DOC. NO. 358

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: FOREST SOILS

Code No.: FOR 219-3

Program: FORESTRY TECHNICIAN

Semester: THREE

Date: JUNE, 1989

Author: MARK HARVEY

New: _____ Revision: X

APPROVED: _____ May 25/89
Chairperson Date

CALENDAR DESCRIPTION

FOREST SOILS	FOR 219
COURSE NAME	COURSE NUMBER

PHILOSOPHY/GOALS:
This is an introductory course in soils that will provide students with an understanding of the physical, chemical, biological and developmental aspects of soils and soil profiles, and some applications of soil science used in forest management practices.

METHOD OF ASSESSMENT (GRADING):

Labs and Tests	10%
Project, Group Report	25%
Participation	10%
Term Test 1	15%
Term Test 2	30%
Field School	10%
	100%

GRADES:

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

Marks will be deducted using a sliding scale for overdue assignments.

TEXT(S):

Ontario Institute of Pedology and University of Guelph, 1985. Field Manual for Describing Soils, 3rd Edition. O/P Publ. No. 85-3.

Canada Soil Survey Committee, Subcommittee on Soil Classification, 1978.
The Canadian System of Soil Classification Can. Dep. Agr. Publ. 1646. Supply and Services Canada, Ont. 164pp.

SUGGESTED REFERENCES:

Expert Committee of Soil Survey: The Canada Soil Information Systen (CanSis), Manual for Describing Soils in the Field, 1982, revised, 1983. J. H. Day, Editor. Land Resource Research Institute, Res. Branch, Agri. Can., Ottawa. 97 p. and Append.

Armson, K.A., 1977. Forest Soils: Properties and Processes. University of Toronto Press. 390 p.

Harpstead, M.I. and Hole, F.D., 1980. Soil Science Simplified. Iowa State University Press. Ames, Iowa, U.S.A. 121 p.

TOPIC NO.	PERIODS	TOPIC DESCRIPTION
1	1	Rocks, Minerals and Weathering - identification of three major classes of rocks, and major minerals - weathering of rocks and minerals and soil forming processes
2	2	Glaciation and Glacial Deposits and Bedrock formations - recognition of landforms - glacial history - soil characteristics of glacial deposits - relationships between forest growth potential and landforms
3	1	Forest Site Description - describing Site and Soils in the field - designing and implementing a forest soil and site survey - drainage and soil moisture classification in Ontario
4	2	Physical Properties of Soil - textural analysis, bulk density, particle density, porosity, structure, colour - field and lab assessment techniques of soil physical properties - relationships between forest site quality and physical properties
5	2	Soil Profile Development, Soil Classification - differentiation of mineral soils into orders and great groups - parent material and the soil profile - organic soil and wetland classification

TOPIC NO.	PERIODS	TOPIC DESCRIPTION
6	2	Soil Water and Forest Hydrology - the physical classification of soil water and the physical properties of water - soil moisture, plant, atmospheric relationships - measuring soil moisture, and soil moisture tension - growth and soil moisture
7	1	Chemical Properties of Soil - soil colloids and sources of negative charges - cation exchange capacity - soil acidity and alkalinity, and nutrient availability - soil acidification
8	1	Soil Organic Matter & Soil Biology - decomposition and distribution of organic matter in soils - soil microbes, mycorrhizae and nitrogen fixation - nutrient cycling - organic soils, peat lands and forest productivity
9	2	Soil Nutrients & Tree Growth - essential plant nutrients, deficiencies - relationship between soil physical - chemical properties and soil nutrient status - measuring soil fertility - milliequivalents, ppm, percentages and soil test results - commercial fertilizer analysis - fertilizer application, fertilizer calculations
10		**FINAL LECTURE/LABORATORY TEST**

LABORATORY EXERCISES

TOPIC NO.	PERIODS	TOPIC DESCRIPTION
1	1	- Identification and characteristics of major soil forming rocks and minerals
2	1	- Identification and characteristics of landforms - Identification of landforms from aerial photographs
3	1	- Lab test, rocks minerals and landforms - Set-up group project, analyze first soil pit
4	3	- Field site analysis, field soils and soil sample
5	2	- Field School soil exercises
6	4	- Laboratory soil analyses
7	1	- Forest site evaluation manuals and maps
8	1	- Soil fertility problems and calculations