COLLEGE OF THE ROCKIES

Environmental Studies Certificate (ESC)

Program Outline

PROGRAM IMPLEMENTATION DATE:	**September 2009**
OUTLINE EFFECTIVE DATE:	**September 2021**
PROGRAM OUTLINE REVIEW DATE:	**March 2026**

GENERAL PROGRAM DESCRIPTION:

This certificate provides an interdisciplinary approach to global environmental issues. Coursework deals with environmental issues from social, scientific, cultural, philosophical, political and economic perspective.

Program Information: This certificate is a foundation year that can ladder into related diplomas, associate degrees or bachelor degrees. This program may appeal to students who plan to go into community development, non-profit societies, local government, public service sector, and related areas.

Delivery: This program is delivered face-to-face and a number of courses are available on-line as well.

COTR Credits: 30

Students must complete a minimum of 10 courses, totaling at least 30 credits.

Program Outline Author or Contact:
Katie Burles, M.Sc.

Signature

APPROVAL SIGNATURES:

Department Head
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Dean Signature

EDCO

Valid from: September 2021 - March 2026

Education Council Approval Date

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PROGRAM PREREQUISITES AND TRANSFER CREDIT:

Admission Requirements:
Secondary school graduation (or equivalent)

- Minimum grade of 65% in English 12 First Peoples or equivalent (refer to Course Equivalency Information on the College website)

Students must have the prerequisites for the individual courses in the program. Students can enroll in the program and take the upgrading courses they require concurrently.

Flexible Assessment (FA):

Credit can be awarded for this course through FA ☑ Yes ☐ No

Learners may request formal recognition for flexible assessment at the College of the Rockies through one or more of the following processes: External Evaluation, Worksite Assessment, Demonstration, Standardized Test, Self-assessment, Interview, Products/Portfolio, Challenge Exam. Contact an Education Advisor for more information.

Transfer Credit: For transfer information within British Columbia, Alberta and other institutions, please visit http://www.cotr.bc.ca/Transfer.

Students should also contact an academic advisor at the institution where they want transfer credit.

Program Requirements:

6 Credits in First Year English and Communications

	One of:
ENGL 100	ENGL 101, ENGL 102, COMC 102

3 Credits in Computer Science or Mathematics

One of:
COMP 105, COMP 153, COMP 154, MATH 101, MATH 103, STAT 106

12 Credits in Science and Arts other than English

Four of:
BIOL 151, CHEM 100, ECON 101, ENSC 101, ENST 200, GEOG 101, GEOL 105, GEOL 106

9 Credits in Science and Arts

Three of:
ANTH 101, COMC 102, COMC 253, ECON 250, FNST 101, GEOG 210, GEOG 211, GEOG 230, GEOL 220, HIST 230, INDG 120, PHIL 201, POLI 100, SOCI 102

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COURSE GRADE:

Course grades are assigned as follows:

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Mark (Percent)	≥ 90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	< 50

A grade of "D" grants credit but may not be sufficient as a prerequisite for sequential courses.

Students must have a C- average to be granted the certificate.

COURSE DESCRIPTIONS:

ENGL 100 (3) English Composition (3-0)
English 100 focuses on composition strategies for writing across academic disciplines. Over the course of the term, students will develop an awareness of how rhetorical situations affect composition and refine their understanding of the fundamentals of essay writing (and clear communication more broadly), including paragraphing, thesis statements, essay structure, and citation methods. Students will also learn the fundamentals of critical thinking and analysis, persuasive writing techniques (including rhetorical appeals and modes), scholarly research, and academic reading.

ENGL 101 (3) Introduction to Poetry and Drama (3-0)
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.

ENGL 102 (3) Introduction to Prose Fiction (3-0)
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.

COMC 102 (3) Advanced Professional Communication (3-0)
This course presents the written and oral communication strategies required in any workplace environment. Students gain practical experience that centers on gathering, summarizing and critically assessing information to produce professional documents. Students will also gain a better understanding on how basic design elements enhance the readability of workplace documents and online communication. This course also focuses on helping students develop speaking skills appropriate to informal and formal presentations and interviews.

COMP 105 (3) Introduction to C/C++ Programming Language (3-3)
Covers the basic programming techniques of C and C++ languages with an introduction to structured programming and abstract data types.

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COMP 153 (3) Introduction to Computers and Data Processing (1-3)
This course allows students to develop knowledge and skills in the field of information technology. Students will explore the operation and application of professional productivity software. Students use four applications of the Microsoft Office 2016 suite: Word, Excel, Access and PowerPoint. The theory component develops a broad and general understanding of current computer technology, methods and models.

COMP 154 (3) Computer Applications in Business (1-3)
This course examines information systems theory and utilizes computer technology. Students will explore the application of technology in organizations. Students will investigate information systems, evaluate organizational needs, and develop effective solutions. Security, legal and ethical issues will be examined along with characteristics of professional administration. Microsoft Office applications, including Word, Excel, PowerPoint, Access and Outlook, will be utilized to create effective business artifacts and fulfill organizational needs.

MATH 101 (3) Finite Mathematics 1 (3-1)
This course is intended for students who require an appreciation of higher mathematics, but don't require calculus. MATH 101 stresses a logical and critical thinking approach while investigating the following topics: an introduction to matrices and to linear algebra; linear programming and the Simplex method; set theory, counting techniques and probability; and introduction to statistics; and Markov Processes.

MATH 103 (3) Differential Calculus (3-1-1)
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.

STAT 106 (3) Statistics (3-1-1)
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.

BIOL 151 (3) Biology of the Environment (3-3)
Biology 151 focuses on environmental and ecological topics within biology from a local perspective. BIOL 151 helps inform students about local and global environmental issues, current events, and new and emerging technologies from a scientific perspective. Students, with the help of their instructor, will design and implement a research project that focuses on a local environmental issue and present it to members of the community.
Note: BIOL 151 *does not* meet the requirements for a science major's course and therefore cannot be substituted for BIOL 101 or BIOL 102.

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CHEM 100 (3) Introduction to Environmental Chemistry (3-3)
CHEM 100 is an introduction to the fields of environmental studies and environmental chemistry. Qualitative and quantitative aspects of environmental processes are studied. Topics include atmospheric processes (including those involving carbon dioxide and ozone), air pollution, acid rain, natural waters, dissolved oxygen, and the fate of chemical compounds in the environment. Where possible, examples involving local issues and current events are studied.

Note: CHEM 100 *does not* meet the requirements for a science major's course and therefore cannot be substituted for CHEM 101 or CHEM 102.

ECON 101 (3) Microeconomics (3-0)
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.

ENSC 101 (3) Introduction to Environmental Science (3-3)
This course introduces students to the interdisciplinary 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, understand, and communicate environmental problems and how they affect various aspects of the ecosphere, including humans. Students will use an ecocentric approach to explore sustainable solutions through integration of acquired knowledge and perspectives. Laboratory activities, field trips and guest lectures will offer the opportunity to study regional environments and local environmental issues.

ENST 200 (3) Introduction to Environmental Sustainability (3-0)
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.

GEOG 101 (3) Introduction to Physical Geography 1 (3-3)
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.

GEOL 105 (3) Introduction to Geology (3-3)
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.

GEOL 106 (3) Physical and Historical Geology (3-3)
This course is an introduction to the major principles of structural and historical geology. Historical geology topics include geologic time, relative and absolute dating techniques, organic evolution, the study of fossils and the geologic history of the earth from the Precambrian to the present. Mineral deposits and natural resource issues will also be examined.

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ANTH 101 (3) Introduction to Cultural Anthropology (3-0)
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.

COMC 253 (3) Intercultural Communication (3-0)
This course explores the inherent relationship between culture, language, and communication. The key concepts of identity, culture, assumptions and stereotypes, beliefs, value systems and globalization are discussed. From theory to practices students investigate the impact of identity and context in intercultural interactions. The focus of this course is to help students develop meaningful strategies to communicate in today's culturally diverse communities.

ECON 250 (3) Environmental Economics (3-0)
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.

FNST 101 (3) First Nations Studies (3-0)
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.

GEOG 210 (3) Geography of BC (3-0)
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.

GEOG 211 (3) Introduction to Geographic Information Systems (2-4)
This course will introduce concepts in geographical information science (GIS) and remote sensing. 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, remote sensing of the Earth's surface, aerial photography, photogrammetry and visual image interpretation. Lab sessions will apply lecture theory through hands-on experience with industry standard GIS software (ArcGIS Pro, ArcGIS Online), aerial photography interpretation, and image assessment.

GEOG 230 (3) Meteorology, Climate and Hydrology (3-3)
This course will examine of the basic principles and processes governing the Earth's weather and climate, including the movement of water. This will include an evaluation of 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.

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GEOL 220 (3) Environmental Geology and Natural Hazards (3-3)
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 hazard issues.

HIST 230 (3) Environmental History (3-0)
Nature and humans have had a long, complex, reciprocal relationship, making for certain conceptions, processes, and complexities to develop. Those developments have led to three main areas of historical overview and deeper consideration:

1) How Canadians, including Indigenous people, have thought about the natural environment and colonized landscapes;
2) How development of resources and industrialization/urbanization in Canada have had short and long term effects; and
3) How Canada's conservationists and environmentalists have responded at various junctures to address concerns.

Using an array of interdisciplinary sources emerging in the burgeoning environmental history field, this course ultimately places the dynamic interplay between the environment and people under study to better understand that relationship over time.

INDG 120 (3) Indigenous Worldviews on Contemporary Structures (3-0)
This course uses Indigenous pedagogy to support students in understanding their relationships to Indigenous peoples and territories in British Columbia. Students will learn about contemporary issues facing some of the Indigenous nations within British Columbia from an Indigenous perspective. Through examining both local and larger provincial conversations surrounding Indigenous rights, treaties (or lack thereof), and the history of colonization, students will learn to consider concepts of cultural appropriation, and examine the idea of decolonization in action.

PHIL 201 (3) Social and Political Philosophy (3-0)
Social and Political Philosophy explores human beings living together in society. Themes include the philosophical foundations of political systems, concepts of justice and liberty, the role of the state and the individual, and the question of historical law. Resources include Plato, Aristotle, Augustine, Machiavelli, Hobbes, Rousseau, Marx, and many more. Perspectives outside the Western Tradition, i.e. Eastern and Indigenous views, will also be explored.

POLI 100 (3) Introduction to Politics and Government (3-0)
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.

SOCI 102 (3) Introduction to Sociology 2: Social Institutions (3-0)
This introductory course examines the major social institutions and social processes in contemporary society, and examines in the central theoretical perspectives in sociology: functionalism, conflict theory, symbolic interactionism, feminism, and postmodernism. Topics include: Family, Education, Religion, Mass Media, Economy and Work, Power, Politics and Government, Social Class and Stratification, Global Stratification, and Collective Behaviour, Social Movements and Social Change.