

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

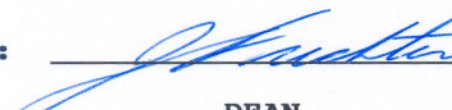

COURSE TITLE: TIMBER MANAGEMENT

CODE NO: FOR 156-4 SEMESTER: IV

PROGRAM: FORESTRY TECHNICIAN PROGRAM

AUTHORS: MARK HARVEY

DATE: NOVEMBER 1996 PREVIOUS OUTLINE DATED: NEW

APPROVED:    
DEAN DATE

TOTAL CREDITS: 4

LENGTH OF COURSE: 4 HRS/WEEK

TOTAL CREDIT HOURS: 64

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**I. PHILOSOPHY/GOALS:**

Upon completing this course students will have a comprehensive understanding of processes required to plan, construct and maintain environmentally acceptable forest access roads. These goals will be achieved through a series of lectures and student work exercises. The exercises are designed to provide students with experiences similar to those that a forest technician would be involved in when working for industry on forest access roads.

Students will identify major harvesting systems and harvesting equipment used in Ontario. For each of these, students will identify economic, physical and biological advantages and constraints. A link will be made between harvesting and other forest activities such as regeneration, recreation and wildlife management. Attention will be given to the Crown Forest Sustainability Act, Bill #171 and harvesting activities. Students will develop a harvesting plan through lab and project work.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course students will be able to:

- 1) Classify roads using the ALSAT-L system of roads classification.
- 2) List and describe the steps involved in the forest access road planning process.
- 3) Identify landscape drainage patterns and classify soil moisture conditions common to Northern Ontario.
- 4) Describe the major landforms found in Northern Ontario.
- 5) Classify the suitability of landform types for road location and as a source of road building materials.
- 6) From aerial photographs, identify forest tree species of the Boreal and Great Lakes St. Lawrence Forest Regions.
- 7) From aerial photographs, identify landforms and surface deposits and associated soil texture and soil moisture conditions.
- 8) From aerial photographs and maps, determine the area of watersheds and using this information and Talbot's Formula determine the size of culverts required at water crossings.
- 9) Describe the process of road location, reconnaissance and curve layout and design on aerial photographs and in the field.

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**II. STUDENT PERFORMANCE OBJECTIVES (CONT'D):**

- 10) Identify parts of the Aggregate Resources Act that are related to extraction of loose surface materials for forest road construction.
- 11) Construct a road profile from elevation data.
- 12) Using maps, aerial photographs and other related information locate road corridors and try lines onto aerial photographs, and maps.
- 13) Complete estimates for cut and fill from a road corridor.
- 14) List the operations involved in road location, construction, maintenance and abandonment and indicate measures that should be taken to minimize the environmental impact of these operations.
15. Explain how a large tree can be felled manually with a chain saw in a safe manner while avoiding any mechanical damage.
16. List and explain all the methods of skidding and forwarding.
17. Compare the basic parts and functions of any tracked or wheeled machine involved in the minor transportation of all forest products.
18. Describe the feller bunchers available by identifying the different styles of felling heads and giving an explanation of the evolution that took place in their development.
19. Identify the more common harvester type machines being used in Ontario.
20. List and describe the different logging systems used in Ontario.
21. Explain how the different pieces of equipment can link together to complete a logging system.
22. Identify the different styles of trucks, trucks and trailers, and tractors and semi-trailers involved in the major transportation of timber products and explain why such a variety get involved.
23. List and describe the environmental impacts of 5 major harvesting systems.
24. Students will develop a harvesting plan given FRI, cruise data and aerial photo.
25. Students will link method of harvesting to regeneration method and other forest values such as recreation and wildlife.
26. Identify and list sections of the Crown Forest Sustainability Act that are related to harvesting including stumpage and area charges.

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III. TOPICS TO BE COVERED:

- 1) Introduction to forest access roads.
- 2) Forest road classification.
- 3) The forest road planning process.
- 4) Soil water classification.
- 5) Watersheds and drainage classification.
- 6) Glaciation and the geomorphology of the Northern Ontario landscape.
- 7) The process of aerial photo interpretation used in forest access road planning, location and construction.
- 8) Tree species and landform identification from aerial photographs.
- 9) The Aggregate Resources Act.
- 10) Road location, reconnaissance and picket lines.
- 11) Survey applications in road construction.
- 12) Environmental guidelines for forest access roads and water crossings.
13. Minor Transportation
  - a) Skidding by
    - i) hand
    - ii) animal
    - iii) tractor
    - iv) tracked machine
    - v) wheeled skidder
    - vi) yarder
    - vii) grapple skidder
    - viii) clam bunk skidder
  - b) Forwarding
  - c) Feller Bunchers
    - i) shear head
    - ii) chainsaw head
    - iii) auger head
    - iv) combined chainsaw/shear head
    - v) circular disc head
    - vi) cone saw head
    - vii) twin disc head
  - d) Harvesters
  - e) Full Tree Feller Forwarders
  - f) Delimbers
    - i) multi stem
    - ii) stroke delimiters
  - g) Slashers and/or Processors

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- 14. Logging systems
  - a) Shortwood
  - b) Tree Length
  - c) Full Tree
- 15. Methods of Loading
  - a) Hand
  - b) Jammer and/or A frame
  - c) Power jammer
  - d) Crane
  - e) Pallet
  - f) Hydraulic loader
  - g) Self loader
  - h) Front-end loader
- 16. Harvesting and forest planning
- 17. Harvesting and environmental impacts
- 18. Harvesting

**IV. METHOD OF EVALUATION:**

Assignments	50%
Tests	<u>50%</u>
	100%

**GRADES:**

A+ =	90-100%
A =	80-89%
B =	70-79%
C =	60-69%
R =	<60%

Assignments must be received on time or the assignment will not be accepted.

**V. REQUIRED RESOURCES:**

- 1. Forest Utilization (FOR110) Study Guide.
- 2. Aerial photo for timber Management.

**VI. SPECIAL NOTES:**

Students with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

