``

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: FOREST OPERATIONS AND MANAGEMENT

CODE NO. : **NRT 224** **SEMESTER:** 4

PROGRAM: FORESTRY CONSERVATION TECHNICIAN

AUTHOR: MARK HARVEY

DATE: DEC 2012 **PREVIOUS OUTLINE DATED:** DEC.2010

APPROVED: "B.Punch"

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CHAIR **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S):

HOURS/WEEK: 4

I. COURSE DESCRIPTION:

Timber Management will provide students with skills needed for the planning and instillation of forest access roads, bridges and culverts, Students will use maps ,aerial photographs and inventory data to plan harvesting operations in a variety of forest types. Students will tour forest industry processing plants and discuss the relationships between timber harvesting and processing.

Emphasis will be given to the identification, description and operational constraints of a very wide range of timber harvesting equipment.

The historical evolution of the timber industry and the impacts of past timber management practices on the forests and forest industry in Ontario will be discussed. Current Provincial legislation applicable to timber harvesting will also be covered. Students will be introduced to the concepts of the forest management planning process and the Forest Management Planning Manual. Students will explore a sample of concepts presented in the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

1, Identify forest harvesting equipment
2, Identify the function of and operational constraints of timber harvesting equipment
3, Estimate water shed areas and calculate culvert sizes
4, Use maps to plan forest access roads and timber harvesting operations
5, Use timber inventory data to plan harvesting operations
6, Use aerial photographs to plan and locate forest access roads
7, Use aerial photographs to plan and locate forest harvesting operations
8, Trace the historical evolution of the timber industry in Ontario
9, List the impacts of past and current timber management and harvesting practices on the forests of Ontario
10, Understand provincial legislation related to forest management Planning.
11, List the sequence of operations used in forest access road construction
12, Demonstrate an understanding of selected forest access road construction and surveying techniques
13, Understand the relationship between timber management, and the Forest products industry.
14, Identify forest access road related social economic resource management issues and strategies for mitigating access road impacts
15, Define Forest Management Plan and Annual Work Schedule and demonstrate a familiarity with selected aspects of the forest management planning process

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

1. Use surveying data , maps and air photos to design forest access roads

   Potential Elements of the Performance:

   - design curves using the tangent offset method
   - estimate cut and fill
   - calculate slopes from elevation data
   - calculate aggregate volumes from elevation data List and describe at least 8 steps in the road building process
   - draw a simple aggregate permit site plan
   - calculate aggregate volumes using contour maps

   this will constitute 20% of the course grade

2. Identify harvesting equipment and operational considerations for harvesting equipment

Potential Elements of the Performance:

- identify up to 40 pieces of harvesting equipment
- list and describe methods of felling using the chain saw
- list and describe and compare 4 or more logging methods
- list and describe loading equipment
- list and describe logging transportation equipment
- identify advantages disadvantages and constraints of specific pieces of harvesting equipment
- list advantages and disadvantages of logging methods and effects on long term sustainability

This will constitute 20% of the course grade

3. Use maps and aerial photographs to plan and locate forest access and harvesting operations

Potential Elements of the Performance:

- delineate water sheds using maps and aerial photos
- calculate water shed areas and culvert sizes using manual and computer models .
- design culvert water crossing installations
- plan and utilize erosion control techniques
- identify potential road corridors from aerial photographs using tree species and terrain as indicators
- identify and locate road location and harvesting constraints including areas of concern
- locate potential harvesting areas using aerial photographs
- use topographic and FRI maps to locate road corridors and determine slopes
- determine the feasibility of forest stands for harvesting using FRI maps and aerial photographs
- outline methods of constructing forest access roads in an environmentally responsible manner
- identify forest types, ecosites, special features and habitats

This will constitute 30% of the course grade

4. Describe the forest management planning process and understand legislation ,policy and compliance as related to forest management planning and forest operations

Potential Elements of the Performance:

- list key components of the crown forest sustainability act that apply to timber harvesting and forest management activities
- define and describe FOIP
- define and describe a FMP
- demonstrate familiarity with the Forest Management Planning Manual
- understand the forest management planning process
- list forest management planning alternatives used to minimize impacts on riparian and aquatic habitats
- list key aspects of provincial regulations and compliance for timber harvesting, water crossings and aggregate extraction

This will constitute 20% of the course grade

5, Trace the historical evolution of the timber industry in Ontario and and relate past practices to the current timber industry

Potential Elements of the Performance

- Identify and describe historical logging equipment
- Trace the evolution of logging and logging equipment in Canada
- Tour a forest products mill and visit a logging contractor's equipment yard.

This will constitute 10 % of the course grade

III. TOPICS:

1. The history of timber harvesting in Ontario

2. Timber harvesting equipment

3. Planning forest access roads, bridges , culverts and aggregate extraction

4. Planning forest harvest and renewal operations

5 Forest Access road construction, good practices and surveying techniques

6 Forest Operations Inspection Program (FOIP) water crossings, harvests, and aggregate extraction

7 FMP'S and Annual Work Schedules and the Stand and Site Guide

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Timber Management Study Guide and Lab Manual
OMNR Forest Management Planning Manual
Stapler
Drafting and aerial photo interpretation equipment
Forest Management Guide for Conserving Biodiversity at the Stand and Site Scale

V. EVALUATION PROCESS/GRADING SYSTEM:

Labs best 6 of 8	20%
Test , compliance , access roads and the FMP	20%
Culverts and Sedimentation Test	10%
Equipment ID test	15%
FMP Assignments 3@ 5%	15%
Stand and Site Guide 2@ 5%	10%
Attendance	10%
	100%

The following semester grades will be assigned to students in post secondary 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
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	Withdrawn from course with - out academic penalty

VI.
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 and Participation:
This is an important component of this course . Students may miss some or all of 2 scheduled 4 hour classes with-out penalty. Further absences will result in a loss of 5 marks per missed class up to a maximum of 10 marks. Students must be present at the beginning and end of each class to be considered as present.

VII.
Course Outline Addendum :

The provisions contained in the addendum located on the portal form part of this course outline.