

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE MARIE, ON



COURSE OUTLINE

Course Title: TIMBER MANAGEMENT

Code No.: NRT222 Semester: 4

Programs: FORESTRY TECHNICIAN

Author: MARK HARVEY

Date: JAN 2000 Previous Outline Date: JAN99

Approved: _____
Dean, Natural Resources Date
Programs

Total Credits: 4 Prerequisite(s): Photogrammetry

Length of Course: 5 HRS/WK X 16 WEEKS

Total Credit Hours: 64

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For additional information, please contact Joe Fruchter, Dean, Natural Resources
Programs, (705) 759-2554, Ext. 688.*

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I. COURSE DESCRIPTION:

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. Identify types of forest access roads and issues concerning the construction, maintenance regulation and abandonment
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 Talbot's Formula and computer models 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.
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 and wildlife.
26. Identify and list sections of the Crown Forest Sustainability Act that are related to harvesting including stumpage and area charges.

III. TOPICS:

- 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

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- 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
- 14) Logging systems
- a) Shortwood
 - b) Tree Length
 - c) Full Tree
 - d) Cut to Length
- 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

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IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Timber Management Study Guide - FOR156
2. Aerial photo for timber management.
3. Pocket Stereoscope
4. A Landowner's Guide to Building Forest Access Roads
USDA For. Serv. NA-TP-06-98

V. EVALUATION PROCESS/GRADING SYSTEM:

The following semester grades will be assigned to students in post secondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	3.75
B	70 – 79%	3.00
C	60 – 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade – limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see Policies & Procedures Manual - Deferred Grades and Make-up).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has been impossible for the faculty member to report grades.	

METHOD OF ASSESSMENT (GRADING METHODS)

Field trips	10%
Labs	40%
Project	15%
Equipment ID Test	10%
Final Test	25%
	100%

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Assignments must be received on time or the assignment may not be accepted at the discretion of the instructor or Labs and assignments received late will be downgraded. All labs and projects must be completed individually by students unless otherwise indicated to the students in writing. Copying of labs submitted for grading is strictly prohibited.

Field trips are not optional. Safety equipment as per the professor's instructions is mandatory and must be worn to attend field trips. A grade of 0 out of 5 will be given for non-compliance.

Students will submit any 8 of 10 assigned labs for grading. Each lab will count for 5 marks. Students may not hand in the remaining 2 labs or have only their best 8 labs count towards a final grade.

In order that a lab be acceptable for grading it must be bound in a folder, binder or with staples and have a cover page indicating lab number, lab title, date submitted and student name. All labs must be considered study materials for the final test.

The instructor reserves the right to make minor changes to the method of evaluation in response to changing student needs and to ensure a fair and a high quality educational experience

VI. SPECIAL NOTES:

Special Needs

If you are a student with special needs (eg. Physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717 or 491 so that support services can be arranged for you.

Plagiarism

Students should refer to the definition of "academic dishonesty" in the "Statement of Students 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, as may be decided by the professor.

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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.

Advanced Standing

Students who have completed an equivalent post-secondary course should bring relevant documents to the Coordinator, Natural Resources Programs.

Retention of Course Outlines

It is the responsibility of the student to retain all course outlines for possible future use in gaining advanced standing at other post-secondary institutions.

Substitute course information is available at the Registrar's Office.

VII. PRIOR LEARNING ASSESSMENT:

Please contact the Prior Learning Assessment Office (E2203) for further information.