



CAMOSUN COLLEGE
School of Arts & Science
Department of Environmental Technology

ENVR-203-X01
Aquatic Monitoring Techniques
Summer 2018

COURSE OUTLINE

The course description is online @ <http://camosun.ca/learn/calendar/current/web/envr.html>

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1. Instructor Information

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|-------------------------|--|---------------------------|
| (a) Instructor | Instructor: Coordinator – Steve Gormican.
Individual modules: Lakes – Matt Jessop
Streams 1 – Michael Kory
Streams 2 – Steve Hann
Coasts – Contractor, Archipelago Marine Services | |
| (b) Office hours | See Summer Schedule for ET students | |
| (c) Location | various | |
| (d) Phone | 250-370-3423 | Alternative: _____ |
| (e) E-mail | gormicans@camosun.ca | |
| (f) Website | _____ | |

2. Intended Learning Outcomes

A. Lakes Module

- To utilize water, sediment and biological sampling equipment to conduct lake monitoring programs.
- To incorporate field quality assurance protocols to ensure that the data collection is complete and correct.
- To summarize the field information in appropriate data sheets.

Specific activities include:

i) Physical and Chemical Measurements

- Use of compass for selecting and positioning of sites.
- Procedures in recording field data.
- Correct labeling of samples.
- Data records/data sheets and maintaining the continuity of samples (QA/QC).
- Calibration of instruments (DO meter/conductivity meter).
- Use of water collection bottles.
- Proper procedures for the collection, preservation, storage and transport of samples to be analyzed for dissolved oxygen, nutrients, pH, alkalinity, and inorganic ions.
- Collection and transport procedures for bacteriological water samples (coliforms).
- Data organization: correction factors and density calculations; plotting of temperature, specific conductivity and dissolved oxygen data.

Use of bottom sediment grabs; sampling procedures for sediments to be analyzed for inorganic and organic contaminants and particle size.

ii) Biological Measurements

- Vertical zooplankton tows.
- Calculation of volume filtered and net efficiency.
- Collection, preservation and storage of phytoplankton and zooplankton samples.

B. Streams 1 Module:

This module is designed to:

- to introduce the parameters and methods of measurement for assessing water quality in streams based on water chemistry and stream biology;
- to introduce the theory and methods of measurement for water chemistry including temperature, oxygen content, pH, conductivity and turbidity;
- to introduce benthic stream invertebrate populations and how they related to water quality;
- to conduct a full field day to practice and apply the methods discussed in the classroom, including making a series of measurements for an assigned section of the stream and to complete datasheets provided;
- to learning how to complete the Water Quality Module and Stream Invertebrate Module of Streamkeepers towards fulfilling the requirements for certification in the Streamkeepers Program

C. Streams 2 Module:

This module is designed to:

- provide students with an opportunity to learn the fundamental theories of fluvial geomorphology
- practice basic stream assessment procedures in a field setting;
- to understand the concepts of drainage divides, basins, and watershed; the processes of stream erosion, transport and deposition; stream flow characteristics and channel morphology;
- to conduct a RISC (Resource Information Standards Committee) approved stream assessment and for students to being the certification process for the federal Department of Fisheries and Ocean's Streamkeepers Program.

D. Coasts Module:

i) To map and describe the intertidal habitat of a 100 m section of the Fonyo Beach foreshore using beach profile transects by:

- Determining the habitat zones along the transect using criteria such as substrate (dominant and subdominant - use the Wentworth Scale), prominent changes in slope, vegetation (dominant and subdominant)
- Using stadia rods, level meter and tide table to determine the top and bottom elevation of each habitat zone relative to chart datum
- Describing the biological characteristics of the habitat by listing abundant and notable species;
- Taking observations 25 m either side of the transect and determine and map the position of any "erratic" habitat; e.g., rock outcrops, sand/shell areas, isolated areas of vegetation;
- Linking the two transects into a single habitat map and complete the DFO on-site habitat description form for your area.
- Determining species diversity and abundance of fish in vegetated and non-vegetated habitats of the beach using beach seine sampling by:

ii) To conduct two beach seine sets in vegetated and adjacent (similar tidal elevation) non-vegetated habitat by:

- Sorting the catch by species and count the number of individuals of each species;
- Estimating the area sampled by each seine and note the habitat.
- Determining the tidal elevation substrate type (Wentworth scale) of your sampling area.
- Recording your results in tabular form and provide a short written comment on the results.

3. Required Materials

(a) Texts:

Three “in-house” manuals which are on the course D2L site.

- Envr 203 Manual: Lakes
- Envr 203 Manual: Streams 1 (Chemistry and Biology)
- Envr 203 Manual: Streams 2 (Geomorphology and Stream Habitats)

Copies of additional information will be provided by the individual instructor.

For most field days, but in particular the Lake component, expect to get wet, even on sunny days. Therefore **rubber boots, rain pants and head protection (touque and/or rain hat) are required** (see evaluation above). **Sandals are not permitted** (Workman’s Compensation requirement). Sun screen and a sun hat are also strongly recommended. Bag lunches are required. Clipboards, pencils and field data sheets will be provided. Bring your field notebook for additional notes that you may want to record.

4. Course Content and Schedule

Each module will include one half day (0900 – 1200 or 1200 – 1300 – 1600 hrs) classroom introduction and one complete field day for each of the four modules. Actual schedule is provided to students as part of the overall Spring ET Schedule, discussed and handed out on the first day of the semester.

5. Basis of Student Assessment (Weighting)

Each Module is worth 25% of the overall grade for Envr 203. Individual instructors will discuss the marking scheme.

Attendance

Students **must attend** all lectures and the lake field trip or they will receive an incomplete in the course. There will be no opportunity to redo any of the components until the following Summer (2019) semester.

Time and Place:

A. Classroom: Room Fisher 310, Lansdowne Campus

B. Field Surveys:

The field days are guided by different requirements for each Module. Students will be informed of the location and time for each by the individual instructor.

6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

n/a

8. College Supports, Services and Policies



Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.

DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://camosun.ca/about/policies/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.