SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: FOREST MENSURATION II

Code No.:   FOR 109-4

Program: FORESTRY TECHNICIAN

Semester: TWO

Date: MAY, 1986

Author: J. G. WISKIN

New: _____   Revision: X

APPROVED: _____   _aug 25/86._
          Chairperson   Date

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:

	Approximate weight
1. Projects and assignments	35%
2. Practical Tests	25%
3. Theory Tests	40%
	100%

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

Projects, assignments and theory tests	Practical tests
A+ = 90-100%	A = 90-100%
A = 80-100%	B = 80-89%
B = 70-79%	C = 70-79%
C = 60-69%	

Theory Tests

Test marks are cumulative. A student with an accumulated average o less than 60% in the tests may be required to write a _final_ test (rewrite) based on the entire semester.

Practical Tests

Students are required to attain competency standards in the use of the tree measuring instruments, consequently, a pass mark of 70% mus be achieved on _each_ test. One rewrite will be scheduled after each test.

FOR 109-4...3

Projects and Assignments

- Projects or assignments are to be handed in on or before an established "due date". Failure to do so will result in 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 trigonometric 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 field conditions
- use acceptable drafting skills to prepare a forest stand map

REF. NO.	TOPIC NO.	OBJECTIVES

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-are
  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 th
  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
- use a wedge prism at designated stations to
  determine basal area per hectare

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.

- describe three stages in the pattern of tree height growth
- determine a future stand table using the stand-table projection method for predicting future growth
- express rate of growth as a percentage value