DOC. 307

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: ENVIRONMENTAL BIOLOGY

CODE NO.: BIO 211-3 SEMESTER: 3

PROGRAM: ABORIGINAL RESOURCE TECHNICIAN/FORESTRY TECHNICIAN

DATE: JANUARY 1993 PREVIOUS OUTLINE DATED: MAY 1992

AUTHOR: HAROLD COOPER

APPROVED: _____ Jan 26 93
DEAN DATE

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TOTAL CREDIT HOURS: 48

PREREQUISITE(S): SCI115

I. PHILOSOPHY/GOALS:

This is a study of the environment from the biological point of view. It will include a look at the process of environmental assessment as well as identification and relationships of flora and fauna of Ontario. Natural history and cultural importance of selected species will also be discussed.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course, the student will:

1. Compare environmental assessments under Provincial and Federal legislation.

2. Identify ground flora including common lichens, mosses, club mosses, horsetails, ferns and aquatic plants and state their significance and typical habitats.

3. Identify common fauna of Ontario including aquatic invertebrates, fish, waterfowl, birds and mammals.

4. Briefly state the ecological values and habitats of the above species.

5. Demonstrate an understanding of traditional native uses of plants and identify specimens commonly used in aboriginal Herbalogy.

III. TOPICS TO BE COVERED:

1. Environmental Impact Assessment
2. Club mosses, Lichens and Horsetails
3. Mosses and Liverworts
4. Ferns
5. Aquatic Plants
6. Aquatic Invertebrates
7. Freshwater Fish
8. Waterfowl
9. Songbirds, Shorebirds, Gamebirds and Raptors
10. Mammals
11. Native Herbalogy and Traditional Use of Plants

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IV. LEARNING ACTIVITIES:

TOPIC I - Environmental Assessment

Upon successful completion of this unit, the student will be able to:

1. Compare Provincial and Federal systems for environmental assessment.

2. Explain the importance of environmental assessments in resource management.

3. Discuss other types of environmental assessment including traditional Native assessments.

TOPIC 2: Club Mosses, Lichen and Horsetails

Upon successful completion of this course, the student will be able to:

1. Briefly explain the life cycles of club mosses and horsetails. E.B. Study Guide

2. Identify 5 species of club mosses.

3. Classify lichen by growth form and identify 6 species to genus level.

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IV. LEARNING ACTIVITIES: (cont'd)

TOPIC 3: Mosses and Liverworts

Upon successful completion of this unit, the student will be able to:

1. Discuss the life cycle of moss and liverworts. — E.B. Study Guide
2. Identify 10 to 12 mosses and liverworts of Northern Ontario, and relate these mosses to their sites.
3. Discuss the role and potential value of Sphagnum moss.

TOPIC 4: Ferns

Upon successful completion of this unit, the student will be able to:

1. Identify 14 species of ferns and describe their sites. — "Fern Finder" field guide; E.B. Study Guide
2. Use a moderately complex key to identify ferns without use of a glossary.
3. Draw and label the life cycle of a fern.

TOPIC 5: Aquatic Plants

Upon successful completion of this unit, the student will be able to:

1. Distinguish between the grass, sedge and rush families. — E.B. Study Guide; Video
2. Identify 35 common aquatic plants and relate these plants to habitat and importance.

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IV. LEARNING ACTIVITIES: (cont'd)

TOPIC 6: Aquatic Invertebrates

Upon successful completion of this unit, the student will be able to:

1. Identify 25 aquatic invertebrates. — E.B. Study Guide
2. Associate these invertebrates with their preferred sites and ecological roles. — Video

TOPIC 7: Freshwater Fish

Upon successful completion of this unit, the student will be able to:

1. Identify about 30 species of common freshwater fishes. — "McClane's Field Guide to F.W. Fish"
2. Construct a chart with the common fish species showing habitat, spawning characteristics and value. — Video

TOPIC 8: Waterfowl

Upon successful completion of this unit, the student will be able to: — E.B. Study Guide; "Ducks at a Distance" or other field guide

1. List 5 features that distinguish between puddle ducks and diving ducks. — Video
2. Identify 24 specimens of waterfowl.
3. Describe the location and principle birds of the four North American flyways.
4. Distinguish between breeding plumage and eclipse plumage.

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IV. LEARNING ACTIVITIES: (cont'd)

TOPIC 9: Songbirds, Shorebirds, Game Birds and Raptors

Upon successful completion of this unit, the student will be able to:

1. Identify field features of 50 species of birds found in Northern Ontario.
2. Distinguish between game birds and non-game birds.
3. Compare buteos, accipiters and falcons.

Field Guide to Eastern Birds

Video

TOPIC 10: Mammals

Upon successful completion of this unit, the student will be able to:

1. State examples and characteristics of the major orders of mammals.
2. Identify about 35 species of mammals from 35 mm slides and study mounts.
3. State the preferred habitats of common Ontario mammals.

E.B. Study Guide

Field Guide to the Mammals

Video

TOPIC 11: Native Herbalogy

Upon successful completion of this unit, the student will be able to:

1. Demonstrate an understanding of traditional native uses of plants used for food or medicinal purposes from your area.
2. Identify approximately 15 plants that are considered edible or of medicinal value.

Field Guide to Medicinal Plants

Field Guide to Edible Plants

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V. EVALUATION METHODS:

TEST #1	Environmental Assessment, Lichen, Club Moss, Moss, Ferns	20%
TEST #2	Aquatic Plants, Aquatic Invertebrates	20%
TEST #3	Ducks, Fish	20%
TEST #4	Birds, Mammals, Herbalogy	20%
WRITTEN ASSIGNMENTS		15%
PLANT COLLECTION		5%

GRADES - A+ = 90%+ A = 80%-84+% B = 70%-79% C = 60%-69%

Rewrites:

If average mark for the four tests is 60%+ and over 60% achieved in 3 of the 4 tests, no rewrite will be required. If the average mark is 55-60%, student may rewrite test with the lowest mark. If average for the four tests is less than 55%, student must write a rewrite for the whole course.

To be eligible for a rewrite, average mark must be at least 50% and attendance must be satisfactory. If more than one lab is missed without excuse, no rewrites will be allowed.

VI. REQUIRED STUDENT RESOURCES:

Environmental Biology Study Guide

Hinds, Bob. Ducks at a Distance, Can. Govt. Publishing Centre, Hull,PQ

Suggested References:

Field Guides for: Eastern Birds
Mammals
Edible Wild Plants
Medicinal Plants

NOTE: These will be used again in subsequent courses.

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VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

Banfield A.W.F. Mammals of Canada. National Mus. of Nat. Sciences Tor. 1974 QL721.B215

Godfrey E. Birds of Canada. National Museum of Natural Sciences 1986 QL685.G63

Hotchkiss N. Common Marsh Underwater & Floating-leaved Plant. Dover Pub. NY NY 1972 QK115.H6

Magee, D.E. 1981. Freshwater Wetlands. Univ. of Mass. press. QK117.M24

Needham, J.G. 1962. Freshwater Biology. Holden-Day Inc., California 108pp. QH96.N38

Parenteau, N. 1988. Public Participation in Environmental Decision-Making. Federal Environmental Assessment Review Off. 71pp. Vertical File

Pennak, R.W. 1953. Fresh-Water Invertebrates of the United States. Ronald Press Co., N.Y. QL141.P45

Scott, W.B., Crossman, E.J. 1973. Freshwater Fishes of Canada. Information Canada. 966pp. QL626.S34

VIII. SPECIAL NOTES:

Hard hats must be worn on field trips.

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.