



COLLEGE OF
THE ROCKIES

ASSOCIATE OF SCIENCE

Environmental Science

**PROGRAM PLANNING GUIDE
2023/2024**



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ASSOCIATE OF SCIENCE

An Associate of Science (ASc) Degree provides students with the first two year of study towards a Bachelor of Science degree.

In the ASc, degree program, students complete 20 courses providing both breadth of knowledge and in-depth study in specific disciplines.

Since many students will continue their studies, the requirements are sufficiently flexible to enable students to complete the required prerequisites for upper level coursework in their intended major.

This guide was developed to help students choose courses and to develop a sequencing plan for transfer to a Bachelor of Science degree program.

DISCLAIMER

This document is provided for information only.

Students should always consult the course calendar of the degree-granting institution to ensure that they have taken appropriate prerequisites.

COTR Education advisors are available for further assistance.

For current course transfer agreements between COTR and BC institutions
please consult [bctransferguide.ca](https://www.bctransferguide.ca)

For transfer to AB institutions
please consult transferalberta.alberta.ca/transfer-alberta-search

For University of Lethbridge transfer agreements
please consult bridge.uleth.ca/PROD/uofl_ro_tc_agrmnts.front_end

Sequencing plans are samples.

Students may need to modify plans based on prerequisite requirements or course scheduling and availability.

Associate of Science Checklist

Environmental Science

36 credits in SCIENCE

at least 3 credits in laboratory science,
15 credits other science courses and at least
18 credits in 200 level in 2 or more areas

U of L BSc
Environmental Science

SFU BSc
Environmental Science
Applied Biology School

SFU BSc
Environmental Science
Environmental Earth Systems

UNBC BSc
Environmental Science

1.	BIOL 101	<i>Introduction to Biology 1</i>	X	X	X	X
2.	BIOL 102	<i>Introduction to Biology 2</i>	X	X	X	X
3.	BIOL 200	<i>Introduction to Microbiology</i>	X ¹			X
4.	BIOL 203	<i>Genetics</i>	X	X		X ¹
5.	BIOL 204	<i>Introduction to Ecology</i>	X	X	X	X
6.	BIOL 208	<i>Vertebrate Biology</i>	X ¹	X		
7.	CHEM 101	<i>Fundamentals of Chemistry 1</i>	X	X	X	X
8.	CHEM 102	<i>Fundamentals of Chemistry 2</i>	X	X	X	X
9.	CHEM 201	<i>Organic Chemistry</i>	X*	X		X*
10.	CHEM 215	<i>Analytical Chemistry</i>	X*		X*	X*
11.	ENSC 101	<i>Introduction to Environmental Science</i>	X	X	X	X
12.	GEOG 101	<i>Introduction to Physical Geography</i>	X	X	X	X
13.	GEOG 211	<i>Intro to Geographical Info Systems</i>	X	X	X	X
14.	GEOG 230	<i>Meteorology, Climatology, & Hydrology</i>	X		X	X
15.	GEOG 251	<i>Quantitative Geography</i>	X		X	X

6 credits in ENGLISH

1.	ENGL 100	<i>English Composition</i>	X	X	X	X
2.	ENGL 101	<i>Introduction to Poetry and Drama</i>	X*	X*	X*	
3.	ENGL 102	<i>Introduction to Prose Fiction</i>	X*	X*	X*	

6 credits in MATH (at least 3 credits in Calculus)

1.	MATH 103	<i>Differential Calculus</i>	X	X	X	X
2.	MATH 104	<i>Integral Calculus</i>	X	X	X	X
3.	STAT 106	<i>Statistics</i>	X	X	X*	X

6 credits in ARTS (other than English)

1.	Elective					
2.	Elective					

6 credits in ARTS, SCIENCE OR OTHER AREAS

1.	PHYS 103	<i>Introduction to Physics 1</i>	X	X	X	X
2.	PHYS 104	<i>Introduction to Physics 2</i>		X	X	X
3.	GEOL 105	<i>Introduction to Physical Geology</i>	X	X		X
4.	ENST 200	<i>Intro to Environmental Sustainability</i>		X*	X*	
5.	Elective					

NOTE
the above listed are example institutions.
Consult bctransferguide.ca for transfer to these and other institutions.

* - indicates that there is more than one option.
ex. English 101 or 102 will help fulfill the English requirement, but English 100 is required.

R - indicates *recommended elective*

X¹ - indicates credit granted but not core requirement

SAMPLE SEQUENCING PLANS

University of Lethbridge
BSc Environmental Science

YEAR 1

Fall Semester

BIOL 101

Introduction to Biology 1

CHEM 101

Fundamentals of Chemistry 1

ENGL 100

English Composition

ENSC 101

Introduction to Environmental Science

GEOG 101

Introduction to Physical Geography

Winter Semester

BIOL 102

Introduction to Biology 2

CHEM 102

Fundamentals of Chemistry 2

ENGL 101

Intro to Poetry & Drama

OR

ENGL 102

Intro to Prose

MATH 103

Differential Calculus

GEOG 230

Meteorology, Climatology, & Hydrology

YEAR 2

Fall Semester

BIOL 204

Ecology

GEOG 211

Introduction to Geographic Information Systems

STAT 106

Statistics

FA 101

Contemporary Art: A History

OR

BIOL 208

*Vertebrate
Biology*

GEOL 105

Introduction to Physical Geology

Winter Semester

BIOL 203

Genetics

GEOG 251

Quantitative Geography

BIOL 200

Introduction to Microbiology

OR

Elective

Liberal Arts Requirement

CHEM 215

Analytical Chemistry

Simon Fraser University
BSc Environmental Science
Applied Biology Concentration

If you want to do this concentration,
please see Math and Science Program Coordinator as well as an Academic Advisor

YEAR 1

Fall Semester

BIOL 101

Introduction to Biology 1

CHEM 101

Fundamentals of Chemistry 1

MATH 103

Differential Calculus

ENSC 101

Introduction to Environmental Science

GEOG 101

Introduction to Physical Geography

Winter Semester

BIOL 102

Introduction to Biology 2

CHEM 102

Fundamentals of Chemistry 2

MATH 104

Integral Calculus

ENGL 100

English Composition

Elective

YEAR 2

Fall Semester

BIOL 204

Ecology

GEOG 211

Introduction to Geographic Information Systems

OR

ENST 200

Intro to Enviro Sustainability

BIOL 208

Vertebrate

PHYS 103

Intro to Physics 1

CHEM 201

Organic Chem

Winter Semester

STAT 106

Statistics

PHYS 104

Intro to Physics 2

GEOG 230

Meteorology, Climatology and Hydrology

ENGL 101
Intro to Poetry & Drama

OR

ENGL 102
Intro to Prose

Elective

Simon Fraser University
BSc Environmental Science
Environmental Earth Systems Concentration

YEAR 1

Fall Semester

BIOL 101

Introduction to Biology 1

CHEM 101

Fundamentals of Chemistry 1

MATH 103

Differential Calculus

ENSC 101

Introduction to Environmental Science

Winter Semester

BIOL 102

Introduction to Biology 2

CHEM 102

Fundamentals of Chemistry 2

MATH 104

Integral Calculus

GEOG 230

Meteorology, Climatology and Hydrology

ENGL 100

English Composition

YEAR 2

Fall Semester

BIOL 204

Ecology

GEOL 105

Introduction to Physical Geology

ENST 200

Intro to Environmental Sustainability

PHYS 103

Introduction to Physics 1

GEOG 211

Introduction to Geographic Information Systems

Winter Semester

ENGL 101

Intro to Poetry & Drama

OR

ENGL 102

Intro to Prose

STAT 106

Statistics

GEOG 251

Quantitative Geography

PHYS 104

Introduction to Physics 2

CHEM 215

Analytical Chemistry

University of Northern British Columbia

BSc Environmental Science

YEAR 1

Fall Semester

BIOL 101

Introduction to Biology 1

GEOG 101

Intro to Physical Geography

MATH 103

Differential Calculus

ENSC 101

Introduction to Environmental Science

CHEM 101

Fundamentals of Chemistry 1

Winter Semester

BIOL 102

Introduction to Biology 2

ENGL 100

English Composition

MATH 104

Integral Calculus

GEOG 230

Meteorology, Climatology, & Hydrology

CHEM 102

Fundamentals of Chemistry 2

YEAR 2

Fall Semester

BIOL 204

Ecology

ENGL 101

Intro to Poetry & Drama

OR

ENGL 102

Intro to Prose

GEOL 105

Introduction to Physical Geology

PHYS 103

Introduction to Physics 1

GEOG 211

Introduction to Geographic Information Systems

Winter Semester

STAT 106

Statistics

GEOG 251

Quantitative Geography

OR

Elective

BIOL 200

Introduction to Microbiology

PHYS 104

Introduction to Physics 2

CHEM 215

Analytical Chemistry

SAMPLE SEQUENCING PLANS

4-YEAR (2 + 2) PROGRAM

COTR to University of Lethbridge BSc. Environmental Science

The following is a sample 2 + 2 planning guide outlining courses required to complete a BSc. Environmental Sciences at University of Lethbridge.

This sequencing plan shows the courses students need to take in each semester at COTR and at Lethbridge.

Liberal arts (numerous options at COTR) and list course requirements should be chosen according to U of L requirements outlined in U of L program planning guide. Between the COTR and U of L program and sequencing plans students will have a clear plan and should not require much in the way of academic advising.

Courses in brackets are U of L course equivalent.

YEAR 1 College of the Rockies

FA

BIOL 101 (BIOL 1010)
CHEM 101 (CHEM 1000)
GEOG 101 (GEOG 1000)
ENG 100 (ENG 1000)
ENSC 101 (EVSC 2000)

WI

BIOL 102 (BIOL 1020)
CHEM 102 (CHEM 2000)
MATH 103 (MATH 1560)
ENG 101/102 (ENG 1900)
GEOG 230 (GEOG 2300)

YEAR 2 College of the Rockies

FA

BIOL 204 (BIOL 2200)
GEOL 105 (GEOG 2060)
GEOG 211 (GEOG 2735)
STAT 106 (MATH REQ.)
FA 101 (ARHI 1000) or LIB ARTS REQ

WI

BIOL 203 (BIOL 2000)
BIOL 200 (BIOL 3400) or LIB ARTS REQ
GEOG 251 (GEOG 2700)
CHEM 215 (CHEM 2410)
BIOL 208 (BIOL 3530) or LIB ARTS REQ

YEAR 3 University of Lethbridge

FA

Technical Studies Term (Lethbridge College)

WI

GEOG 2030
GEOG 3080
FIELD COURSE
LIB ARTS REQ.
LIB ARTS REQ.

YEAR 4 University of Lethbridge

FA

ENSC 4000
GEOG or GEOL List Course
GEOG or GEOL List Course
Lib Arts req. 3000/4000 level
Elective 3000/4000 level

WI

BIOL 3300
BIOL List 2 or 3 course
Independent or Applied Study 3000/4000
Lib Arts req. 3000/4000 level
Elective 3000/4000 level

COTR to Simon Fraser University

BSc. Environmental Science – Applied Biology Concentration

The following is a sample 2 + 2 planning guide outlining courses required to complete a BSc. Environmental Sciences at Simon Fraser University.

The sequencing plan clearly shows students the courses they need to take in each semester at COTR and at SFU.

Humanities requirements should be chosen according to SFU requirements (numerous options available at COTR) and list courses at SFU would be chosen by students according to the SFU program planning guide.

Courses in brackets are SFU course equivalent.

YEAR 1 College of the Rockies

FA

BIOL 101 (BIOL 101)
 CHEM 101 (CHEM 121)
 MATH 103 (MATH 102)
 GEOG 101 (GEOG 111)
 ENSC 101 (EVSC 100)

WI

BIOL 102 (BIOL 102)
 CHEM 102 (CHEM 122)
 MATH 104 (MATH 152)
 ENG 100 (WRIT 1XX)
 Elective

YEAR 2 College of the Rockies

FA

BIOL 204 (BIOL 204)
 BIOL 208 (BIOL 316)
 GEOG 211 (GEOG 255) or ENST 200 (REM 100)
 PHYS 103 (PHYS 101)
 CHEM 201 (CHEM281)

WI

STAT 106 (STAT 270)
 PHYS 104 (PHYS 102)
 GEOG 230 (GEOG 214)
 ENGL 101 or ENGL 102 (ENGL 113/102)
 Elective

YEAR 3 Simon Fraser University

FA

EVSC 201
 REM 100
 BISC 337
 EVSC 300
 REM 311

WI

EVSC 305
 B- Science req.
 STAT 302
 B- Science req.
 B- Science req.

YEAR 4 Simon Fraser University

FA

ENVC 400
 List Course
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req

WI

List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req

COTR to Simon Fraser University

BSc. Enviro Science – Enviro Earth Systems Concentration

The following is a sample 2 + 2 planning guide outlining courses required to complete a BSc. Environmental Sciences at Simon Fraser University.

The sequencing plan clearly shows students the courses they need to take in each semester at COTR and at SFU.

Humanities requirements should be chosen according to SFU requirements (numerous options available at COTR) and list courses at SFU would be chosen by students according to the SFU program planning guide.

Courses in brackets are SFU course equivalent

YEAR 1 College of the Rockies

FA

BIOL 101 (BIOL 101)
 CHEM 101 (CHEM 121)
 GEOG 101 (GEOG 111)
 MATH 103 (MATH 151)
 ENSC 101 (EVSC 100)

WI

BIOL 102 (BIOL 102)
 CHEM 102 (CHEM 122)
 ENG 100 (WRIT 1XX)
 MATH 104 (MATH 152)
 GEOG 230 (GEOG 214)

YEAR 2 College of the Rockies

FA

BIOL 204 (BIOL 204)
 PHYS 103 (PHYS 101)
 GEOL 105 (EASC 101)
 GEOG 211 (GEOG 255)
 ENST 200 (REM 100)

WI

ENG 101/ENG 102 (ENG 103/ENG 112)
 PHYS 104 (PHYS 102)
 GEOG 251 (GEOG 251)
 ELECTIVE
 STAT 106 (STAT 270)

YEAR 3 Simon Fraser University

FA

EVSC 201
 REM 100
 GEOG 215
 EVSC 300
 List Course

WI

EVSC 305
 List Course
 List Course
 List course
 List course

YEAR 4 Simon Fraser University

FA

ENVC 400
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req

WI

List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req
 List Course/humanities req./Honours req

COTR to UNBC

BSc. Environmental Science

The following is a sample 2 + 2 planning guide outlining courses required to complete a BSc. Environmental Sciences at University of Northern BC.

The sequencing plan shows students the courses they need to take in each semester at COTR and at UNBC.

Breadth requirements should be chosen according to UNBC requirements according to the UNBC BSc Environmental Science program requirements.

Courses in brackets are UNBC course equivalent

YEAR 1 College of the Rockies

FA

BIOL 101 (BIOL 103 & 123)
 CHEM 101 (CHEM 100 & 120)
 GEOG 101 (GEOG 102)
 MATH 103 (MATH 100)
 ENSC 101 (ENSC 111)

WI

BIOL 102 (BIOL 104 & 124)
 CHEM 102 (CHEM 101 & 121)
 ENGL 100 (ENG 170)
 MATH 104 (MATH 101)
 GEOG 230 (ENSC 201)

YEAR 2 College of the Rockies

FA

BIOL 204 (BIOL 201)
 GEOL 105 (GEOG 210)
 GEOG 211 (GEOG 204)
 ENGL 101/102 (ENG 101/103)
 PHYS 103 (PHYS 110)

WI

BIOL 200 (BIOL 203)
 STAT 106 (STAT 240)
 GEOG 251 (ENSC 250)
 CHEM 215 (CHEM 210)
 PHYS 104 (PHYS 111)

YEAR 3 University of Northern British Columbia

FA

ENSC 202
 FSTY 205
 GEOG 205
 GEOG 210
 Breadth Requirement

WI

ENPL 305
 ENPL 401
 ENSC 308
 ENSC 406
 Breadth Requirement

YEAR 4 University of Northern British Columbia

FA

ENSC 440 OR ENSC 499
 ENSC 450
 ENSC 414
 Breadth Requirement
 Breadth Requirement

WI

ENSC 218
 ENV5 225 or FNST 304 or GEOG 307 or GEOG 401 or INST 307
 ENGR 451 or ENSC 404
 ENSC 412 or ENSC 452
 Breadth Requirement

INSTITUTION SPECIFIC REQUIREMENTS

University of Lethbridge requirements:

At least 20 courses of the 40-course degree program must be taken at U of L.

Liberal Arts Requirements:

- Four courses in Fine Arts & Humanities
- Four courses in Social Sciences
- Four courses in Science

Technical Studies Term (five courses)

Students are required to complete a term of study at Lethbridge College, consisting of five courses from the College's Environmental Science program. The Technical Studies term counts as the equivalent of 15.0 credit hours at the University of Lethbridge (three unspecified 2000-level and two unspecified 3000-level Environmental Science courses). The Technical Studies term should be taken after at least 20 university courses have been completed and prior to registration in the final 10 courses for the degree. Students must have the college course selection approved by the Coordinator of Environmental Science. Students are not permitted to complete any courses in addition to the approved Lethbridge College courses during the Technical Studies term. Further details are available from the Coordinator

SFU Residency requirements:

At least ½ of the program's total units and 2/3 of the programs upper division units must be taken at SFU.

SFU WQB Requirements:

- 6 units of Writing (W) including at least 3 credits taken at SFU
- * SFU requires 6 credits in Writing, 3 credits must be 300, 400 level and must be taken at SFU.
- 6 units of Quantitative (Q)
- 18 units of designated Breadth (B)
 - 6 units of B-Soc (Social Sciences)
 - 6 units of B-Hum (Humanities)
 - 6 units of B-Sci (Science)
- 6 units of Undesignated Breadth

UNBC Breadth requirements:

Arts and Humanities:

At least 3 credit hours of courses with the prefix ENGL, HIST, PHIL, WMST.

Social Science:

At least 3 credit hours of courses with the prefix:
ANTH, COMM, ECON, EDUC, ENPL, FNST, INTS, NORS, ORTM, POLS, PSYC, RRT.

Natural Science:

At least 3 credit hours of courses with the prefix BIOL, GEOG, ENSC, ENV5, FSTY, HHSC, NREM.

Physical Science:

At least 3 credit hours of courses with the prefix ASTR, CHEM, CPSC, MATH, PHYS, STAT.

COURSE DESCRIPTIONS

These courses form the core of the Associate of Science Degree Program. Please see course calendar or course outlines for specific course prerequisites and when choosing courses, please consult receiving institution for specific degree requirements.

36 Credits in Science

at least 3 credits in lab science, up to 15 credits in other science courses and at least 18 credits in second year science in two or more subject area

BIOL 101 Introduction to Biology 1

An introduction to the structure and function of organisms with particular reference to molecular, biochemical and physiological aspects of the living world. Designed for students seeking a degree or diploma in a field of science or technology, BIOL 101, with BIOL 102, lays the foundations on which the higher-level courses in Biology are based. It is also suitable as an elective course for general interest or arts students.

Credits: 3.00

BIOL 102 Introduction to Biology 2

BIOL 102 is an introduction to organismic and population biology with emphasis on reproduction, genetics, developmental biology, evolution, diversity, and ecology.

Credits: 3.00

CHEM 101 Fundamentals of Chemistry 1

This course presents the fundamental principles of chemistry with particular reference to acid base and redox chemistry, electronic structure of atoms and molecules, properties of liquids, gases, solids and their solutions, phase changes, and thermochemistry. The associated laboratory exercises emphasize proper experimental techniques, data collection and analysis, safety and technical writing skills.

Credits: 3.00

CHEM 102 Fundamentals of Chemistry 2

Together with CHEM 101, CHEM 102 provides a solid foundation in fundamental chemical principles. Topics include equilibrium, thermodynamics, kinetics, electrochemistry, chemistry of the main group elements and the chemistry of organic and biomolecules. The associated laboratory exercises emphasize proper experimental techniques, data collection and analysis, safety and technical writing skills.

Credits: 3.00

ENSC 101 Introduction to Environmental Science

This course introduces students to scientific analysis and communication of environmental issues. Students will learn about natural systems and the complex interactions among their biological, physical, chemical and anthropogenic components. Students will consider Western and Indigenous perspectives, governance, and economic factors to critically evaluate and communicate environmental problems. Students will investigate how these issues affect various aspects of the ecosphere, including humans, and will use integrated knowledge and perspectives to explore sustainable solutions. Laboratory activities, field trips and guest lectures will offer the opportunity to study regional environments and local environmental issues.

Credits: 3.00

GEOG 101 Physical Geography

This course examines the concepts and processes of physical geography that govern the function of the atmosphere, lithosphere, hydrosphere, and biosphere using an earth-systems approach. Course lectures and lab topics introduce the sciences of cartography, meteorology, climatology, geomorphology, hydrology, biogeography, and soils. A focus on how human activities impact the environment, such as climate change and other real-world issues will also be addressed.

Credits: 3.00

GEOL 105 Introduction to Geology

An introduction to the major principles of physical and historical geology covering the origin and structure of the Earth, plate tectonics, volcanism and other mountain building processes, the erosion of the Earth's crust, and the formation and properties of minerals and rocks.

Credits: 3.00

BIOL 200 Introduction to Microbiology

Introduction to Microbiology is an introduction to the general principles of microbiology. Lectures and laboratory exercises explore fundamental topics of microbiology, environmental microbiology and molecular microbiology such as diversity of microorganisms, microbial structure, metabolism, genetics and microbial ecology emphasizing applied, medical and environmental microbiology. The laboratory introduces methods for safe handling of microorganisms, techniques of microbial isolation, enumeration and identification as well as experiments relevant to lectures.

Credits: 3.00

BIOL 203 Genetics

Genetics is the study and understanding of inheritance and development of organisms. This course will provide an introduction to genes and gene function. Mendelian and extra-mendelian genetics and molecular genetics review and expand on these topics explored in first year biology. Topics in transmission, molecular and quantitative genetics will also be discussed. Lab material will include descriptive aspects, techniques, data analysis and experimentation.

Credits: 3.00

BIOL 204 Ecology

The course studies the interactions between organisms and their environment at the organismal, population, community and ecosystem levels. Topics considered include energy flow, nutrient cycling, ecological succession, population dynamics and evolutionary processes. Local examples may be used to illustrate some of the principles.

Credits: 3.00

BIOL 208 Vertebrate Biology

This course covers the evolution and comparative anatomy of cephalochordates, urochordates, fish, amphibians, reptiles, birds, and mammals. The comparative anatomy of major organ systems among fishes, amphibians, birds, and mammals will be studied in the lab via dissection of representative organisms. The lab will emphasize the relationship between structure and function of vertebrate organisms while the lecture will focus on current controversies and discoveries in the scientific study of vertebrate evolution.

Credits: 3.00

CHEM 201 Organic Chemistry

CHEM 201 is an introductory course in organic chemistry including the structure and reactions of aliphatic and aromatic hydrocarbons and their derivatives. The laboratory stresses the techniques of preparation, purification and identification of organic compounds.

Credits: 3.00

CHEM 215 Analytical Chemistry

This course provides a solid background in the principles of analytical chemistry and their applications in fields such as environmental science. Topics include measurements and their errors, the use of statistics in data analysis and sampling, redox-, complexometric- and acid-base titrations, absorption and emission forms of atomic and molecular spectroscopy, electrochemical methods of analysis and separation techniques. The laboratory exercises emphasize proper experimental techniques, data collection and analysis, safety and technical writing skills.

Credits: 3.00

GEOG 211 Introduction to Geographic Information Systems

Geographic Information Systems (GIS) is an applied field encompassing the acquisition, storage, processing, analysis and presentation of spatial information. GIS has become an essential tool for spatially informed decision making in government, academic and private sectors. Course lectures will cover underlying theory, concepts and applications of GIS. Topics covered include spatial data acquisition, raster and vector data models, database, cartography and geoprocessing. Lab sessions will apply lecture theory through hands-on experience with industry standard GIS software. Next Offered 2021/2022

Credits: 3.00

GEOG 230 Meteorology, Climatology and Hydrology

This course will examine the basic principles and processes governing the Earth's weather and climate, including the movement of water. In this course, students will analyze the linkages between the atmosphere, hydrosphere, and land surface interactions responsible for creating the weather and climate that we experience each day. Specifically, we will examine fluxes of mass and energy exchanges, radiation, precipitation, winds, weather systems, fluvial hydrology, water balances, and global climates. First Offering 2021/2022

Credits: 3.00

GEOG 251 Quantitative Geography

This course will introduce methods for collecting, analyzing, and reporting geographic data. Course topics include gathering samples, describing data and theoretical distributions, testing significance, and exploring spatial relationships. Real-world examples from both physical and human geography as well as other related subject areas will provide a foundation for more advanced courses and applications. All lab activities are computer based using statistical software.

Credits: 3.00

6 Credits in first year English (ENG 100 and one of ENG 101 or ENG 102)

ENGL 100 English Composition

English 100 focuses on composition for academic purposes and develops a student's ability to write clearly and effectively. Students also learn the fundamentals of critical thinking, persuasive writing techniques (including rhetorical appeals and devices), scholarly research, and academic reading.

Credits: 3.00

ENGL 101 Introduction to Poetry and Drama

An introduction to the critical reading of literature through the study and analysis of poetry and drama across historical periods from Shakespeare to twenty-first century poets and dramatists. While this course will teach students how to perform college-level literary analysis of canonical texts, it will also teach students how to question and evaluate the cultural narratives that literature circulates. As such, the class will explore questions of gender, class, race, nationhood/nation building, and the problematic literary canon in order to develop strategies for negotiating complex literary texts and to become better, more nuanced readers.

Credits: 3.00

ENGL 102 Introduction to Prose

English 102 introduces students to the genre of literary fiction from the origins of the short story in early nineteenth century to the novels of twentieth and twenty-first century. The aim of English 102 is to read fiction with an understanding of genre, technique and form; to apply various critical strategies to literary texts; and to develop analytical writing skills appropriate to essays at the university level. Ultimately, the course encourages students to consider how narrative forms can shape, challenge and respond to their moral, social, and political contexts.

Credits: 3.00

6 Credits in Mathematics (at least 3 credits in calculus)

MATH 103 Differential Calculus

This course is intended for students who are pursuing a Bachelor of Science degree. Topics include functions, limits, continuity, derivatives and their interpretation, differentiation rules, techniques of differentiation, implicit differentiation, inverse functions, exponential functions, logarithms, applications of differentiation such as linear approximations, Newton's method, related rates, analysis of graphs and optimization, the Mean Value Theorem, definite and indefinite integrals, integration by substitution, Riemann sums, and applications of integration. Calculus is a necessary step in any career in the sciences including Biology, Chemistry, Commerce, Computer Science, Engineering, Geology, Mathematics, Medicine, and Physics. It is also useful in any field which uses statistics to analyze data.

Credits: 3.00

MATH 104 Integral Calculus

Topics include: Logarithmic, exponential and hyperbolic functions, complex numbers, integration techniques (substitution, parts, partial fractions, trigonometric substitution, numerical methods), L'Hopital's rule, improper integrals, sequences, series, convergence tests (divergence, integral, comparison, limit comparison, ratio, root, and alternating series tests), Taylor Maclaurin and Fourier series, vectors (dot products, vector valued functions), and polar curves. Calculus is a necessary step in any career in the sciences including Biology, Chemistry, Commerce, Computer Science, Engineering, Geology, Mathematics, Medicine, and Physics. It is also useful in any field which uses statistics to analyze data.

Credits: 3.00

STAT 106 Statistics

This course introduces the fundamental ideas of statistics and can be applied to any discipline. Topics include: collection, description, and presentation of data; calculating central tendency and dispersion; probability and statistical inference; hypothesis testing (means, proportions, variances, one and two samples); correlation and regression; decision making and sampling, Goodness of Fit Tests, and Contingency Tables.

Credits: 3.00

6 Credits in Arts (other than English)

HUMANITIES

FNST 101 First Nations Studies 1

This course is an introduction to the multi-disciplinary field of Aboriginal studies. The prehistory, history, and traditional and contemporary cultures of Aboriginals in Canada and their various perspectives are addressed. Additionally, the historical overview of Aboriginal/non-Aboriginal relations and their effects are explored.

Credits: 3.00

HIST 201 Pre-Confederation Canada

This course surveys Canada's past before 1867. It looks at original Indigenous inhabitants through French settlers and English conquerors to colonial immigrants, labourers, businessmen, politicians, and women, a panoply of fascinating historical agents. In addition, significant events, such as group contact/relations, expansion/settlement processes, economic undertakings, military battles as well as rebellions, social developments, and political evolutions, are examined. Attention is paid to time's impact on continuity and change throughout the period, but greater emphasis is placed on understanding these agents and events through the major analytical categories of race/ethnicity, gender, and class. Doing so helps foster students' interest in the importance of understanding this country's past and allows them to acquire greater historical consciousness to critically understand Canadians' current context.

Credits: 3.00

HIST 202 Post-Confederation Canada

A historical survey of Canada, this course traces the country's development from the immediate aftermath of Confederation to contemporary times. Over that period, significant actors and events, like the World Wars and the Depression, will be considered. Greater attention, however, will be paid to changes and continuities arising from Canada's territorial growth; consolidation under the national policy, including incorporating large numbers of immigrants into the country; cleavages in their various manifestations; imperialism-continentalism choices; industrialization/urbanization/reform movements; post-war international and social decisions; Sixties' upheavals, and Indigenous marginalization. All of these areas of study will help foster students' interest in the importance of understanding this country's past and allow them to acquire greater historical consciousness to critically question whether Canadians' attempts to create a great nation were best for all.

Credits: 3.00

PHIL 102 Introduction to Philosophical Inquiry 2

Philosophy 102 is designed to explore three primary subject areas of philosophy: the nature of reality (metaphysics), the study of knowledge (epistemology), and the question of God (the philosophy of religion). Resources include Plato, Aristotle, Descartes, Materialism, Locke, Hume, Kant, and many more, both classical and contemporary. Some of the particular issues explored are: the question of transcendent reality, the mind-body problem, free will versus determinism, the role of mind and perception in knowing, the claims of skepticism, and the central arguments for and against the existence of God.

Credits: 3.00

SOCIAL SCIENCES

ANTH 101 Introduction to Cultural Anthropology

This course involves an in-depth exploration of the concept of culture and the cross-cultural study of human diversity within the discipline of anthropology. Students focus on topics such as anthropological research, ethics, culture, worldview, gender, language, marriage, families and households, Indigenous peoples, religion, and globalization. Students also engage in self-reflexive examination of their own worldviews, perceptions, and biases in relation to other peoples and cultures.

Credits: 3.00

ECON 101 Microeconomics

This course deals with the economic principles that govern the individual segments of the economy. Topics include supply and demand, price elasticity, utility, cost of production, perfect and imperfect market structures, theory of production, the demand for factors, and the pricing of factors. Some current business situations are discussed.

Credits: 3.00

ECON 102 Macroeconomics

This course presents the economic principles that govern the behaviour of the nation's economy. Topics include production possibility, supply and demand, national income analysis, money and banking, fiscal and monetary policy, and international trade. Current Canadian economic problems are discussed.

Credits: 3.00

ECON 250 Environmental Economics

This course provides an introduction to the concepts and methods of analysis in environmental economics. It applies microeconomic principles to the examination of market failures and how they may be corrected either through incentives or policy. Topics include valuing the environment, cost-benefit analysis, environmental policy analysis, and specific Canadian environmental issues and policy.

Credits: 3.00

ENST 200 Introduction to Environmental Sustainability

This course examines the central concepts of environmental sustainability and considerations for development. Students are introduced to the complexity and debate of developing resource-based industries and minimizing impacts to ecosystems and communities. Planning and management strategies for various industries, as well as the role of various agencies and organizations, will be examined with specific examples.

Credits: 3.00

GEOG 210 Geography of BC

This course presents a regional geographic analysis of British Columbia and investigates the physical, cultural, economic, and historical characteristics of the various provincial regions. This course also examines patterns of settlement and development, with particular emphasis on industries of importance to the Columbia Basin region, including forestry, mining, and tourism.

Credits: 3.00

POLI 100 Introduction to Politics & Government

This course introduces students to political science, assisting them to gain a foundational understanding of first, the discipline's key concepts and second, its practicalities. In order to do so, study will start with the fundamental nature of politics; power in all its guises; political beliefs, attitudes, and values acquisition; and the theoretical bases/action plans of various ideologies. Consideration will then turn to an exploration of peoples' efforts to create proper sized political units; set fundamental rules; lead and make decisions; debate and pass laws; offer advice for and put in place government programs; organize to achieve goals and aims; and devise electoral systems to make choices. To clarify and solidify learning this information, students will work up case studies so they can develop better-informed political opinions and proceed to other political science courses.

Credits: 3.00

PSYC 101 Introduction to Psychology 1

This course provides an introduction to the history, principles, and methods of psychology. Topics may include the brain and behaviour, sensation and perception, learning and memory, thinking and language, and states of consciousness.

Credits: 3.00

PSYC 102 Introduction to Psychology 2

This course is a continuation of Psychology 101. Topics may include development across the lifespan, intelligence, motivation, emotion, stress and health, personality, psychological disorders, therapy, and social behaviour.

Credits: 3.00

GEOL 220 Environmental Geology and Natural Disasters

This course examines the nature of a variety of natural hazards including events such as earthquakes, volcanic eruptions, landslides, river flooding, severe weather, wildfire, and hurricanes. Current methods of analysis, prediction and mitigation are investigated. Laboratory activities concentrate on working from real-life situations in order to draw conclusions about natural hazards issues.

Credits: 3.00

FINE ARTS

FA 101 Contemporary Art: A History

This course provides an opportunity to study and interpret significant social, historical, political and philosophical themes of contemporary art as a cultural expression of society. Beginning with Western Art of the 13th century, we will study the influences leading to Modern and Contemporary Art of the 20th and 21st centuries. Students explore important developments through the intersection of art, science, technology and the new forms of visual culture that are shaping the contemporary art of today.

Credits:3.00

FA 105 Studio Foundation

The Studio Foundations course embodies fundamental hands-on experience with art materials and creative processes in drawing, painting, sculpture, printmaking, photography, and graphics. It provides students with an introduction to concepts and processes used in producing and presenting art through the study and application of creative methods and techniques, specific and multimedia approaches, and other considerations needed in the planning, rendering and presenting of art.

Credits: 3.00

FA 106 Introduction to Drawing

This course provides a magnificent opportunity for student-artists to develop a keen sensitive eye along with deeper feelings for materials and subjects of drawing. Through lecture and hands-on experience, the student-artist explores contemporary and historical drawing practices, bringing their intellectual awareness, emotional responses, skills, and capabilities to a new level. Beginning with how one perceives an image through a broad spectrum and diverse techniques of drawing practice, the student-artist sees the indispensable role of drawing as an important aspect of art making.

Credits:3.00

FA 107 Sculpture

The student is introduced to sculpture and 3D thinking through the element of clay, exploring a variety of historical and contemporary methods and styles. Investigation of a number of building techniques, and various embellishment and firing styles lead the student to an experience of the processes and qualities inherent in clay as a sculpture medium.

Credits:3.00

6 Credits in Arts, Science or other areas

ARTS

ANTH 101 Introduction to Cultural Anthropology

This course involves an in-depth exploration of the concept of culture and the cross-cultural study of human diversity within the discipline of anthropology. Students focus on topics such as anthropological research, ethics, culture, worldview, gender, language, marriage, families and households, Indigenous peoples, religion, and globalization. Students also engage in self-reflexive examination of their own worldviews, perceptions, and biases in relation to other peoples and cultures.

Credits: 3.00

OR any humanities course, social science course or fine arts course not used to meet other requirements

SCIENCE

GEOL 105 Introduction to Geology

An introduction to the major principles of physical and historical geology covering the origin and structure of the Earth, plate tectonics, volcanism and other mountain building processes, the erosion of the Earth's crust, and the formation and properties of minerals and rocks.

Credits: 3.00

PHYS 103 Introduction to Physics 1

This course introduces the student to how calculus is used to build physical theory and to solve problems in kinematics, dynamics, momentum, and center of mass calculations. In addition, the student is introduced to several conservation laws, in particular conservation of mechanical energy and linear and angular momentum.

Credits: 3.00

PHYS 104 Introduction to Physics 2

This course builds on PHYS 103. Electric and magnetic fields are used as examples of vector fields, and the concept of flux and Gauss's theorem are used to calculate the electric field in simple cases. Line integrals and the gradient are introduced as a means of going between electric field and potentials. Students are taught the uses for resistors, capacitors, and inductors and how to do calculations for circuits which use them. Ideas from relativity and quantum mechanics are introduced.

Credits: 3.00

STAT 106 Statistics

This course introduces the fundamental ideas of statistics and can be applied to any discipline. Topics include: collection, description, and presentation of data; calculating central tendency and dispersion; probability and statistical inference; hypothesis testing (means, proportions, variances, one and two samples); correlation and regression; decision making and sampling, Goodness of Fit Tests, and Contingency Tables.

Credits: 3.00

OR any other science course not already used to meet other requirements

CURRENT TRANSFER CREDIT AGREEMENTS

For Core Science Courses In The Asc In Environmental Science

Current Transfer Credit Agreements for Core Science courses in the Associate of Science – Environmental Science with University of Lethbridge, Simon Fraser University and University of Northern British Columbia.

COTR	U of L	SFU	UNBC
BIOL 101 <i>Introduction to Biology 1</i>	BIOL 1010 Cellular Basis of Life	BIOL 101 (B-SCI) General Biology	BIOL 103 & 123 Introductory Biology I & Lab
BIOL 102 <i>Introduction to Biology 2</i>	BIOL 1020 Diversity of Life	BIOL 102 (B-SCI) General Biology	BIOL 104 & 124 Introductory Biology II & Lab
BIOL 200 <i>Introduction to Microbiology</i>	BIOL 3400 Principles of Microbiology	BIOL 1XX	BIOL 203 Microbiology
BIOL 203 <i>Genetics</i>	BIOL 2000 Principles of Genetics	BIOL 202 Genetics	BIOL 210 Genetics
BIOL 204 <i>Ecology</i>	BIOL 2200 Principles of Ecology	BIOL 204 Introduction to Ecology	BIOL 201 Ecology
BIOL 208 <i>Vertebrate Biology</i>	BIOL 3530 Vertebrate Zoology	BIOL 316 Vertebrate Biology	BIOL 2XX
CHEM 101 <i>Fundamentals of Chemistry 1</i>	CHEM 1000 General Chemistry I	CHEM 121 (Q, B-SCI) General Chemistry I	CHEM 100 & 120 General Chemistry I & Lab
CHEM 102 <i>Fundamentals of Chemistry 2</i>	CHEM 2000 General Chemistry II	CHEM 122 (Q) General Chemistry II	CHEM 101 & 121 General Chemistry II & Lab
CHEM 201 <i>Organic Chemistry 1</i>	CHEM 2500 Organic Chemistry I	CHEM 281	CHEM 201 & 250
GEOG 101 <i>Physical Geography</i>	GEOG 1000 Intro to Physical Geography	GEOG 111 (B-SCI) Earth Systems	GEOG 102
MATH 103 <i>Differential Calculus</i>	MATH 1560 Calculus I	MATH 151 (Q) Calculus I	MATH 100 Calculus I
MATH 104 <i>Integral Calculus</i>	MATH 2560 Calculus II	MATH 152 (Q) Calculus II	MATH 101 Calculus II
PHYS 103 <i>Intro to Physics 1</i>	PHYS 1000 Introduction to Physics I	PHYS 101 (Q, B-SCI) Physics for the Life Science I	COTR PHYS 103 & 104 = PHYS 110 & 111 Introduction to Physics I & II
PHYS 104 <i>Intro to Physics 2</i>	PHYS 2000 Introduction to Physics II	PHYS 102 (Q, B-SCI)	COTR PHYS 103 & 104 = PHYS 110 & 111 Introduction to Physics I & II
ENG 100 <i>English Composition</i>	WRIT 1000 (FA, HUM) Intro to Academic Writing	WRITING 1XX* (W)	ENGL 170 Writing & Communication Skills
ENG 101 <i>Intro to Poetry & Drama</i>	ENGL 1900 (FA, HUM) Intro to Language & Literature	ENGL 103 Introduction to Drama	ENGL 100 Intro to Literary Structure
ENG 102 <i>Introduction to Prose</i>	ENGL 1900 (FA, HUM) Intro to Language & Literature	ENGL 112 Intro to Issues in Lit & Culture	ENGL 103 Introduction to Fiction
STAT 106 <i>Statistics</i>	STAT 1770 Intro to Probability & Statistics	STAT 205 Introduction to Statistics	STAT 240 Basic Statistics
ENSC 101 <i>Introduction to Environmental Science</i>	ENVSC 2000 Fund. of Enviro Science	EVSC 100 (B-SCI) Intro to Enviro. Science	ENSC 111 Intro to Environmental Science
GEOG 211 <i>GIS</i>	GEOG 2735 Introduction to GIS	GEOG 255 Geographic Info Science	GEOG 204 Intro to GIS for the Soc. Sciences
GEOG 230 <i>Weather & Climate</i>	GEOG 2300 Weather and Climate	GEOG 214 Weather and Climate	ENSC 201 Weather and Climate
GEOG 2xx <i>Quantitative/Methods</i>	GEOG 2700 Geographical Data & Analysis	EVSC 305 Methods in Enviro Science	ENSC 250 Environmental Data Analysis
CHEM 2xx <i>Analytical Chemistry</i>	CHEM 2410 Analytical Chemistry I	CHEM 215 (Q) Intro to Analytical Chemistry	CHEM 210 Analytical Chemistry I

Arts, Humanities and Social Sciences Courses Recommended for The Asc In Environmental Science

Current Transfer Agreements for suggested arts, social science, humanities and fine arts courses for the Associate of Science - Environmental Science with University of Lethbridge, Simon Fraser University and UNBC.

COTR	U of L	SFU	UNBC
FNST 101 <i>First Nations Studies 1</i>	INDG 1000 (FA & HUM) Intro to Native American Studies	FNST 101 (B- HUM) Introduction to First Nation Studies	FNST 1XX
FNST 203 <i>Indigenous Ways of Knowing</i>	INDG 1000 (FA & HUM) Intro to Native American Studies	FNST 2XX (B- HUM)	FNST 2XX
HIST 201 <i>Pre-Confederation Canada</i>	HIST 2710 (FA & HUM) Canada to 1867	HIST 101 (B- HUM) Canada to Confederation	HIST 210 Canada Before Confederation
HIST 202 <i>Post Confederation Canada</i>	HIST 2720 (FA & HUM) Canada Since 1867	HIST 102 (B- HUM) Canada Since Confederation	HIST 211 Canada Since Confederation
HIST 230 <i>Canada's Environmental History</i>	HIST 2XXX (FA & HUM)	HIST 1XX (B- HUM)	HIST 2XX
PHIL 101 <i>Intro to Philosophical Inquiry 1</i>	PHIL 1XXX (FA & HUM)	PHIL 120 (B- HUM) Introduction to Moral Philosophy	PHIL 1XX
PHIL 102 <i>Intro to Philosophical Inquiry 2</i>	PHIL 1000 (FA & HUM) Introduction to Philosophy	PHIL 100 (B- HUM) Knowledge and Reality	PHIL 1XX
PHIL 180 <i>The search for Meaning</i>	PHIL 1XXX (FA & HUM)	PHIL 1XX (B- HUM)	PHIL 1XX
PHIL 201	PHIL 2XXX (FA & HUM)	PHIL 2XX (HUM)	PHIL 2XX
ANTH 101 <i>Intro to Cultural Anthropology</i>	ANTH 1000 (SOC SCI) The Anthropological Perspective	SA 101 (B- HUM) Introduction to Anthropology	ANTH 1XX
ANTH 102	ARKY 1000 (SCI) Introduction to Archaeology	ARCH 1XX	ANTH 102 Anthropology: A World of Discovery
ANTH 216 <i>Culture and the Environment</i>	ANTH 2XXX (SOC SCI)	SA 2XX ANTH	ANTH 2XX
ECON 101 <i>Microeconomics</i>	ECON 1010 (SOC SCI) Introduction to Microeconomics	ECON 103 (B-SOC) Principles of Microeconomics	ECON 100 Microeconomics
ECON 102 <i>Macroeconomics</i>	ECON 1012 (SOC SCI) Introduction to Macroeconomics	ECON 105 (B-SOC) Principles of Macroeconomics	ECON 101 Macroeconomics
ECON250 <i>Environmental Economics</i>	ECON 3220 (SOC SCI) Environmental Economics	ECON 260 (Q) Environmental Economics	ECON 2XX
POLI 100 <i>Intro to Politics and Government</i>	POLI 1000 (SOC SCI) Introduction to Political Science	POL 100 (B-SOC) Introduction to Politics and Government	POLS 100 Contemporary Political Issues
POLI 202 <i>Environmental Politics</i>	POLI 2XXX (SOC SCI)	POL 2XX	POLS 2XX
ENST 200 <i>Intro to Enviro Sustainability</i>	SCI 2000 (SOC SCI) Environmental Science 2000	EVSC 100 (B-SCI) Introduction to Environmental Science	ORTM 200 Sustainable Recreation and Tourism
PSYC 101 <i>Introduction to Psychology 1</i>	PSYC 101 & 102 = PSYC 1000 Basic Concepts in Psychology & 1XXX (SOC SCI)	PSYCH 100 (B-SOC) Introduction to Psychology I	PSYC 101 Introduction to Psychology I
PSYC 102 <i>Introduction to Psychology 2</i>		PSYCH 102 (B-SOC) Introduction to Psychology II	PSYC 102 Introduction to Psychology II
PSYCH 270 <i>Environmental Psychology</i>	PSYCH 2XXX (SOC SCI)	PSYCH 1XX	PSYC 2XX
SOCI 101 <i>Sociology and the Individual</i>	SOCI 101 + 102 = SOCI 1000 Intro to Sociology = 1XXX (SOC SCI)	SA 1XX	SOSC 1XX
SOCI 102 <i>Intro to Sociology 2: Social Institutions</i>		SA 150 (B-SOC) Introduction to Sociology	SOSC 1XX
CRWT 101 <i>Creative Writing</i>	ENGL 1XXX (FA & HUM)	GE 1XX	ENGL 1XX
CRWT 102 <i>Creative Writing 2</i>	ENGL 2XXX (FA & HUM)	GE 1XX	ENGL 1XX
CRWT 202	ENGL 2XXX (FA & HUM)	NO CREDIT	ENGL 271

			Expository Writing
FA 100 <i>Introduction to Fine Arts</i>	ART 1XXX (FA & HUM)	CA 1XX (ART & CULTURE)	HUMN 1XX
FA 101 <i>Contemporary Art: A History</i>	ARHI 1000 (FA & HUM) Introduction to Art	CA 1XX (ART & CULTURE)	HUMN 1XX
FA 105 <i>Studio Foundations</i>	ART 2XXX (FA & HUM)	CA 1XX (VISUAL ARTS STUDIO)	HUMN 1XX
FA 106 <i>Introduction to Drawing</i>	ART 2031 (FA & HUM) Foundation Studio (Drawing and Image)	CA 262 Methods & Concepts: Drawing-based Principles	NO CREDIT
FA 107 <i>Sculpture</i>	ART 2032 (FA & HUM) Foundation Studio (Object and Space)	CA 264 Methods and Concepts: Sculptural Practices	NO CREDIT
FA 108 <i>Introduction to Painting</i>	ART 2002 (FA & HUM) Fundamentals of Painting	CA 263 Methods and Concepts: Painting – based Practices	NO CREDIT
BIOL 151 <i>Biology of the Environment</i>	BIOL 1XXX (SCI LIB)	BISC 100 (SCI) Introduction to Biology	BIOL 110 Introductory Ecology
CHEM 100 <i>Intro Environmental Chem</i>	SCI 1XXX (SCI LIB)	CHEM 1XX	CHEM 1XX
GEOG 210 <i>Geography of British Columbia</i>	GEOG 1XXX (SCI LIB)	GEOG 2XX	GEOG 200 British Columbia: People and Places
GEOL 105 <i>Introduction to Geology</i>	GEOL 2060 (SCI LIB) Physical Geology	EASC 101 (SCI) Dynamic Earth	GEOG 210 Introduction to Earth Science
GEOL 106 <i>Physical and Historical Geology</i>	GEOL 2XXX (SCI LIB)	EASC 210 (SCI) Stratigraphy and Sedimentation	GEOG 1XX
GEOL 220 <i>Environ Geol and Natural Hazards</i>	GEOL 2XXX (SCI LIB)	EASC 2XX	SCIE 2XX OR GEOG 2XX
STAT 106 <i>Statistics</i>	STAT 1770 (SCI LIB) Intro to Probability and Statistics	STAT 205 (201?) (Q) Introduction to Statistics	STAT 240 Basic Statistics
STAT 206 <i>Calculus Based Statistics</i>	STAT 2XXX (SCI LIB)	STAT 270 (Q) – Introduction to Probability and Statistics	STAT 371 Probability and Statistics for Scientists and Engineers
COMP 105 <i>Intro to C/C++</i>	CPSC 1620 (SCI LIB) Fundamentals of Programming 1	CMPT 125&127, 135 OR 128 Introduction to computing Science and Programming	CPSC 100 Computer Programming I
COMP 153 <i>Intro to Data Processing</i>	CPSC 1000 (SCI LIB) Introduction to Computer Science	NO CREDIT	CPSC 150 Computer Applications

ACADEMIC REQUIREMENTS FOR PROFESSIONAL DESIGNATIONS

Professional Designations in Biology (BC)

For the most current and complete information, please consult: cab-bc.org

Registered Biology Technologist (College of Applied Biology)

R.B.Tech and Trainee (R.B.Tech) applicants must have a diploma from the accredited program list¹ or documentation supporting the requirements as set out below.

Required Courses:

- Maximum of 3 courses in each of the following competencies (Min of 20 courses)
 - Communications
 - Mathematics/Statistics
 - Environmental Science
 - Field/Laboratory Techniques
 - Applied Science
 - Project Management

Registered Professional Biologist (College of Applied Biology BC)

Applicants require a minimum of 25 courses, 15 of which must be biology courses. Applicant must have taken all required courses listed or they will not be accepted for membership in the College of Applied Biology.

First Year Courses

- Introductory Biology
- Communications
- Mathematics (counted as science course)
- Chemistry (counted as science course)

Second Year Courses

- Systematic or Classification
- Cellular
- Organismal
- Ecology
- Applied Biology
- Statistics

Not Required

Courses from these categories may be accepted as Biology Course

- Biochemistry
- Microbiology
- Evolutionary Biology
- Developmental Biology
- Biology Field and/or laboratory courses
- Biomechanics
- Animal Behaviour
- Silviculture, Aquaculture or Agriculture
- Toxicology
- Directed Studies

Total Number of Biology and Science Courses

(Must equal 25)

1. Courses that focus on communication skills such as English Composition, technical writing, journalism, public speaking or use of mass media
2. E.g. Vertebrates, Invertebrates, Vascular-plants, Non-vascular plants, Microbiology, Toxicology, Comparative anatomy
3. Genetics, Molecular Biology, Cell Biology or Biochemistry
4. Physiology (cell, animal, plant or microbial)
5. E.g. Ecology, Population or Community Ecology
6. E.g. Conservation Biology, environmental Biology, Landscape Ecology, Wildlife Management, Fisheries Management

7. For directed studies courses in a biological field to be accepted, the applicant must provide a copy of the report required for the course.

Registered Professional Biologist (College of Applied Biology)

Applicants require a minimum of 25 courses, 15 of which must be biology courses. Applicant must have taken all required courses listed or they will not be accepted for membership in the College of Applied Biology.

Professional Designations in Biology (Alberta)

For the most current and complete information, please consult: aspb.ab.ca

Registered Technologist in Biology (Alberta Society of Professional Biologists)

This membership category will be non-regulated until such time as the Professional Biologist Regulation is amended, potentially in 2018. At that time, the R.T.Biol. will be regulated and will have full title protection, however, technologists will not have sign off or authentication privileges.

Academic Requirements:

- A Registered Technologist in Biology must have a two year diploma from a post-secondary institution. The diploma must contain at least eight biology/ecology courses, applied science courses, and at least one communications and one statistics course.

Registered Biologist (Alberta Society of Professional Biologists)

The Registered Biologist membership category is a transitional category for applicants who do not meet the academic requirements for Professional Biologist and who do not have six years of experience required under equivalency for P. Biol. yet wish to be a non-regulated member of the ASPB. Members admitted to this category are expected to either take the required number of courses to meet 15 biology courses, or ensure they are attaining work experience that will meet the course to work equivalency requirements in the Equivalency section above. Members can remain in this category only until they have reached the required six years of work experience for Equivalency.

Academic Requirements:

- A R. Biol. must have an undergraduate degree, and must have 12 - 14 biology courses, 4 at the senior level.
- An applicant should arrange for university transcripts and proof of degree to be sent directly from the university to the ASPB office. For applicants who have completed post-secondary education outside Canada, they must submit a third party evaluation of their academics, such as IQAS.

**Professional Biologist
(Alberta Society of Professional
Biologists)**

This category designates individuals who fully meet requirements for academic, experience and good character. A P. Biol. has voting privileges in the ASPB, and may hold office as a Board of Director. Only a P. Biol. may use the protected title Professional Biologist or the abbreviation P. Biol. A Professional Biologist must also participate in the continuing competency program.

Academic Requirements:

- A P. Biol. must hold a four year undergraduate and/or graduate degree(s) in the biological sciences from a Canadian university, or equivalent. The Registration Committee considers a university bachelor's degree is equivalent to a biology degree if it includes 15 courses that are in the biological sciences, and where four or more of the biological science courses are at a senior level (i.e., third or fourth-year).
- An applicant should arrange for university transcripts and proof of degree to be sent directly from the university to the ASPB office. For applicants with education completed outside Canada, they must submit an evaluation of those credentials in order to be considered.

Professional Designations in Agrology (BC)

For the most current and complete information, please consult: bcia.com

Articling Agrologist (BC Institute of Agrologists)

As a BCIA member you are recognized having met specified criteria and are thereby qualified to call yourself an 'Agrologist' while engaging in the practice of agrology.

Academic Requirements:

- A Bachelor's level degree (with a science focus).
- Coursework must consist of the following:
 - Minimum of 8 foundational knowledge courses (usually 100 and 200 level courses) in the subject matters listed below

Foundational Natural Science Courses

A foundational natural science course provides science instruction that forms the foundation upon which subsequent natural science courses or agrology courses are built. (Cannot be double counted)

- Biology
- Biochemistry
- Hydrology
- Genetics
- Chemistry
- Earth Sciences
- Hydrogeology
- Physics
- Ecology
- Physical Geography
- Microbiology
- Geology

Additional Foundational Courses

Courses that are of benefit to the study of natural sciences or agrology.

- Math
 - Statistics
 - Computer Science
 - Economics
 - Communication/Writing
- Minimum 20 courses in natural sciences and/or agricultural and resource economics at any level that demonstrate direct link to agrology.
 - Minimum of 11 courses at the 300+ level (can come from the 20 course requirement above) 8 of which must be in natural sciences and/or agricultural and resource economics and relate directly to Agrology (as defined in the Agrologists Act, 2003).

Professional Designations in Agrolgy (Alberta)

For the most current and complete information, please consult: albertaagrologists.ca/site/home

Agrologist in Training (Alberta Institute of Agrologists)

This category designates individuals who fully meet requirements for academic, experience and good character. A P. Biol. has voting privileges in the ASPB, and may hold office as a Board of Director. Only a P. Biol. may use the protected title Professional Biologist or the abbreviation P. Biol. A Professional Biologist must also participate in the continuing competency program.

Academic Requirements:

- A minimum of four-year, 120-credit Baccalaureate degree in agriculture or environmental science or an equivalent degree that includes:
 - 60 credits agrolgy of which 24 must be at the senior level (usually 300 or 400 level)
 - 15 credits of foundational natural science (e.g., biology, botany, chemistry, physics, geology, ecology, hydrology, hydrogeology)
 - 3 credits of English/communications
 - 3 credits of math/calculus/statistics
 - 3 credits economics (microeconomics or macroeconomics)

Professional Designations in Environmental Sector

For the most current and complete information, please consult: eco.ca/certification/ep-designation/

Environmental Professional (ECO Canada)

The Canadian Environmental Certification Approvals Board (CECAB) is responsible for overseeing the administration, evaluation and ratification of Environmental Professional (EP) certification. The Approvals Board, composed of prominent environmental stakeholders from across Canada, functions as an impartial governing body for the certification and term renewal of members. Through this process, EPs are ratified at the highest level, and are proven as leaders in their respective fields, with the competencies to safeguard public trust.

Basic Requirements for Registration:

- Recognized Canadian college diploma or university degree, or equivalent international credentials
- At least five years of environmental work experience in Canada and this experience must be recent (obtained within the past ten years)
- Complete a self-assessment against the National Occupation Standards (NOS), and then have three peer references validate your environmental competency
- Pass the EP Ethics Examination, demonstrating their understanding and adherence to the Guidelines for Ethical Practice and EP Code of Ethics

Professional Designations in Geoscience

Most graduates from Environmental Science Degree Programs work towards professional designations in biology and agrology. Some courses obtained through these program pathways could be used towards a professional designation in geoscience.

For the most current and complete information, please consult: geoscientistscanada.ca.

Each province has a regulating body with a slightly different application process and set of admission requirements. It is important to contact the regulatory body in the province or territory in which you plan to apply in order to confirm requirements.

Professional Geoscientist (British Columbia)

For the most current and complete information, please consult: egbc.ca

Professional Geoscientist (Engineers & Geoscientists British Columbia)

Engineers and Geoscientists British Columbia is the business name of the Association of Professional Engineers and Geoscientists of the Province of British Columbia. Engineers and Geoscientists BC regulates and governs these professions under the authority of the Engineers and Geoscientists Act.

The association is charged with protecting the public interest by setting and maintaining high academic, experience, and professional practice standards for over 37,000 members. Individuals licensed by Engineers and Geoscientists BC are the only persons permitted by law to undertake and assume responsibility for engineering and geoscience projects in BC.

Basic Requirements for Registration:

- Four-year B.Sc degree in geoscience
- 48 months of supervised geoscience work experience
- Good character, reputation and conduct
- Proficiency in the language of business in the province or territory of practice
- Knowledge of professional practice issues, including law and ethics

To become a member you must complete the [Engineers & Geoscientists BC Self-Assessment Tool](#).

Based on your academic background and work experience, the tool will also provide guidance on what to expect during the qualification review process at Engineers and Geoscientists BC or ASTTBC.

egbc.ca/Become-a-Member/Self-Assessment-Tool

Professional Geoscientist (Alberta)

For the most current and complete information, please consult: apega.ca

Professional Geoscientist (Association of Professional Engineers and Geoscientists of Alberta)

The Association of Professional Engineers and Geoscientists of Alberta (APEGA) regulates the practices of engineering and geoscience in Alberta on behalf of the Government of Alberta through the Engineering and Geoscience Professions Act.

Basic Requirements for Registration:

- Four-year B.Sc degree in geoscience
- 48 months of supervised geoscience work experience
- Good character, reputation and conduct
- Proficiency in the language of business in the province or territory of practice
- Knowledge of professional practice issues, including law and ethics



SMALL COLLEGE PROUD.