School of Arts & Science
ENVIRONMENTAL TECHNOLOGY DEPARTMENT

ENVR 203: AQUATIC MONITORING TECHNIQUES: LAKES, STREAMS 1 & 2, COASTS
SPRING, 2007

COURSE OUTLINE

The Approved Course Description is available on the web @_____

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for your records.*

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1. Instructor Information

(a) Instructor: Coordinator – Warren Drinnan.
Individual modules: Lakes – Steve Gormican, Gormican Environmental Services
Streams 1 – Warren Drinnan
Streams 2 – Steve Hann
Coasts – Pam Thuringer, Archipelago Marine Services
(b) Office hours (of coordinator): 0930 – 1230; as handed out by individual instructors
(c) Location: Warren Drinnan - F348D
(d) Phone: Warren Drinnan - 370-3463; Steve Hann – 370 - 3210; Steve Gormican: 656-2818; Pam Thuringer: 383-4535
(e) E-mail: drinnan@camosun.bc.ca
(f) Website: see Environmental Technology Program Website via links with www.camosun.bc.ca

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 can be purchased at the bookstore.

- 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.

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.

Student Requirements

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.

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 Spring (2005) semester.

Time and Place:

A. Classroom: Room WT103, 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

The following percentage conversion to letter grade will be used:

A+ = 95 - 100%	B = 75 - 79%	D = 50 - 59%
A = 90 - 94%	B- = 70 - 74%	F = 0.0 - 49%
A- = 85 - 89%	C+ = 65 - 69%	
B+ = 80 - 84%	C = 60 - 64%	

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

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at http://www.camosun.bc.ca

ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html