DOC. 307

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: ENVIRONMENTAL BIOLOGY

Code No.: BIO 211-3

Program: FORESTRY TECHNICIAN

Semester: III

Date: JUNE, 1989

Author: DERROLL MURPHY

New: _____ Revision: X

APPROVED: _____ July 10/89
Chairperson Date

CALENDAR DESCRIPTION

ENVIRONMENTAL BIOLOGY	BIO 211-3
COURSE NAME	COURSE NUMBER

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 to their aquatic or forest habitats.

METHOD OF ASSESSMENT (GRADING METHOD):

TEST #1	Lichen, Clubmoss, Moss, Fern	20%
TEST #2	Aquatic Plants, Aquatic Invertebrates	20%
TEST #3	Ducks, Fish	20%
TEST #4	Birds, Mammals	20%
FIELD TRIP REPORT		7%
PLANT COLLECTION		8%
TALK		5%

IMPACT MATRIX: Satisfactory or Not Satisfactory

ECOLOGICAL RELATIONSHIPS BONUS

GRADE A+ = 90% A = 80% B = 70% C = 60%

If average mark for the four tests is 60%+, there will be no rewrites. If average mark is 55-60%, student will 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 elibigle for a rewrite, average mark must be at least 50%

TEXTBOOK(S):

Lab Manual - College Bookstore, as well as selected references.

Ducks at at Distance

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SPECIFIC OBJECTIVES

OBJECTIVE	TECHNICIAN COMPETENCY BENCHMARK
Given a hypothetical development, contruct an environmental impact matrix using a numerical rating system and justify the rating.	2967.04
List differences in a numerical matrix and the Federal screening process.	"
Explain the major features of the EARP Federal process and the EIA Ontario process.	"
Name at least two advantages of the Ontario class action exemption process.	"
Draw and label the life cycle of clubmoss.	"
Name division and genus, and identify five species of clubmoss, stating their major ecological importance.	"
Explain symbiotic relationship in lichens.	"
Describe importance of lichens referring to factors such as atmospheric qualities, site indicators, competition with other species, and possible uses.	"
Define crustose, fruticose and foliose lichens, and identify three major species of lichens.	"
Draw and label a moss life cycle.	"
Identify three species of horsetail and name at least one practical use.	"
Name division and class for moss and liverworts and identify 10 moss species.	2967.04
Name at least three differences between sphagnum moss and true moss, state their ecological importances and uses.	"

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OBJECTIVES	TECHNICIAN COMPETENCY BENCHMARK
Demonstrate ability to use a key for clubmoss, moss, ferns, aquatic plants, aquatic invertebrates and fish by either constructing a usable key or by successful keying of species.	2967.04
Identify 14 species of fern and describe typical sites.	"
Draw and label three species of fern to show the difference between once, twice and thrice cut.	"
List at least five past or present uses for ferns	"
Identify 21 species of aquatic plants.	"
List two distinguishing characteristics of the following families: Rush, grass and sedge.	"
State at least four ecological benefits of aquatic plants.	2970.01 and 2967.04
State four ecological adaptations of aquatic plants to suit their environment.	2970.01 2967.04
Define the following terms related to aquatic habitat: pond, lotic, fall turnover, littoral, profundal, eutrophic, hypolimnion, lentic, epilimnion, spring turnover, limnetic, oliogotrophic, dystrophic	2967.04
Describe two techniques of measuring lake enrichment.	2967.04
Describe four methods of aquatic plant density control.	"
Given a list of wildlife and aquatic plant species, match the lists for a food or habitat relationship.	"
Explain the most common method of purifying water.	"

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OBJECTIVES	TECHNICIAN COMPETENCY BENCHMARK
List types of streams where bethnic, pelagic, and surface organisms are usually found.	2967.04
Name at least two invertebrates typical of each of the following: bedrock streambed — rubble or gravel bottom sandy streambed — muddy or silt bottom	"
Explain reproduction of the blackfly and mosquito.	"
State ecological and economic effects of blackflies and mosquitoes.	"
Name and explain five different ways of controlling biting insects.	"
Give phylum, class, and order of 21 species of aquatic invertebrates.	"
Identify 21 species of aquatic invertebrates.	"
Identify and give habit detail on 24 species of fish.	"
Given a list of fish, match to the following terms: omnivorous — phytoplankton feeder herbivorous — carnivorous parasitic — scavenger	"
List harmful effects on humans of fish contaminants such as mercury, PCB's, mirex and DDT.	2967.04
Compare and contrast on a chart, the indicated fish species under the following headings: Identification Features — Habitat Coldwater Species — Panfish	"
List five major distinguishing features between puddle and diving ducks.	"
Identify 24 species of water fowl.	"

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OBJECTIVES	TECHNICIAN COMPETENCY BENCHMARK
Compare and contrast, on a chart, the indicated waterfowl species under the following headings: Identification Features Habitat Food	2967.04
List four major North American flyways and describe their general location.	"
Distinguish between the terms: eclipse plumage and breeding plumage.	"
Identify 32 species of mammals and state preferred habitat.	"
Given seven orders of Ontario mammals, describe three characteristics of each.	"
List representative members and three characteristics of the following mammal families: dog, cat, bear raccoon, deer, squirrel beaver	"
Identify 50 species of birds and state preferred annual habitat.	"
List a minimum of three species under the headings: game birds, raptors woodpeckers, shore birds passerines	"
Distinguish between buteos, accipiters, and falcons.	"
Given a list of Ontario wildlife, identify tracks and signs from 35mm slides.	"
Describe contruction technique for a plaster of paris cast which effectively shows animal tracks.	"
Deliver a short talk on some practical aspect of bio-energenics.	2965.04

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TOPIC NO.	PERIODS	TOPIC DESCRIPTION
1	3	Impact Matrix Explanation and discussion of requirements for impact statement. Examples of statements, environment and the law.
2	3	Matrix Discussion of the validity of student matrix. Clubmosses and Lichens Identification of 6 species structure, function and life cycle and habitat.
3	3	Mosses Identification of 9 species structure, function, life cycle and habitat.
4	3	Ferns Identification and life cycle habitat and relations.
5	3	Aquatic Plants Identification structure and uses. Habitat and relations. Water quality.
6	3	Aquatic Invertebrates Identification by sight and key, habitat. Relationship with man.

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TOPIC NO.	PERIODS	TOPIC DESCRIPTION
7	4	Fish Keying for identification of species, habitat, structure, uses.
8	3	Field Trip Stream survey: water quality tests, stream flow and inventory.
9	3	Waterfowl Identification and habitat of game waterfowl, foods.
10	4	Birds Identification and habitat of common bird species.
11	4	Mammals Identification and habitat of common Ontario mammals.
12	3	Tracks and Signs Identification of tracks and signs. Making a cast.
13	3	Field Trip Examine given area for: inventory of biota ecological relationships possible uses
14	5	Man's Influence on Bio-energenics Student will deliver five minute talk.
15	2	Ecological Relationships Relating of Ontario mammals to previously studied autotrophs and heterotrophs.

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