SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE MARIE, ON

COURSE OUTLINE

Course Title: TIMBER CRUISING

Code No.: NRT106 Semester: 2

Program: FORESTRY TECHNICIAN

Author: MARK CROFTS

Date: DECEMBER 2000 Previous Outline Date: Dec. 1999

Approved: _____ _____
Dean, Natural Resources Programs Date

Total Credits: 4 Prerequisite(s): NRT 119
Length of Course: 3 hrs/wk X 16 weeks
Total Credit Hours: 64

I. COURSE DESCRIPTION:

Effective forest management and harvest planning is based on accurate field inventories of the composition of the forest. This course examines methods of obtaining such information through hands on training using various cruising methodologies, computerized field data recorders, trees volume calculations and computerised analysis of tree growth. **NRT 119 Forest Mensuration is the prerequisite for this course.**

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Perform a simple stem analysis in order to calculate current annual increment (CAI), periodical annual increment (PAI), mean annual increment (MAI) and optimal rotation age.

   Potential elements of the performance:

   - Understand the concepts of diameter growth, height growth, basal area, stem analysis, CAI, PAI, MAI and rotation age.
   - Graph tree diameter over age relationships and compute growth using Pressler's formula.
   - Explain five methods by which tree growth is measured.

   This learning outcome will constitute 10% of the course's grade.

2. Carry out accurate inventories of forest trees.

   Potential elements of the performance:

   - Comprehend the concepts of timber cruising, forest inventories and growth and yield.
   - Carry out prism cruises and strip cruises complete with the associated compilations
   - Understand how to design a timber inventory
   - Properly report cruise results

   This learning outcome will constitute 45% of the course's grade.

3. Demonstrate the ability to use handheld microcomputers for forestry applications.

Potential elements of the performance:

- Tally timber cruises on a microcomputer
- Use microcomputer software such as TCM / PAM or Growth and Yield to calculate cruise results

This learning outcome will constitute 10% of the course's grade.

4. Visually estimate and verify tree diameters, heights, forest stand stems per hectare, basal area per and volume per hectare.

Potential elements of the performance:

- Comprehend the concepts of stems per hectare, basal area per hectare and volume per hectare.
- Apply mathematical formulae to calculate stems per hectare, basal area per hectare and volume per hectare.

This learning outcome will constitute 15% of the course's grade.

5. Analyze tree growth rates using various computerized analytical tools such as the "T.R.I.M." SYSTEM, and /or WINDENDRO.

Potential elements of the performance:

- Assess the impacts of various silvicultural practices on tree growth rates.
- Use computerized tools to examine growth rates.
- Apply computerized analytical tools to dendrochronological principles.

This learning outcome will constitute 10% of the course's grade.

Note: The remaining ten percent of the grade will be based on attendance and participation on field trips. See evaluation for more details.

III. TOPICS: NO. OF WEEKS

1. Tree height and diameter review 1

2. The measurement of tree growth and age

- Variables that express tree growth
- Methods for measuring past growth and predicting future growth
- Growth and yield curves

- Tree growth as a percentage value

3. Forest Resource Sampling 8

- Types of timber sampling units including plot shape and size
- Strip cruising
  - field layout, procedures, sample intensity
- Point sampling
  - the theory of point sampling
  - prism cruising
- Volume tables, types of volumes
- Timber cruise compilations
- Designing a forest inventory
- Principles of growth and yield in Ontario

4. Hand Held Microcomputers 2

- Introduction
- Software applications for cruising
- Use of microcomputers in a fixed area and prism cruises

5. Calculation of stems per hectare, basal area per hectare and volume per hectare based on data collected from fixed and variable area plots. 2

- Stand and stock tables calculations using collected data
- Normal yield tables

6. Reviews for midterm, final exam and field exam 3

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Hayden, J. 1999. Making Cents Out of Forest Inventories. OMNR Science Development and Transfer Series. 002. ISBN 0-7778-8545-X.

Clement J. Hayden J. 2000. Timber Cruising Study Guide. Sault College. (Pending)

Suunto MC-1 Compass or Equivalent

V. EVALUATION PROCESS/GRADING SYSTEM:

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

Grade	Definition	Grade Point Equivalent
A+	90 – 100%	4.00
A	80 – 89%	3.75
B	70 – 79%	3.00
C	60 – 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade – limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see Policies & Procedures Manual – Deferred Grades and Make-up).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has been impossible for the faculty member to report grades.	

NOTE: STUDENTS MAY BE ASSIGNED AN "R" grade early in the course (at midterm) for unsatisfactory performance. If you receive an "R" grade at mid term, check this with the professor as soon as possible for clarification as an early "R" grade negatively impacts your GPA.

EVALUATION BREAKDOWN

Exams (1 @ 15%, 1@20%)	35%
Safety/Fire Start	5%
Fixed area cruise (circle / square)	10%
Strip Cruise	10%
TCM PAM Assignment	10%
Prism Cruise	10%
Tree Growth Computer Analysis	10%
Attendance and Participation	10%
	100%

VI. SPECIAL NOTES:

Special Needs
If you are a student with special needs (e.g. Physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717 or 491 so that support services can be arranged for you.

Plagiarism
Students should refer to the definition of "academic dishonesty" in the "Statement of Students 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, as may be decided by the professor.

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.

Advanced Standing
Students who have completed an equivalent post-secondary course should bring relevant documents to the Co-ordinator, Natural Resources Programs.

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

Substitute course information is available at the Registrar's Office.

Course Modification
The instructor reserves the right to modify the course as deemed necessary to meet the needs of students.

Health and Safety
Timber cruising through rough terrain and in inclement weather is inherently physically demanding. This is a field based course. We will travel extensively through deep snow in semi-remote locations. Students must wear appropriate safety gear during field operations (eye, hearing, head, foot protection) and dress appropriate to the weather. Students will be evaluated on their preparedness and their ability to start a cooking fire on one of the field work exercises. Snowshoes are mandatory.

Attendance
Attendance at labs, lectures and field trips is important. There is a great deal of effort in planning, scheduling, budgeting, etc. involved in all aspects of the course.
ATTENDANCE AND PARTICIPATION IN FIELD LABS ARE REQUIRED IN

ORDER TO RECEIVE A GRADE FOR THE FIELD LAB ASSIGNMENTS unless there are exceptional circumstances.

A trip schedule will be provided to students at the beginning of the semester.

Notetaking
While the course texts are a significant source of information for the course, they are not the only source. Students must take notes summarizing additional material that is presented in class. All material is valid test material.

Rewrites/Supplementary Exams
There will be no rewrites/supplementary exams in this course.

Assignments
All assignments must be submitted on time to pass the course, or be penalized 10% of the total mark per day including weekends. Check each assignment for the due date and time. Anything handed in past this time is late.

Assignments must be word processed, double-spaced and follow other formatting specifications outlined by the instructor. Students are responsible for ensuring that their assignments are received by the instructor.

Class Conduct
Classes will be conducted in the same manner, as would a meeting in the work place environment. Eating is not permitted, except for light snacks during group work or study periods.

VII. PRIOR LEARNING ASSESSMENT:

Please contact the Prior Learning Assessment Office (E2203) for further information.