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

COURSE OUTLINE

Course Title: WATERSHED MANAGEMENT

Code No.: FOR 318-4

Program: FISH & WILDLIFE/PARKS & FOREST RECREATION/  
FOREST MANAGEMENT TECHNOLOGY

Semester: FIVE

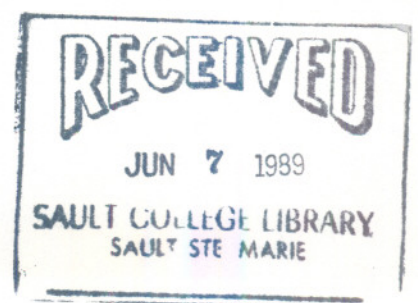
Date: JUNE, 1989

Author: B. CURRELL

New: \_\_\_\_\_ Revision: X

APPROVED: *[Signature]*  
Chairperson

*[Signature]*  
Date





**WATERSHED MANAGEMENT  
FOR 318-4**

**WATERSHED MANAGEMENT**

**FOR 318-4**

Course Name

Course Number

**PHILOSOPHY/GOALS:**

A practical course designed for field personnel to provide information on water management and methods to assist in minimizing erosion and sedimentation on land undergoing development.

**METHOD OF ASSESSMENT (GRADING METHOD)**

Unit Tests (3) 45%

Assignments (5) 45%

A total of three unit tests based on lecture material will be written at the completion of units 2, 4 and 6 and, will account for 45% of the course work.

A series of six assignments will be handed in, valued at 45%. All assignments must be handed in to pass the course though marks for only the best 5 will be calculated in the final grade. Quizzes and in-class assignments will be worth 10%.

Reports are due two weeks after assigned; a total of 10% will be deducted for every day late. Reports submitted after 1 week after the due date will receive 0.

Marks are cumulative and 60% is considered a pass. If a final grade of less than 60% is received, a test based on the entire course material may be written during the rewrite period providing student effort and attendance have been satisfactory.

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

**TEXTBOOK(S) SUGGESTED:**

Watershed Management Lab Manual; 1989 edition.

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**UNIT #1      Important Physical Properties of Water Affecting Management**

- density relationships
- thermal and oxygen stratification
- zonation of lakes and productivity
- wind action, waves and seiches

**Assignment 1 - Lake Productivity**

- temperate streams
- river meanders, particle movement
- measuring streamflow

**Field trip 1 - Measuring Streamflow  
(Assignment 2)**

**UNIT #2      Control of Runoff in Watersheds**

- basic run-off equation
- control of run-off by proper management practices
- role of natural and artificial impoundments

**Field trip 2 - Role of Beavers in Watersheds  
(Assignment 3)**

- farm ponds

**Assignment 4 - Farm Pond Construction**

**UNIT TEST #1**

**UNIT #3      The Aquatic Community and its Habitat**

- environmental requirements of fish
- invertebrates and their biological requirements
- biological indicator species

**Field trip 3 - Biological Indicators  
(Assignment 5)**

**UNIT #4      Shore Processes and Shore Protection**

- shore features and processes
- shore protection; devices and guidelines
- legalities of shoreline development

**Field trip 4 - Shoreline Protection**

**UNIT TEST 2**

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**UNIT # 5 Stream Improvement Measures**

- problem situations in streams
- erosion control
- stream improvement

**UNIT # 6 Forestry Practices and Watershed Management**

- effects of harvesting on aquatic environments
- proper logging practices to minimize effects
- forestry chemicals and their effects on aquatic life
- construction of resource roads to minimize aquatic effects

**Assignment 6 - Resource Road Construction Guidelines**

**UNIT TEST 3**

All field trips are compulsory. Students missing field trips without documentation will receive an automatic 0 for the corresponding assignment.

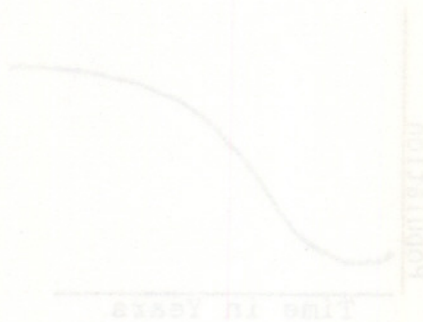


Fig. 11 - Theoretical Population Growth Curve

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REPORT WRITING

General

- type on standard sized typing paper
- leave margins at least 1" at each side for instructor's comments
- double space
- be brief and concise
- underline all scientific names
- do not use I, me, you, we, our, etc.
- be sure all tables and figures are correctly numbered and labelled
- refer to tables and figures by number

Example:

Table 10. Population numbers of caribou on Pribilof Isl.

Year	Estimated Number
1956	6
1957	10
1958	14
1959	19
1960	27
1961	* no data
1962	37

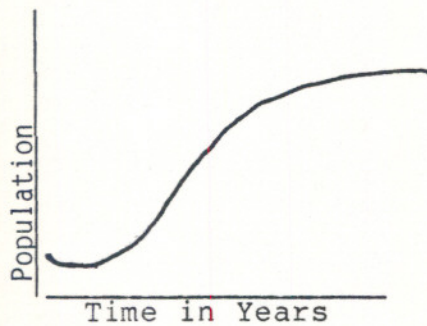


Fig. #1 - Theoretical Population Growth Curve

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References

- presented on a separate page at end of report,

1) For paper presented in a Journal:

Mason, C.F. and R. J. Bryant. 1974. The structure and diversity of the animal communities, J. Zool., 172, 289-309.

1	1
issue no.	page reference

2) For book references:

Hynes, H. B. N., 1970. The Ecology of Running Waters, Liverpool University Press, Liverpool.

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REFERENCES

- Case, A.B. and D.A. Rowe. 1978. Environmental Guidelines for Resource Road Construction. Fisheries and Environment Canada, Forestry Service.
- Clemens, Robert H., No date. The Role of Vegetation in Shoreline Management. A guide for Great Lakes shoreline property owners. Fisheries and Environment Canada, Dept. of Army Corps of Engineers, North Central Division.
- Kerr Wood Leidal Associates Ltd. and D.B. Lister and Associates Ltd. 1980. Stream Enhancement Guide. Fisheries and Oceans and Ministry of Environment, Province of British Columbia.
- Ontario Conservation Authorities. 1981. Erosion Control. Conservation Services Manual Volume I. ISBN 0-7743-7067-X.
- Ontario Ministry of Natural Resources. 1982. Building a Dam and other Water Projects.
- Ontario Ministry of Natural Resources. 1981. Great Lakes Shore Processes and Shore Protection.
- Rothwell, R.L. 1978. Watershed Management Guidelines for Logging & Road Construction in Alberta. Northern Forest Research Centre. Canadian Forestry Service, Fisheries & Environment Canada, Edmonton, Alberta.
- U.S. Army Corps of Engineers, North Central Division. 1978. Help Yourself - A discussion of erosion problems on the Great Lakes and alternative methods of shore protection.
- U.S. Army Corps of Engineers. 1973. Shore Protection Manual. Vol 1-3. Coastal Engineering Research Center, Ft. Belvoir, Virginia.
- U.S. Army Corps of Engineers. No date. Low Cost Shore Protection - A Property Owner's Guide.
- U.S. Department of Agriculture, Forestry Service. 1966. Wildlife Habitat Improvement Handbook. Forestry Service, Washington. FSH 2609.11:146 pp.
- U.S. Department of Transportation. Federal Highway Administration. 1979. Restoration of Fish Habitat in Relocated Streams. U.S. Government Printing Office, Washington, D.C. 20402. FHWA-1P-79-3.