COURSE OUTLINE: NRT146 - SILVICULTURE I

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Course Code: Title	NRT146: SILVICULTURE I
Program Number: Name	5230: FORESTRY TECHNICIAN
Department:	NATURAL RESOURCES PRG
Semesters/Terms:	19W
Course Description:	This course is the first of two Forestry courses (Silviculture I and Silviculture II) 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 and silviculture planning 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 complement the complete range of silviculture activities.
Total Credits:	3
Hours/Week:	3
Total Hours:	45
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Substitutes:	NRT200
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**5230 - FORESTRY TECHNICIAN** VLO 1 Conduct forest inventory surveys and field measurements to determine forest resources and values in forests and woodlots. VLO 2 Assess soil characteristics, vegetation and wildlife habitats to identify their interactions within forest ecosystems. VLO 3 Perform technical functions in silvicultural operations and assist in the monitoring and evaluation of the effectiveness of silvicultural practices. VLO 4 Collect, analyze, interpret, and display spatial data using mapping technology and Geographical Information Systems (GIS) to contribute to forest resource management. VLO 5 Contribute to sustainable forest management plans, including conservation and rehabilitation measures, taking into consideration the perspectives of a variety of stakeholders and the requirements of relevant legislation and regulations. VLO 8 Work independently and in a collaborative environment while applying effective teamwork, leadership and interpersonal skills. VLO 9 Communicate technical information to a variety of stakeholders in oral, written, visual and electronic forms.
Essential Employability Skills (EES) addressed in	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.

this course:	EES 2	Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 3	Execute mathematical operations accurately.
	EES 4	Apply a systematic approach to solve problems.
	EES 5	Use a variety of thinking skills to anticipate and solve problems.
	EES 6	Locate, select, organize, and document information using appropriate technology and information systems.
	EES 7	Analyze, evaluate, and apply relevant information from a variety of sources.
	EES 9	Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10	Manage the use of time and other resources to complete projects.
	EES 11	Take responsibility for ones own actions, decisions, and consequences.

General Education Themes: Civic Life

Science and Technology

Course Evaluation: Passing Grade: 50%, D

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Describe the importance of silviculture in Ontario and explain who is responsible for its implementation.	1.1 Identify the reasons for possible wood shortages in Ontario. 1.2 Describe programs which are contributing to silviculture in Ontario. 1.3 Explain current forest industry responsibilities for silviculture and show how forest management activities are being funded.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Describe the characteristics of the Great Lakes - St. Lawrence Boreal and Southern Ontario forests and recommend management of their ecosites.	2.1 Describe the silvics of Great Lakes - St. Lawrence and Boreal tree species. 2.2 Identify and describe forest ecosites in the Great Lakes - St. Lawrence conifer forest and forests of Northeastern Ontario. 2.3 Recommend management of identified ecosites.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Describe the Silvicultural Harvesting Systems in use in Ontario and show how and with what species groups, each system is being used.	3.1 Define a silvicultural harvesting system and explain the difference between silvicultural harvesting systems and logging methods. 3.2 List the silvicultural harvesting systems used in Ontario. Describe where each system should be used. 3.3 Explain how each harvesting system is carried out and describe how each system encourages the regeneration of desired tree species. 3.4 Describe the main differences between four logging methods used in Ontario and explain the silvicultural advantages and disadvantages of each method.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Forecast seed crops, collect and store tree seeds and	4.1 Assess seedling quality using statistically sound sampling procedures.

	conduct seeding operations. Demonstrate ability to grow crops of forest tree seedlings in a nursery and show ability to conduct business with private sector tree seedling production facilities.	4.2 Grow 4-8 species of containerized tree seedlings from seed. 4.3 List key elements of a seedling grower contract. 4.4 Visit a local tree seedling production facility. 4.5 Assist in the operation of the college containerized tree seedling greenhouse. 4.6 Identify 10 or more Boreal and Great Lakes - St. Lawrence forest tree seed species and associated fruiting structures.
	Course Outcome 5	**Learning Objectives for Course Outcome 5**
	Describe the objectives of site preparation and show how it can be carried out to meet these objectives.	5.1 List and describe seven practical reasons for carrying out site preparation. 5.2 Summarize how site preparation can change soil conditions and improve growing conditions for seedlings. 5.3 List and describe 5 types of scarification prime movers. 5.4 Recognize at least 20 scarifiers, understand how they operate, sites where each should be used and describe the results each equipment type will produce. 5.5 Describe the value of prescribed burning for ecosystem management. 5.6 Explain, giving examples, how controlled burning is being used in Ontario as a silvicultural treatment.
	Course Outcome 6	**Learning Objectives for Course Outcome 6**
	Explain how logging systems can be used or modified in order to promote natural regeneration.	6.1 List and describe six reasons why there has been a recent interest in natural regeneration systems. 6.2 Demonstrate how black spruce alternate strip cuts should be planned and managed to encourage natural regeneration. 6.3 Describe how Cut to Length can be planned and carried out to protect advanced regeneration. 6.4 Discuss the similarities and differences between ClaaG, HARO and HARP logging modifications as practiced on upland and lowland sites.
	Course Outcome 7	**Learning Objectives for Course Outcome 7**
	Describe Provincial, Federal and private sector activities being carried out to improve reforestation success	Attend field trips to both the Ontario Forest Research Institute and the Great Lakes Forest Research Centre to be introduced and have discussions on Silviculture Research Activities. Complete assignment on developing a range of silvicultural prescriptions using the NEBIE approach to planning for a specific area in Ontario.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight	Course Outcome Assessed
Assignments	60%	all
Tests (3)	40%	all

Date: June 25, 2018

Please refer to the course outline addendum on the Learning Management System for further information.