SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

<u>COURSE OUTLINE</u>

Course Title: FOREST MENSURATION II

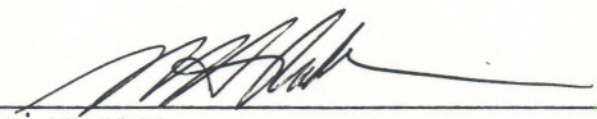Code No.: FOR 109-4

Program: FORESTRY TECHNICIAN

Semester: TWO

Date: AUGUST, 1987

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New: _____   Revision: ___X___

APPROVED: _____   Date Aug 27/87
          Chairperson

CALENDAR DESCRIPTION

FOREST MENSURATION II	FOR 109-4
COURSE NAME	COURSE NUMBER

PHILOSOPHY/GOALS: To provide the student with a foundation in measurement principles and sampling techniques.

FOR 109 is a pre-requisite for FOR 203.

METHOD OF ASSESSMENT (GRADING METHOD): Student assessment is based on:

Practical Tests (lab and field)	Weight
Log identification	5%
Tree diameter	10%
Tree height	10%

Theory Tests (written)	
Test #1	15%
Test #2	20%
Lab quizes	5%

Assignments and Projects	
College woodlot cruise	10%
Fish Hatchery cruise	20%
Lab assignments	5%
	100%

Tests and projects are assigned a numerical grade. Letter grades have the following numerical equivalent:

Projects, assignments and tests

A+ = 90-100%
A = 80-89%
B = 70-79%
C = 60-69%

Practical Tests

Students are required to attain competency standards in the use of the tree measuring instruments, consequently, a pass mark of 60% mus be achieved on each test. One rewrite will be scheduled after each test.

Projects and Assignments

Projects and assignments are assessed on the basis of accuracy (computations, measurements, etc.) and neatness, (proper format and drafting skills).

Projects and assignments handed in after the "due date" will be penalized by loss of marks up to a maximum of 10% per day.

TEXTBOOK(S):

1. Manual of Forest Measurements and Instruments

2. Manual of Lab and Field Assignments, Projects and Exercises

3. Reference textbooks in Library

COURSE OUTLINE AND OBJECTIVES

FOR 109-4

FOREST MENSURATION II

REF. NO.	TOPIC NO.	OBJECTIVES
2967.04	1	**LOG IDENTIFICATION** - identify commercial tree species in the log form
	2	**METRIC (SI) UNITS** - state the unit symbol for a given measurement use - use the correct form for writing metric units and symbols - state equivalent values between millimetres, centimetres, metres and kilometres and betwee square metres and hectares
2967.04	3	**MEASUREMENT OF TREE DIAMETER** - define and locate dbh - determine diameters for irregular trees - determine diameter class midpoints and class limits - define and derive tree basal area - use the dendrometers (parallel calipers, diameter tape, Biltmore stick and parabolic calipers) to measure tree diameter - use upper stem dendrometers to measure tree diameter - calculate the calibrations for the Biltmore stick - state four reasons why dbh is considered to be the primary tree measurement

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2967.04   4   MEASUREMENT OF TREE HEIGHT

- define total and merchantable height
- describe the results of measuring a leaning
  tree
- name and describe hypsometers based on trigo-
  nometric principle (Abney, Haga, Suunto)
- use these hypsometers to determine total tree
  height
- from the degree scale, derive the percent and
  Haga scales
- name and describe hypsometers based on
  geometric principle (Staff, Merritt)
- describe how to use these hypsometers
- calculate the calibrations for the Merritt
  hypsometer

2967.01   5   FIELD NOTES

- name four important requirements of field
  notes
- list the type of information required in the
  design of tally sheets and map sheets
- use the dot-dash method for tallying tree
  diameters
- list the type of information to be included
  on site and stand description sheets
- write the common signs and symbols used for
  mapping forestry, land, water and cultural
  features
- list the abbreviations for commercial tree
  species (Ontario Ministry of Natural
  Resources)
- define the following land classifications,
  give examples and show the map symbol used:
  (a) non-productive forest land
  (b) non-forested land
- apply field mapping techniques to actual fiel
  conditions
- use acceptable drafting skills to prepare a
  forest stand map

2967.04   6   SAMPLING IN FORESTRY

- define the following terms:
  (a) sample
  (b) sample unit
  (c) stand table
  (d) stock table
- state two basic differences between fixed-area
  and variable-area sample units
- describe how stand variability affects plot
  size or strip width
- compare the advantages and disadvantages of
  strips vs. plots
- describe two types of errors that may occur
  in forest sampling
- calculate the radius of circular plots and the
  side and diagonal of square plots, given the
  area
- calculate the area of a forest property in
  hectares, given the dimensions in metres
- define and calculate: -
  (a) sample area in hectares
  (b) sample volume in m^3
  (c) volume per hectare in m^3
  (d) total stand volume in m^3
  (e) sample intensity
- locate plot and strip sample units in the
  field; tally trees on the sample units by
  species and diameter

2967.04   7   THE MEASUREMENT OF TREE GROWTH

- name and describe five ways of expressing
  tree growth
- name and describe three field methods for
  measuring past growth and predicting
  future growth
- define the following terms: -
  o Periodic Increment (P.I.)
  o Periodic Annual Increment (P.A.I.)
  o Current Annual Increment (C.A.I.)
  o Mean Annual Increment (M.A.I.)
- calculate average P.A.I. from increment
  cores
- determine past growth from stem analysis
- describe the relationship between P.A.I.
  and M.A.I.

predicting future growth
- express rate of growth as a percentage value
- from stand table data on permanent sample plots determine:
  .mean basal area
  .mean dbh
  .percent change in growth

2967.04   8   THE MEASUREMENT OF TREE VOLUME

VOLUME TABLES
- list the variables commonly associated with
  a) local volume tables
  b) standard volume tables
- state whether these variables are dependent or independent
- define:
  a) Gross Total Volume
  b) Gross Merchantable Volume
  c) Net Merchantable Volume
- state the advantage and the restriction of local volume tables