SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

<u>COURSE OUTLINE</u>

<u>COURSE TITLE</u>:	Introduction to Natural Resources
<u>CODE NO.</u> :	NRT100 **SEMESTER:** 2
<u>PROGRAM</u>:	Pre-Trades
<u>AUTHOR</u>:	Erwin Goertz
<u>DATE</u>:	Dec. 2006 **<u>PREVIOUS OUTLINE DATED</u>:** N/A
APPROVED:	

_____ _____
                 DEAN   **DATE**

TOTAL CREDITS:	3
PREREQUISITE(S):	None
LENGTH OF COURSE:	3 hrs/week **TOTAL CREDIT HOURS:** 42

I.   COURSE DESCRIPTION:

The aim of this course is to introduce pre-trades students to the field of natural resources. Students will be exposed to introductory level hands on, outdoor and indoor related exercises relevant to the forestry, fish & wildlife, and parks & outdoor recreation disciplines.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. **Describe Ontario's system of parks & protected areas and explain the values they provide.**

    Potential Elements of the Performance:
    *   describe the benefits that protected areas provide our society
    *   list 5 types of protected area systems that occur in Ontario and explain how each is different
    *   describe the objectives of the National Park system and explain how the 4 types of National Parks fulfill this objective
    *   list the 6 classes of Provincial Parks in Ontario, giving examples and describing the goal of each park class
    *   explain Provincial Park zoning

2. **Understand the Principles of Global Positioning Systems (GPS).**

    Potential Elements of the Performance:
    *   explain how GPS works
    *   be able to identify the accuracy of GPS units
    *   explain what WAAS (Wide Area Augmentation System) represents
    *   understand the errors associated with GPS signals
    *   be able to identify the accuracy of GPS units

3. **Be able to use a Global Positioning System (GPS).**

    Potential Elements of the Performance:
    *   be able to "mark" a field position into the GPS while outdoors
    *   enter a field position into a GPS while indoors using map coordinates as well as by selecting a point on the screen
    *   navigate to a field position (waypoint) outdoors

- measure distance and direction on a GPS screen
- create and save a track log (a traveled path)
- determine area outdoors using a GPS

4. **Identify several mammal species in Ontario.**

   Potential Elements of the Performance:
   - fur characteristics and identification
   - visual identification of mammal species
   - distinction between mammal 'families'
   - skull characteristics and identification
   - hair analysis identification of species

5. **Identify several upland game bird species of Ontario.**

   Potential Elements of the Performance:
   - visual identification of upland bird species (slides, specimens)
   - audio identification of upland bird species by their calls
   - visual identification by parts (tails, wings)
   - game bird species identification by preferred habitat

6. **Determine sex and age classes of mammal species and upland game birds.**

   Potential Elements of the Performance:
   - white-tailed deer jaw ageing analysis
   - mammal species age-sex determination by dimorphism
   - upland game bird species determination by dimorphism (age-sex)
   - age class determination by tooth wear pattern

7. **Identify characteristics of Ontario wildlife species using key terminology.**

   Potential Elements of the Performance:
   - distinguish wildlife adaptations for habitat suitability
   - descriptively characterize physical wildlife attributes
   - identify species using key terminology presented in a dichotomous key
   - categorize Ontario wildlife species by diet
   - characterize predator-prey relationships of some common Ontario wildlife species

8. **Recognize & explain how to safely use and maintain hand tools and small engine motorized equipment used to maintain parks.**

    Potential Elements of the Performance:
    - students will learn how to recognize different hand tools including axes, knives, shovels, rakes, bucksaw, pruners (long & short handled) and cleaning equipment
    - students will learn how to recognize small engine motorized equipment including power washers, chainsaws, brush saws and lawn mowers
    - students will learn how to sharpen and perform bush maintenance on hand tools and motorized equipment used in park maintenance

9. **Make associations between different insect feeding types and the type of damage that they incur in trees.**

    Potential Elements of the Performance:
    - look up insects by name in a book and determine their feeding types, host plant and damage caused
    - examine trees and recognize damage caused by insect feeding type

10. **Snowshoe off trail using a compass.**

    Potential Elements of the Performance:
    - follow a given azimuth while traversing on snowshoes
    - break trail while on snowshoes
    - use a map or air photo for orientation while snowshoeing
    - snowshoe 4 kms in wooded terrain

11. **List important safety concerns for snowshoeing and select appropriate equipment.**

    Potential Elements of the Performance:
    - list 5 important safety tips for snowshoeing
    - list 3 types of snowshoes
    - identify the best snowshoe for a variety of purposes and outdoor terrain

12. **Safely use a chainsaw for top and bottom of the bar cuts on a horizontally placed log.**

   Potential Elements of the Performance:
   • students will cut 2 cookies from a log using a chainsaw in a safe manner using the appropriate personal protective equipment
   • students will state the importance of the kick back zone and explain where the kick back zone is located and how to reduce the potential danger from the kick back zone

13. **Properly sharpen and maintain a chainsaw.**

   Potential Elements of the Performance:
   • students will properly sharpen and maintain a chainsaw using the proper sharpening files, depth guage tools and filing guides
   • students will be able to explain how the kick back zone danger is reduced through proper sharpening

14. **Identify nine coniferous trees native to Algoma forests.**

   Potential Elements of the Performance:
   • in a lab setting, use a simplified, graphics-based dichotomous key to identify foliage and/or cones of nine species of coniferous trees
   • in a field setting, for a particular coniferous tree;
     - assess features including foliage, cones, bark and silhouette
     - determine which features are best applied to the identification task at hand
     - apply knowledge of and experience with key features to correctly identify the tree

15. **Identify tracks and sign features of native mammalian families.**

   Potential Elements of the Performance:
   • review the normal habitat and geographical distribution of family groups of Ontario mammals
   • illustrate by photographs, plaster casts, whole specimens, the most important characteristics and patterns of tracks, trails, scats and other markings
   • match tracks and signs to the appropriate family of mammal

16. **Identify 20 wildlife species common to the Sault area by their tracks and signs.**

    Potential Elements of the Performance:
    - using visual aids such as photographs, keys, and plaster casts, summarize identifying features of the tracks and signs of about 20 common species
    - weather and time permitting, identify as many tracks and signs as possible in the Sault College woodlot
    - match common individual tracks and signs to the wildlife species responsible for them at an 80% accuracy level

17. **Safely use pruning equipment to maintain trails used in outdoor recreation to pre-established recreational standards.**

    Potential Elements of the Performance:
    - students will safely use equipment to maintain trails in the Sault College woodlot
    - students will demonstrate proper pruning procedures based on arboricultural practices
    - explain how the concept of "in growth" determines the scheduling of trail maintenance
    - distinguish between trees to prune, remove or leave based on health attributes

18. **Identify equipment used in forest inventory work to measure height/diameter of trees as well as distance.**

    Potential Elements of the Performance:
    - identify the following equipment (metric); clinometer, hipchain, calipers, prism, diameter tape, vertex and electronic clinometer, range finder, and GPS unit

19. **Take measurements using tree inventory equipment.**

    Potential Elements of the Performance:
    - measure the height of a tree on flat ground using a Suunto
    - measure a tree diameter using a diameter tape and calipers
    - calculate basal area using two prism sweeps

- measure 200 metres in the forest using a hip chain along a given azimuth
- measure 50 metres along a trail using an electronic range finder
- record measurements on a tally sheet
- record UTM coordinates for a given location using a GPS unit

20. **Identify 5 tree species used for practicing tree inventory measurements.**

Potential Elements of the Performance:
- identify hard maple (Mh), soft maple (Ms), poplar (Po), white spruce (Sw) and balsam fir (Bf)

21. **Describe the operation of electronic tree measurement devices.**

Potential Elements of the Performance:
- describe the operation of a vertex
- describe the operation of an electronic clinometer

22. **Examine water chemical parameters of a local stream.**

Potential Elements of the Performance:
- accurately determine dissolved oxygen, pH, turbidity, carbon dioxide and alkalinity using a HACH kit
- record water conductivity using a conductivity bridge and calculate total dissolved solids

23. **Examine physical parameters of a local stream.**

Potential Elements of the Performance:
- accurately determine water and air temperature using a thermometer
- properly determine water depth and hydraulic head

24. **Examine biological parameters of a local stream.**

Potential Elements of the Performance:
- collect benthic invertebrates using a surber sampler, sieves and D-framed dip nets
- correctly sort, categorize and enumerate specimens collected
- properly preserve and document specimens

25. **Accurately collect resource field data.**

Potential Elements of the Performance:
- determine the location of the stream station using a GPS unit
- use equipment check lists
- execute field procedures as instructed
- use the appropriate field equipment in a safe, accurate and precise manner
- keep neat, accurate and complete field notes and tally sheets

26. **Observe and identify five or more species of waterfowl and/or raptors in a field setting.**

Potential Elements of the Performance:
- use a field guide (provided) and binoculars or spotting scope (provided) to identify migrating waterfowl and/or raptors

27. **Walk a forested property and identify features of the site that might contribute to its usage as a recreational area.**

Potential Elements of the Performance:
- identify & record physical features that affect recreation planning
- identify & record biological features that affect recreation planning
- identify and record human related features that affect recreation planning

III. TOPICS:

1. Park systems
2. Using a Global Positioning System (GPS)
3. Wildlife identification
4. Park maintenance and equipment
5. Insects and diseases affecting trees
6. Outdoor recreation
7. Use and maintenance of a chainsaw
8. Identification of coniferous trees
9. Wildlife tracks and signs
10. Trail maintenance and pruning
11. Tree measurements
12. Stream survey
13. Waterfowl/raptor observation and identification
14. Recreation planning

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Pen/pencil
2. Clipboard (folding type)
3. Calculator
4. Work gloves
5. Steel-toed boots
6. Hardhat
7. Hardhat winter liner (toques not allowed)
8. Snowshoes with bindings
9. Winter boots (lined/waterproof) and warm clothing

Students will be provided with tear away safety vests, compasses, spotting scopes and bird identification guides when necessary. If they have any of these items, they may wish to use their own.

V.   EVALUATION PROCESS/GRADING SYSTEM:

Evaluation will take place on an in class basis. As each lesson deals with a specific topic and is taught by a different faculty member, each instructor will assess student progress during or at the end of each class. Each lesson evaluated will carry equal weight towards the final grade. Students missing 4 or more classes automatically receive an "F" grade. There is no opportunity to make up classes/assignments that have been missed. The following assessment will take place for each lesson.

Lesson 1 – Park Systems – Open book Quiz
Lesson 2 – Using a GPS – Outdoor Assignment
Lesson 3 – Wildlife identification – Assignment and Quiz
Lesson 4 – Park Maintenance & Equipment - Quiz
Lesson 5 – Insects & Diseases affecting Trees - Assignment
Lesson 6 – Outdoor Recreation – Participation and Assignment
Lesson 7 – Use & Maintenance of a Chainsaw – How well students
                    sharpen, maintain and use a chainsaw safely
Lesson 8 – Identification of Coniferous Trees - Quiz
Lesson 9 – Wildlife Tracks & Signs – Participation and Quiz
Lesson 10 – Trail Maintenance and Pruning – Quiz and Performance
Lesson 11 – Tree Measurements – Participation and Assignment
Lesson 12 – Stream Survey – Participation and Field Forms
Lesson 13 – Waterfowl/Raptor Observation & Identification - Participation
Lesson 14 – Recreation Planning – Assignment

The following semester grades will be assigned to students:

Grade	Definition	Grade Point Equivalent
A+	90 – 100%	4.00
A	80 – 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI. SPECIAL NOTES:

Special Needs:
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of course outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other post-secondary institutions.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Rights and Responsibilities*. Students who engage in "academic dishonesty" will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:
The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII.   PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII.   DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.