

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



Sault College

**COURSE OUTLINE**

<b>COURSE TITLE:</b>	Silviculture	
<b>CODE NO. :</b>	NRT 200	<b>SEMESTER:</b> 3
<b>PROGRAM:</b>	Forest Conservation Technician,	
<b>AUTHOR:</b>	Peter Gagnon R.P.F.	
<b>DATE:</b>	Sept. 2011	<b>PREVIOUS OUTLINE DATED:</b> June 2010
<b>APPROVED:</b>	"B.Punch"	
	_____ <b>CHAIR</b>	_____ <b>DATE</b>
<b>TOTAL CREDITS:</b>	3	
<b>PREREQUISITE(S):</b>	None	
<b>HOURS/WEEK:</b>	3 hr./week	

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*For additional information, please contact Brian Punch, Chair,*  
*School of Environment and Design*  
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**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 will represent 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:

Silviculture Study Guide: 2008 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	40%
Quizzes	10%

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

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
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:

### 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.

### 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.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

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

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. 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.



Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session. 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 4 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.