre-requisites. Consult the webpage of the post-secondary institution of interest for details.

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## **WORKPLACE MATHEMATICS 11**

This course is strongly recommended for students who are planning on entering the workforce directly after high school, or who are planning on pursuing a career in the trades industries. Topics covered may include reasoning, rates of change, measurement and statistics. Students who successfully master the learning outcomes of this course may continue on to Apprenticeship and Workplace Mathematics 12. This course satisfies the Ministry of Education's mathematics graduation requirements.

## **FOUNDATIONS OF MATHEMATICS 11**

This course is strongly recommended for students who are planning on pursuing post-secondary studies in the arts or humanities. Topics studied may include logic and reasoning, functions, geometry, and statistics. Students who successfully master the learning outcomes of this course may continue on to Foundations of Mathematics 12. This course satisfies the Ministry of Education's mathematics graduation requirements. Students who are planning on pursuing post-secondary studies in math or sciences may consider taking both Foundations Math 11 and Pre-Calculus Math 11 if they wish to be best prepared for post-secondary studies, but will need to take at least Pre-Calculus Math 11.

## **PRE-CALCULUS MATH 11**

This course is strongly recommended for students who are planning on pursuing post-secondary studies in math or sciences. Topics covered may include relations and functions, trigonometry, polynomial functions, and graphing. Students who successfully master the learning outcomes of this course may continue on to Pre-Calculus 12. This course satisfies the Ministry of Education's mathematics graduation requirements. Students who are planning on pursuing post-secondary studies in math or sciences should consider taking both Foundations Math 11 and Pre-Calculus Math 11 if they wish to be best prepared for post-secondary studies. Students who are planning on pursuing studies in arts or the humanities should take the Foundations of Mathematics 11.

## **PRE-CALCULUS MATH 12**

This academic course is intended for students who plan to pursue post-secondary studies involving calculus such as business, engineering and the sciences. Topics will include: series and sequences, exponents and logarithms, trigonometry, functions, combinations, permutations and probability.

## **CALCULUS 12**

This course includes: history of calculus, limits, functions, continuity, graphs, derivatives, and anti-differentiation. Students have the option of writing the first year calculus exam for credit at UVic, U.B.C., S.F.U. and UNBC in June or writing the AP/AB Calculus exam in May, which gives credit for first year calculus in most universities in North America.

## **SCIENCE COURSES AT LP**

**Ministry approved high school Science courses at Post Secondary Institutions in BC**

<b>Science 11</b> <ul style="list-style-type: none"><li>▪ Biology 11</li><li>▪ Chemistry 11</li><li>▪ Earth Science 11</li><li>▪ Physics 11</li></ul>	<b>Science 12</b> <ul style="list-style-type: none"><li>▪ Biology 12</li><li>▪ Chemistry 12</li><li>▪ Physics 12</li></ul>
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## Cross Referenced Against British Columbia Post-Secondary Institutions

Institution	Arts (including UT)	Business	Trades	Science	Engineering	Computer Science	Nursing	Music
Uvic (Victoria)	Approved Sc 11	Approved Sc 11 or Sc 12		Chem 11 Physics 11 2 Sc 12's	Chem 11 Chem 12 Physics 11 Physics 12	Approved Sc 11 and Sc 12	Bi 11 Bi 12 Chem 11 Chem 12	Approved Sc 11
Camosun (Victoria)		Approved Sc 11 or Sc 12		Approved Sc 12	Chem 11 Physics 11 Physics 12	Chem 11 Physics 11 Physics 12	Bi 11 Bi 12 Chem 11 Chem 12	
UBC (Vancouver)	Approved Sc 11	Approved Sc 11 or Sc 12		Chem 11 Physics 11 1 Sc 12	Chem 11 Chem 12 Physics 11 Physics 12	Approved Sc 11 and Sc 12	Bi 11 Bi 12 Chem 11 Chem 12	Approved Sc 11
SFU (Burnaby)	Approved Sc 11	Approved Sc 11 or Sc 12		Chem 11 Physics 11 2 Sc 12's	Chem 11 Chem 12 Physics 11 Physics 12	Approved Sc 11 and Sc 12		Approved Sc 11
BCIT (Burnaby)			Approved Sc 11 and Sc 12	Minimum ... Chem 11 Physics 11 Biology 11				
UNBC (Prince George)	Approved Sc 11	Approved Sc 11 or Sc 12		Chem 11 Physics 11 2 Sc 12's	Chem 11 Chem 12 Physics 11 Physics 12	Approved Sc 11 and Sc 12	Chem 11 Chem 12 Biology 12	

# Grade 11

## **CHEMISTRY 11** **REQUIRED** FOR ENGINEERING, NURSING, SCIENCES AND MATHS AND REQUIRED SO AS TO TAKE CHEMISTRY 12

This course builds on the Science 10 course and provides an introduction to the theories of chemistry through the analysis and interpretation of laboratory experiments, films, and theory. The course examines a variety of important chemical concepts including atomic theory and structure, and its relation to chemical reactions; chemical reactions and equation writing; kinetic theory; solutions and ions; physical states; the periodic table and it introduces organic chemistry.

## **PHYSICS 11** **REQUIRED** FOR ENGINEERING, SCIENCES AND MATHS

Physics 11 follows the prescribed learning outcomes from the BC curriculum. This is an introductory course in classical physics in one dimension. It is recommended students have good basic algebra skills (Math 10). Topics include kinematics, dynamics, work, power, energy, momentum, waves and special relativity. Students develop the concepts throughout the course from lab work, activities and problem solving.

## BIOLOGY 11

**RECOMMENDED** FOR NURSING, GENERAL SCIENCES AND MATHS

**HOWEVER, DO NOT NEED FOR BIOLOGY 12**

The course focuses on biodiversity with evolution as the unifying theme. It examines a variety of life forms and their interrelationships. The instructors have some latitude in the approaches they use to examine the major principles of biology, developing an appreciation for the living form and an awareness of the need to share the world in a considerate and harmonious way.

## EARTH SCIENCE 11

**ONLY TRANSFERRABLE FOR GENERAL USE AT POST SECONDARY AND NOT APPLICABLE FOR USE FOR ENGINEERING, MEDICAL, SCIENCES AND MATH PROGRAMS**

This course, as determined by the Earth Science 11 IRP, focuses on the various aspects, methods, and applications of Earth and Space Science. It is a comprehensive science course which will require students to work steadily for two terms to ensure completion, but is less demanding than the Biology 11 course. The units covered will be the Earth and its Environment, Rocks and Minerals, Weathering and Minerals, Tectonics and Earthquakes, Resources and the Environment, Oceanography, Astronomy, Atmospheric Science and the Earth's History. Grading will be based on assignments, projects, tests and participation in class.

## HUMAN BIOLOGY 12

**FOR USE AS ELECTIVE ONLY, AND NOT FOR USE AT POST SECONDARY ENGINEERING, MEDICAL, SCIENCES AND MATH PROGRAMS**

Human Biology 12 is a survey course of the Biology 12 curriculum and for those students who are not quite ready for the rigor of a grade 12 Science. This course is a great introduction to Human Biology, and a first step for students interested in ultimately taking Biology 12. Topics of instruction include the biological systems of the human body. Formative assignments comprise the majority of the assignments in this course, with a summative project representing the final evaluation.

## HISTORY OF SCIENCE 11

**FOR USE AS ELECTIVE ONLY, AND NOT FOR USE AT POST SECONDARY ENGINEERING, MEDICAL, SCIENCES AND MATH PROGRAMS**

The History of Science includes, but is not limited to, the infinite reaches of space, the tiniest living organism, the human body, and the history of Earth. People have always been doing science because they have always wanted to make sense of the world and harness its power. From ancient Greek philosophers through Einstein and Watson and Crick to the computer-assisted scientists of today, men and women have wondered, examined, experimented, calculated, and sometimes made discoveries so earthshaking that people understood the world, or themselves, in entirely new ways. This course consists of discussions that help illustrate the progress of what is science. It takes students to the stars through the telescope, as the sun replaces the earth at the center of our universe. It delves beneath the surface of the planet, charts the evolution of chemistry's periodic table, introduces the physics that explain electricity, gravity, and the structure of atoms. It recounts the scientific quest that revealed the DNA molecule and opened unimagined new vistas for exploration, such as in genetic engineering and GMO research. The course focuses on both central and not well known scientists who contributed to the tapestry which is the cornerstone to scientific history, and spending time discussing the unrest that occurred when complementary scientific finding(s) have challenged established and orthodox ideas. Discussions will take place regularly in the majority of classes with formative projects making up the majority of the assignments, with a final project as the overall summative evaluation.

# Grade 12:

## **BIOLOGY 12**

**REQUIRED** FOR NURSING, AND RECOMMENDED FOR SCIENCES AND/OR WHERE AN ACCEPTED GRADE 12 SCIENCE COURSE IS REQUIRED, AND IN ABSENCE OF BOTH CHEMISTRY 12 AND PHYSICS 12, AND **CAN** BE INCLUDED IN GRADE 12 GPA CALCULATION

This course builds on the Biology 11 course and concentrates on molecular and physiological aspects of biology. Specific topics of instruction include biological chemistry, cellular biology, and mammalian physiology and anatomy. Dissections in laboratory activities form an integral part of the course.

## **CHEMISTRY 12** **REQUIRED** FOR ENGINEERING, NURSING, SCIENCE, AND MATHS PURSUITS AND **CAN** BE INCLUDED IN GRADE 12 GPA CALCULATION

This academic course, as determined by the Chemistry 11/12 IRP, builds on Chemistry 11 and presents an introduction to physical and chemical equilibrium systems involving energy-related changes, kinetics, solubility, oxidation-reduction reactions and acid-base theories. Although the course does not use high-level math, it does require good mathematical problem-solving skills.

## **PHYSICS 12** **REQUIRED** FOR ENGINEERING AND MATHS PURSUITS AND **CAN** BE INCLUDED IN GRADE 12 GPA CALCULATION

Physics 12 follows the prescribed learning outcomes from the BC curriculum. This is a course in classical physics in two dimensions. Students should have a strong math background in algebra and systems of equations (Bin Math 11/Physics11). Topics include kinematics, dynamics, energy, momentum, torque, gravitation and electromagnetism. Physics 12 is an applied math course and requires a large amount of problem solving. Students interested in writing AP physics or SAT physics tests may do extra work to prepare