

I. COURSE DESCRIPTION:

This field camp provides a hands-on, practical experience specific to environmental studies. Emphasis will be placed on field techniques and surveys to evaluate fish populations and assess their habitats (e.g. Ontario Aquatic Habitat (Lake) Inventory Survey, Ontario Stream Assessment Protocol). Students will demonstrate the proper use of field instruments, traps and nets. Students will apply techniques used in the Ecosystem Land Classification (ELC) System including soil analysis, and use of keys to determine Ecosite Type (ES) and Vegetation type (V). Aggregate extraction operations and environmental reclamation will be explored through in-field surveys. Forest harvesting systems and silvicultural practices will be explored by conducting a post-harvest audit to quantify compliance level within provincial standards. Using the Forest Operations Inspections Program (FOIP) protocols, students will assess a water-crossing on a forest access road for compliance within the standards. All-terrain vehicle operation, safety and basic maintenance will be reinforced.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Conduct a lake survey using standard equipment and methodologyPotential Elements of the Performance:

- effectively use passive and active fish capture techniques such as gill nets, trap nets, minnow traps and seine nets
- practice efficient and humane procedures to capture, handle fish
- process fish by determining and recording species identification; total length; fork length; weight; sex; stomach contents; state of health; presence of parasites, tags or marks and by removing scales, fin rays cleithrum and/or otoliths for age determination
- select and use appropriate field equipment to collect, document and preserve small littoral fish and aquatic invertebrates
- correctly operate and where necessary, calibrate the following instruments and equipment: oxygen meter, conductivity meter, pH meter, YSI metre, secchi disc, Juday plankton net, Eckman dredge
- accurately map riparian vegetation, substrate types and other shoreline features for physical features map
- correctly operate a Bathymetric Automated Survey System (B.A.S.S.) unit to map lake basin profile
- safely operate an outboard motor under field conditions

2. **Assess physical processes and channel structure of a stream**

Potential Elements of the Performance:

- properly demonstrate the Ontario Stream Assessment Protocol field procedures for assessing physical processes and channel structure
- accurately define site boundaries of the stream site
- set up transects and observation points
- correctly measure hydraulic head (velocity), active channel width, instream cover, maximum particle size, bank stability, bank vegetation and cover type, stream bearing
- classify stream substrate types

3. **Capture aquatic invertebrates for collection requirements**

Potential Elements of the Performance:

- correctly use dip nets and surber samplers in the collection of aquatic invertebrates
- properly preserve and document invertebrates collected
- accurately record habitat variables of collection location

4. **Complete field related investigation and assessment of water-crossings.**

Potential Elements of the Performance:

- apply the Forest Operation Inspections Program (FOIP) protocol to a forest road access water-crossing
- estimate pipe length based on physical parameters
- estimate % slope of the pipe
- measure water depth, % of pipe below stream bed level and depth of road bed over pipe
- discuss and evaluate flow through pipe and associated culvert dimensions
- observe erosion control measures (rip rap, etc.)
- complete FOIP inspection form and compare observed culvert data to provincial standards
- Visit bridge or large arched culvert to discuss installation and compliance.

5. **Conduct in-field terrestrial ecosystem surveys.**

Potential Elements of the Performance:

- Define and discuss the King Strip Survey
- Conduct a King Strip Survey to estimate grouse abundance
- Correctly identify mammal species using their tracks & signs
- Assess wildlife diversity using tracks & signs
- Discuss and conduct a nesting cavity survey

6. **Discuss the Ecosystem Land Classification (ELC) System and application of its main components in a field assessment.**

Potential Elements of the Performance:

- establish a soil pit to the proper depth and dimension
- complete an analysis of soil horizons, both organic and mineral
- demonstrate texturing techniques using textbook keys
- discuss physical and chemical characteristics of organic soils
- establish the presence of free carbonates in the soil profile
- identify the color of each mineral soil horizon using the Munsell color charts
- visit various sites discussing land formation and associated deposits
- discuss soil moisture regimes and application in the ELC
- identify key vegetation for the determination of V-type.
- explore and identify wetland associated vegetation

7. **Discuss steps involved in performing a post-harvest field audit.**

Potential Elements of the Performance:

- Discuss main silvicultural systems practiced in Ontario the rationale for each
- Discuss the *Crown Forest Sustainability Act* (CFSA) and Forest Management Planning (FMP) Protocol and how they are applied.
- Properly use mensuration equipment to measure tree heights, diameters, stump heights, residual tree damage, damage to advanced desired regeneration, rutting and commercial waste remaining
- Layout field plots using compass and 30m tape
- Tally the specific infractions and residual trees indentified on a per plot basis, per hectare basis and total stand
- Calculate residual stems per hectare, wasted wood volume using the cubic meter rule
- Calculate the road access percentage of landbase

- Determine the areas of compliance and non-compliance

8. **Organize field data into neat, accurate and complete standardized field forms and field maps**

Potential Elements of the Performance:

- construct an accurate lake physical features map
- neatly and accurately complete a Lake Summary form, Gill Net Catch Record Forms, Field Collection Records, Scale Sample Envelops associated with a lake survey
- neatly and accurately complete field forms associated with the Ontario Stream Assessment Protocol
- perform basic calculations to summarized survey data
- neatly and accurately complete field forms for soils analysis
- perform calculations and make conclusions as to the harvest compliance level.

III. TOPICS:

1. Ecosystem Land Classification
2. Lake/Stream Survey
3. Aquatic Invertebrate Collection
4. Water crossings
5. Terrestrial Ecosystem Survey
6. Forest Harvest Audit

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Manual of Instructions - Aquatic Habitat Inventory Surveys. Fisheries Branch, OMNR (ONLINE)
2. Kurta, Allen. 1995. Mammals of the Great Lakes Region. Fitzhenry and Whiteside. Toronto. 376 p.
3. Newmaster, S.G., A.G. Harris and L.J. Kershaw. 1997. Wetland Plants of Ontario. Lone Pine Publishing. Edmonton, Alberta. 240 p.
4. Second Year NET Field Camp Manual. 2012 Sault College, Sault Ste. Marie.
5. Hubbs, C. L and K. L. Lager. 2002. Fishes of the Great Lakes Region. University of Michigan. Ann Arbor, Michigan. 267 p.
6. Soils Analysis (NRT257) course manual & lab manual
7. Field Manual for describing soils in Ontario
8. For a full list of personal gear, refer to "Student Equipment Checklist" in the Second Year NET Field Camp Manual.

V. EVALUATION PROCESS/GRADING SYSTEM:

The following semester grades will be assigned to students in post-secondary courses:

<u>Grade</u>	<u>Definition</u>
S	Satisfactory
U	Unsatisfactory
W	Student has withdrawn from the course without academic penalty.

The grade received will be based on attendance and participation.

MANDATORY attendance and participation is required for all field activities for a satisfactory (S) grade.

NO ALCOHOL, ILLEGAL DRUGS or FIREARMS ALLOWED IN CAMP

Those students not complying with the Student Code of Conduct will be withdrawn from camp and receive an F grade.

NOTE: This course provides an opportunity for field data collection fundamental to mapping exercises, analysis and creation of a Lake Survey Technical Report in Aquatic Ecosystem Surveys (NET 200-3). Failure to receive a satisfactory (S) grade in F&W Field Camp may seriously hamper success in Aquatic Ecosystem Surveys.

VI. SPECIAL NOTES:Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

VI. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.