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

COURSE OUTLINE

Course Title: FOREST MENSURATION II

Code No.: FOR239-4   **Semester:** 3

Program: FORESTRY TECHNICIAN

Author: BOB CURRELL

Date: JUNE 1998   **Previous Outline Date:** JUN 96

Approved: _____ _June 16, 1998_
             Dean, Natural Resources   **Date**
                        Programs

Total Credits: 4   **Prerequisite(s): None**
Length of Course: 3 hrs/wk X 16 weeks
Total Credit Hours: 64

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I.   COURSE DESCRIPTION:

Effective forest management and harvest planning is based on accurate field inventories of the composition of the forest. This course reviews tree measurement instruments and techniques and then concentrates on forest resource sampling. It covers timber cruising field work and compilations as well as introducing global positioning systems (G.P.S.) and hand held microcomputers. The course examines scaling procedures including volume calculation and log identification.

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 5 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
   - Carry out prism cruises and strip cruises complete with the necessary compilations
   - Understand how to design a timber inventory
   - Properly report cruise results

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

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

      Potential elements of the performance:

      • Tally timber cruises on a microcomputer
      • Use a microcomputer to calculate cruise results
      • Use GPS units to carry out a traverse

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

4.   Classify the quality of trees based on external indicators as used in tree marking.

      Potential elements of the performance:

      • Identify external defect indicators
      • Classify trees as Acceptable Growing stock (AGS) or Unacceptable Growing Stock
        (UGS)
      • Identify candidate wildlife trees based on visible features.

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

5.   Estimate log, tree and forest volumes using accepted scaling formulae:

      Potential elements of the performance:

      • Comprehend the concept of tree volume
      • Apply mathematical formulae to calculate wood volumes

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

6.   Identify commercial species of Ontario logs.

      Potential elements of the performance:

      • Describe the features used in log identification
      • Identify hardwood and softwood logs using micro and macro features.

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

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III.   TOPICS: **NO. OF WEEKS**

1. Tree height and diameter review   1

2. The measurement of Tree growth and age   1
   - variables that express tree growth
   - methods for measuring past growth and predicting
     future growth
   - growth curves
   - tree growth as a percentage value

3. Forest Resource Sampling   5
   - types of timber sampling units including plot shape
     and size
   - strip cruising
     - field layout, procedures, sample intensity
   - point sampling
     – the theory of pint sampling
     – prism cruising
     – stand and stock tables
     – normal yield tables
   - volume tables, types of volumes
   - timber cruise compilations
   - designing a forest inventory

4. Hand Held Microcomputers   1
   - introduction
   - applications for cruising
   - use of microcomputers in a strip cruise

5. Global Positioning Units (GPS)   1
   - introduction
   - using GPS units to carry out a traverse

6. Tree Grading and Defects   2
   - introduction
   - external defect indicators of hardwoods
   - classification of hardwoods of Acceptable or Unacceptable
     growing stock (AGS or UGS)

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7. Log Identification   2
    - features used for identification
    - hardwood log identification
    - softwood log identification

8. Measurement of Log and tree Volumes   1
    - introduction to tree volume and scaling
    - mathematical formulae for log scaling and calculating log
      volume

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

Forest Mensuration II Study Guide
Resource Sampling Study Guide
Silva Ranger or Suunto MC-1 compass
Clipboard

V.   EVALUATION PROCESS/GRADING SYSTEM:

Written Tests (2)	50%
Assignments, quizzes	50%

NOTE: STUDENTS MAY BE ASSIGNED AN "R" grade early in the course for unsatisfactory performance.

VI.   SPECIAL NOTES:

STUDENTS WITHOUT HARD HATS WILL NOT BE PERMITTED TO PARTICIPATE IN FIELD ERXERCISES.

Special Needs

If you are a student with special needs (eg. 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.

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 Coordinator, 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.

VII.   PRIOR LEARNING ASSESSMENT:

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