ORIGINAL COURSE IMPLEMENTATION DATE: September 2024

REVISED COURSE IMPLEMENTATION DATE:

COURSE TO BE REVIEWED (six years after UEC approval)**:** January 2030

Course outline form version: 28/10/2022

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: ENV 212	**Number of Credits:** 4 Course credit policy (105)
Course Full Title: Environmental Field and Lab Techniques **Course Short Title:** Env Field & Lab Techniques	
Faculty: Faculty of Science	**Department:** Planning, Geography, and Environmental Studies

Calendar Description:

Students will learn introductory-level principles of common field and lab techniques that are used in a wide variety of environmental careers. Through hands-on experiential learning, students will build skill sets by designing field activities, collecting and storing samples, analyzing samples in the lab, interpreting data, and effectively communicating results.

Note: Field trips outside of class time will be required. Please refer to department website for field trip scheduling information.

Prerequisites (or NONE):	One of BIO 105, BIO 106, BIO 111, BIO 112, CHEM 110, CHEM 113, CHEM 114, GEOG 103, GEOG 105, GEOG 111, PHYS 100, PHYS 101, PHYS 105, PHYS 111, or PHYS 112.
Corequisites (if applicable, or NONE):	NONE
Pre/corequisites (if applicable, or NONE):	NONE

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number:

Cross-listed with:

Equivalent course(s):

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar	20
Tutorials/workshops	15
Experiential (field trip)	25
Total hours	**60**

Scheduled Laboratory Hours

Labs to be scheduled independent of lecture hours: ☒ No ☐ Yes

Course Details

Special Topics course: **No**

(If yes, the course will be offered under different letter designations representing different topics.)

Directed Study course: **No**

(See policy 207 for more information.)

Grading System: **Letter grades**

Delivery Mode: **Face-to-face only**

Expected frequency: **Annually**

Maximum enrolment (for information only)**: 28**

Prior Learning Assessment and Recognition (PLAR)

PLAR is available for this course.

Transfer Credit *(See **bctransferguide.ca**.)*

Transfer credit already exists: **No**

Submit outline for (re)articulation: **Yes**

(If yes, fill in transfer credit form.)

Department approval	**Date of meeting:**	September 2023
Faculty Council approval	**Date of meeting:**	October 6, 2023
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	January 26, 2024

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

Upon successful completion of this course, students will be able to:

1. Design appropriate sampling protocols considering location, ethics and Indigenous perspectives, budget, personnel of various backgrounds, and safety concerns.
2. Implement standard protocols for collection and field analyses, preservation, and lab analyses of air, water, soil, vegetation, animals, and microorganisms in the field.
3. Demonstrate a Two-Eyed Seeing approach to data collection, interpretation, and communication.
4. Explain the principles behind standard environmental field techniques and modern lab analyses especially as a guide to improvise solutions.
5. Manage field and lab equipment with proper calibration, upkeep, and repair.
6. Organize datasets with field notebooks, laboratory records, and online SharePoint.
7. Interpret data using spatial software to visualize field observations and surveys.
8. Produce a technical report on the interpretations of observations, results, and data against published guidelines, objectives, and standards.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Lab work:	25%	Assignments:	10%		%
Field evaluation:	45%	Quizzes/tests:	20%		%

Details:

Field evaluation includes keeping a field journal, use of data collection and processing techniques, and interpreting data through reporting. 2-3 weeks during the term will feature outdoor experiential learning opportunities at the UFV campus and within Fraser Valley communities.

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures will be followed by presentations and demonstrations of techniques in the field. The preparation of samples for storage or lab analysis follows the field work. Analysis, visualization, and sharing of environmental data through hardcopy forms, online forms, and ArcGIS Apps follows the lab analysis. Students are expected to attend all field work, lab work, and computer processing of data to gain a holistic understanding of environmental techniques.

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. Open Educational Resources (OER) should be included whenever possible. If more space is required, use the Supplemental Texts and Resource Materials form.)*

	Type	Author or description	Title and publication/access details	Year
1.	Online resource	Austin, Joyce (editor)	British Columbia Field Sampling Manual (BCFSM)	2020
2.	Online resource	B.C. Ministry of Environment and Climate Change Strategy	British Columbia Environmental Laboratory Manual	2020
3.	Textbook	University of North Texas	Field & Laboratory Methods for Environmental Science for Non-Majors	2022
4.	Article	Trios, C.H., Auerbach, J., & Katti, M.	Decoloniality and anti-oppressive practices for a more ethical ecology	2021
5.	Online resource	Nature United	Indigenous Guardians Toolkit: Monitor and Collect Data	2016

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Students should be prepared for outdoor field work and wear appropriate clothing and shoes. Other necessary tools will be supplied.

Course Content and Topics

- Introduction to environmental field techniques, safety, and ethical considerations.
- Two-Eyed Seeing approach to environmental stewardship, monitoring, and assessment.
- Field techniques for monitoring and sampling air, water, vegetation, animals, microorganisms.
- Laboratory analysis of air, water, vegetation, animals, microorganism samples.
- Measurement, statistics of sampling, and Quality Assurance / Quality Control
- Manual and digital recording and reporting of observations, data, and results.