

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: Silviculture
CODE NO. : NRT 200 **SEMESTER:** 3
PROGRAM: Forestry Technician
AUTHOR: Bob Currell
DATE: Aug.2006 **PREVIOUS OUTLINE DATED:** Aug. 2005
APPROVED:

	DEAN	DATE
TOTAL CREDITS:	4	
PREREQUISITE(S):	None	
HOURS/WEEK:	3 hr/week	

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*For additional information, please contact C. Kirkwood, Dean
School of Technology, Skilled Trades & Natural Resources
(705) 759-2554, Ext.688*

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.

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

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

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

Potential Elements of The Performance

- describe the silvics of Great Lakes-St Lawrence and Boreal tree species
- identify and describe forest ecosites in the Great Lakes-St. Lawrence conifer forest and forests of North-eastern 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.
- Carry out a hand seeding trial and report on results

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

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

- Complete quizzes intended to evaluate knowledge provided by forest management sector guest speakers or videos
- complete internet assignments and/or quizzes 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

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 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 at least 20 different types of scarifiers
- role of prescribed burning in silviculture in Ontario
- how prescribed burns are planned and carried out to meet silvicultural objectives
- recommending 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: 2006 edition

Wagner,R.G., Columbo,S.J. 2001. Regenerating the Canadian Forest. Toronto, Queen's Printer for Ontario.

V. EVALUATION PROCESS/GRADING SYSTEM:

Tests(3)	50%
Assignments, Lab Exercises	40%
Quizzes	10%

A quiz announced a week ahead of time may be held at the start of classes to review information covered in the previous week

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	

U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI. **SPECIAL NOTES:**

Attendance will be taken at all field activities; students not attending will receive a 0 for any assignment or quiz related to the missed activity.

Assignments are due at 3:30 p.m. on the due date. Late assignments will be penalized 10% per day.

Optional non-graded forest management activities, off campus, may be offered on occasional weekends. Students will be accepted on a first come, first served basis.

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 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.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student 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/program, as may be decided by the professor/dean. 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.

Course outline amendments

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 a challenge exam or portfolio.

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.