SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:
SILVICULTURE

CODE NO. : NRT2000 **SEMESTER:** 4

PROGRAM:
FORESTRY TECHNICIAN/ABORIGINAL RESOURCE TECHNICIAN

AUTHOR:
BOB CURRELL

DATE: January 2003 **PREVIOUS OUTLINE DATED:** May 2002

APPROVED: _____ _____
DEAN **DATE**

TOTAL CREDITS: 3

PREREQUISITE(S): NONE

LENGTH OF COURSE: 2hr/week X 15 weeks **TOTAL CREDIT HOURS:** 30

I. COURSE DESCRIPTION:

This course is the first of two Forestry courses (Silviculture and Forest Renewal) which together explain how reforestation in Ontario is carried out to manage both Boreal and Great Lakes-St. Lawrence forest region tree species.

As an introduction to Ontario reforestation methods, policies which affect silviculture will be described. The silvics of important forest trees will be presented as they affect the regeneration of these species. Harvesting methods as they affect regeneration, preparing sites for artificial or natural regeneration and carrying out direct seeding operations will be discussed. Emphasis will be placed on the ecosystem approach to silviculture and low impact natural forest regeneration systems will be introduced.

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II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Describe the importance of silviculture in Ontario and explain who is responsible for its implementation

Potential Elements of the Performance:

- Identify the reasons for possible wood shortages in Ontario
- Describe programs which are contributing to silviculture in Ontario
- Explain current forest industry responsibilities for silviculture and show how forest management activities are being funded
- Name and describe recent First Nation's forestry programs and developments

This learning outcome will represent 10% of the course grade.

2. Describe the characteristics of the Great Lakes-St. Lawrence and Boreal forests and recommend management of their typical ecosites

Potential Elements of The Performance

- describe the silvics of Great Lakes-St Lawrence and Boreal tree species
- identify and describe forest ecosites in either the forests of North-eastern or Northwestern Ontario
- recommend management of identified ecosites

This learning outcome will represent 15 % of the course grade.

3. Describe the Silvicultural Harvesting Systems in use in Ontario and show how and with what species groups, each system is being used.

Potential Elements of the Performance:

- Define a silvicultural harvesting system and explain the difference between silvicultural harvesting systems and logging methods
- List the silvicultural harvesting systems used in Ontario. Describe where each system should be used.
- Explain how each harvesting system is carried out and describe how each system encourages the regeneration of desired tree species
- Describe the main differences between four logging methods used in Ontario and explain the silvicultural advantages and disadvantages of each method

This learning outcome will represent 15% of the course grade.

4. Forecast seed crops, collect and store tree seeds and conduct seeding operations

Potential Elements of the Performance:

- Describe the differences between the flowering characteristics of angiosperm and gymnosperm trees
- Show the reproductive cycle of a typical tree species
- Explain how to forecast the size of future tree seed crops
- Describe the concept of seed dormancy and explain how seed dormancy can be broken artificially
- List methods commonly used to collect tree seed.
- Explain how tree seed is extracted from fruits and cones
- List and describe methods of aerial and ground seeding used in Ontario.

This learning outcome will represent 20% of the course grade.

5. Describe the objectives of site preparation and show how it can be carried out to meet these objectives

Potential Elements of the Performance

- List and describe seven practical reasons for carrying out site preparation
- Summarize how site preparation can change soil conditions and improve growing conditions for seedlings
- List and describe 5 types of scarification prime movers
- Recognize at least 20 scarifiers, understand how they operate, sites where each should be used and describe the results each equipment type will produce
- Describe the value of prescribed burning for ecosystem management
- Explain, giving examples, how controlled burning is being used in Ontario as a silvicultural treatment

This learning outcome will represent 20% of the course grade.

6. Explain how logging systems can be used or modified in order to promote natural regeneration can be used or modified to promote natural regeneration

Potential Elements of the performance

- List and describe six reasons why there has been a recent interest in natural regeneration systems
- Demonstrate how Black spruce alternate strip cuts should be planned and managed to encourage natural regeneration
- Describe how Cut to Length can be planned and carried out to protect advanced regeneration
- Discuss the similarities and differences between ClaaG, HARO and HARP logging modifications as practiced on upland and lowland sites

This learning outcome is worth 10% of the course grade.

7. Describe Provincial, Federal and private sector activities being carried out to improve reforestation success

Potential Elements of the Performance

- Answer individual oral questions intended to evaluate knowledge provided by assigned Study Guide reading, Powerpoint presentations or other course related materials provided on WebCT
- complete internet or WebCT assignments relating to silviculture in Ontario

This learning outcome is worth 10% of the course grade.

III. TOPICS:

1. Introduction to Silviculture

   - what it is, why it's important
   - responsibilities for silviculture in Ontario (who does what)
   - how is Ontario silviculture funded?
   - recent forest management developments affecting silviculture
   - 1st Nations forestry programs

2. Characteristics of Ontario Forests

   - silvics of important Ontario tree species
   - use of classification keys to classify forest ecosites
   - management of forest ecosystems based on ecosite type.

3. Silvicultural Harvesting Systems

   - even-age and uneven-age management systems
   - silvicultural harvesting systems and the site types where they're recommended
   - logging methods and their effect on silvicultural opportunities

4. Tree Seed

   - flower and seed development
   - seed identification and seed crop forecasting
   - germination requirements of Ontario tree species
   -seed extraction from cones and fruits
   - seeding methods used in Ontario

5. Site Preparation (SIP)

- reasons for site preparation
- physical and biological effects of site preparation
- mechanical site preparation (scarification)
- prime movers
- appearance, operation and results expected when using 20 different types of scarifiers
- role of prescribed burning in silviculture in Ontario
- how prescribed burns are carried out to meet silvicultural objectives
- Recommended Site preparation methods and equipment for different site types

6. Natural Regeneration Systems

- the value of natural regeneration
- harvest modifications to encourage natural regeneration
- strip cuts, patch cuts, seed trees
- ClaaG, HARP and HARO natural regeneration systems for peatlands
- careful logging on upland sites

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Silvicultural Study Guide: 2000 edition

Internet access and a Sault College computer account
so that WebCT can be accessed

V. EVALUATION PROCESS/GRADING SYSTEM:

Tests (3)	60%
Assignments, Lab exercises	30%
Weekly quizzes	10%

Individual students will be asked quiz questions at the beginning of the class to review information covered in the previous week or to evaluate required reading.

The following semester grades will be assigned to students in postsecondary 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.	
X	A temporary grade. This is used in limited 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.	

VI. SPECIAL NOTES:

Internet access is required so that students can use WebCT. Assignment and test grades, Powerpoint presentations and other learning materials will be posted on WebCT which students will be expected to access.

Assignments are due at the start of class on the due date. Late assignments will be penalized 5% per day.

Special Needs:

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

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following:

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean’s secretary. Students will be required to provide a transcript and course outline related to the course in question.