

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

COURSE OUTLINE

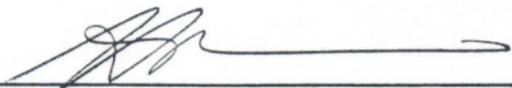
COURSE TITLE: WATERSHED MANAGEMENT

CODE NO.: FOR222-4 SEMESTER: III

PROGRAM: FORESTRY TECHNICIAN

AUTHOR: VAL WALKER

DATE: SEPTEMBER 1992 PREVIOUS OUTLINE DATED: NEW

APPROVED: 
DEAN

Sept 30 1992
DATE



WATERSHED MANAGEMENT

FOR222-4

COURSE NAME

COURSE NUMBER

TOTAL CREDIT HOURS: 64

PREREQUISITE(S): None

I. PHILOSOPHY/GOALS:

A practical course for field personnel to provide information on watershed management and methods to assist in minimizing the impact of development on riparian areas.

An introduction to hydrology and watershed characteristics will be followed by the potential effects of forestry practices on the aquatic environment. Specific reference will also be given to the impact of development on shorelines and streambank areas. Measures which can be taken to prevent, mitigate or remedy potential negative effects will be presented.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1. Describe the important physical properties of water affecting management.
2. Describe the physics of river meanders, particle movement and the measurement of stream flow.
3. Describe the basic runoff process and the factors involved in its determination.
4. Outline the procedure for floodplain mapping and hazard land evaluation.
5. Discuss the role of wetlands in watershed management and the control of runoff by proper management practices.
6. Outline the importance of biological indicators in the assessment of water quality.
7. Describe shoreline processes, devices and guidelines for shore protection.
8. Discuss erosion control and stream improvement devices in the rehabilitation of streams.
9. Discuss the impact of forestry practices on aquatic environments and mitigating measures that can be taken.

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III. TOPICS TO BE COVERED:

Unit 1 - Introduction to Watersheds

- Description of a watershed
- Physical properties of water
- Characteristics of lakes, rivers, streams
- Field trip: Goulais River?

Unit 2 - Forest Hydrology

- The water cycle
- Measuring stream flow
- Methods to control runoff
 - man-made structures
 - natural controls
 - wetlands
 - beaver dams
- Flood plain mapping, hazard land evaluation
- Field trip: Beaver dams

Unit Test #1

Unit 3 - Shoreline Management

- Shore processes
- Shoreline protection measures
- Field trip: Shoreline Management

Unit 4 - Stream Improvement

- Erosion control
- Fish habitat improvement

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III. TOPICS TO BE COVERED: (Continued)

Unit 5 - Detection of Water Pollution Using Biological Indicators

- Environmental requirements of fish
- Biological indicators of pollution
- Field trip: Fort Creek

Unit Test #2

Unit 6 - Forest Management and Watershed Effects

- harvesting effects; how to mitigate them
- effects of pesticides and how to minimize them

Unit 7 - Road Building and Water Crossings

- techniques to minimize the environmental impact of forest roads and water crossings

Unit 8 - Compliance Monitoring

- Riparian code of ethics

Unit Test #3

IV. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

Unit Tests (3)

60%

Assignments

40%

GRADING:

A+ - 90 - 100%

A - 80 - 89%

B - 70 - 79%

C - 60 - 69%

R - less than 60%

Approximately 6 major assignments will be given during the course; one connected with each of the field trips. Some reports will be done in groups, others individually. Assignments are normally due two weeks after being announced. All assignments must be completed in order to pass the course.

Marks are cumulative and 60% is considered a passing grade. There is no rewrite option.

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V. REQUIRED STUDENT RESOURCES:

Watershed Management (FOR 318) Lab Book

Environmental Guidelines for Access Roads and Water Crossings -
Ontario Ministry of Natural Resources

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.