

3-17-1980

Environmental Studies in Biological Sciences: A Minor

The College at Brockport, College Senate

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Replacement Page

Resolution #25, 1979-80

Environmental Studies in the Biological Sciences: A Minor

TO: PRESIDENT ALBERT W. BROWN

FROM: THE FACULTY SENATE

Meeting on 3/17/80
(Date)

RE: X I. Formal Resolution (Act of Determination)
II. Recommendation (Urging the fitness of)
III. Other (Notice, Request, Report, etc.)

SUBJECT: Environmental Studies in the Biological Sciences: A Minor
from the Department of Biological Sciences



(see attached)

Routing #25 79-80

Resolution #24
1979-1980

Signed: *Robert G. Kemmerling* Sent 3/19/80
(For the Senate) *m a d*
Robert G. Kemmerling, President, Faculty Senate

TO: THE FACULTY SENATE

FROM: PRESIDENT ALBERT W. BROWN

RE: I. DECISION AND ACTION TAKEN ON FORMAL RESOLUTION

a. Accepted. Effective Date 3/20/80
b. Deferred for discussion with the Faculty Senate on _____
c. Unacceptable for the reasons contained in the attached explanation

II, III a. received and acknowledged

b. Comment: *Sign Central Staff (President Staff)*

DISTRIBUTION: Vice Presidents: _____

Others as identified: _____

Distribution Date: 3/20/80

Signed: *Albert W. Brown*
(President of the College)

Date Received by the Senate: _____

Environmental Studies in the Biological Sciences: A Minor
from the
Department of Biological Sciences

Brockport, New York

Rationale

In dealing professionally with private business and government agencies, environmental scientists have become increasingly aware that a substantial employee background in environmental science is often of critical importance to effective agency functioning. Yet many environmentally-related positions are necessarily filled by non-science majors. Recently, faculty in non-science departments have expressed concern about the lack of a coherent environmental program appropriate for non-science students. With these factors in mind, the faculty in the Department of Biological Sciences has created a minor designed to provide a strong foundation in the environmentally-related, biologically-oriented sciences.

Goals

The 'Environmental Studies in the Biological Sciences' minor is specifically designed for nonbiology majors with an active interest in environmental problems and nature in general. The sequence of courses recommended provides a background in ecological and biological principles upon which specialty courses in conservation, pollution, and management are dependent. These courses should provide the information necessary to understand environmental problems and issues as well as enhance the knowledge of those students seeking nonscientific but environmentally-related positions: environmental law, environmental politics, parks and recreation, naturalists and so forth. While this minor is also appropriate for nature lovers and naturalists, we do recommend a major in biology (option in aquatic ecology, terrestrial ecology, or conservation) for anyone seeking employment in technically-oriented positions.

COURSE DESCRIPTIONS

BIO 201 BIOLOGY I - BOTANY

Study of world of plants with emphasis on levels and classification of plant life, chemicals of life, reproduction and propagation, genetic systems, steady states, metabolism, ecology, and evolution. 4 semester hours.

BIO 202 BIOLOGY II - ZOOLOGY

Lectures, readings, films, and discussions provide a broad overview of structure and function in the major groups of animals with special emphasis on the solutions to the basic problems of life which have developed within each group. Laboratories consist of dissections and demonstrations of the major animal types. 4 semester hours.

BIO 303 ECOLOGY

Basic ecology course concerned with interrelationships among organisms and environment. Energy flow, materials cycling, population dynamics, principles of animal behavior, as well as natural history, considered in both lecture and field studies. 3 semester hours.

BIO 423 BIOLOGY OF POLLUTION

Water, air and land pollution problems, bioassay techniques and procedures; as well as analysis of pollution data will be emphasized. 3 semester hours.

BIO 318 MARINE BIOLOGY

Basic principles, concepts and the importance of marine ecosystems are discussed. Intelligent reactions to public discussions concerning marine environment issues will be stressed.

BIO 419 LIMNOLOGY

Study of the chemical, physical, and biological characteristics of freshwater lakes and streams. This course is recommended for students interested in oceanography and marine biology, as well as the study of freshwater streams and lakes. 3 semester hours.

BIO 422 POPULATION BIOLOGY

Lectures and discussions are in two general areas: evolution of populations and structure and function of populations. Specific topics include population genetics, the population as a basic unit of evolution, growth and limitation of populations, spatial distributional patterns, the exclusion principle, predator-prey theory, and species equilibrium theory. 3 semester hours.

COURSE DESCRIPTION (cont'd)

BIO 471 FIELD BIOLOGY

Identification of major groups and common species of plants and animals; energy flow and ecological relationships; field skills. 4 semester hours.

BIO 316 FOREST RESOURCES

Timber, wildlife, recreational, and environmental values of forests; history of management practices and policy; emphasis is on the United States. 3 semester hours.

BIO 324 GROUNDS MANAGEMENT

Planting and maintenance of turf grass, woody plants, and other ornamentals for parks, golf courses, campuses, industrial parks, and the home grounds. Recommended for students in recreation and leisure. Laboratories provide practical experience. 3 semester hours.

BIO 424 CONSERVATION PRACTICUM

Pruning and thinning woodlots for timber stand improvement; woods road maintenance; aesthetic forestry; the design, layout, and construction of foot trails. Work projects in the demonstration forest and elsewhere at the Fancher Campus. 4 semester hours.

BIO 426 ECONOMIC BOTANY

Plants in relation to man; the role of plants, development of civilizations; the origin of cultivation; the importance of plants in the socio-economic development of modern cultural nations. 3 semester hours.

BIO 475 WOODLAND MANAGEMENT

Principles and theory of forest ecology and management and of wild life ecology and management; problems involving gathering and analyzing data to evaluate habitats and estimate timber volume. 4 semester hours.

BIO 476 ENVIRONMENTAL RESOURCE MANAGEMENT

Lecture/discussion course designed to explore resource availability and use, trends, environmental perceptions and evaluations; choice and consequences. Real solutions to real environmental problems are sought in an interdisciplinary approach for non-science as well as science majors. 3 semester hours.

BIO 486 ICHTHYOLOGY

The study of fish, including morphology, physiology, ecology, and natural history of major groups of fish. Laboratory experience in fish collection techniques, anatomy, taxonomy, and life history studies. 4 semester hours.

COURSE DESCRIPTION (cont'd)

BIO 472 ALGAL ECOLOGY

Qualitative and quantitative aspects of algal ecology, analysis of data and preparation of a comprehensive report on lab and field work. 4 semester hours.

BIO 482 PLANT TAXONOMY

Development of a working knowledge of the major flowering plant families - their distinguishing characteristics, relationships, distribution, value, and methods of identification. Also considered are man's historical work with floras, the development of classification systems, the study of origin, variation, and evolution of floras. 4 semester hours.

BIO 483 AQUATIC INVERTEBRATES

The importance of invertebrates in the ecosystem, the taxonomy of aquatic insects, including crustacea, mites, leeches, mollusca; the relationship between classification and identification, use of dichotomous keys, sampling equipment, and preservation techniques. 4 semester hours.

BIO 485 ENTOMOLOGY

Study of biology and classification of insects. Emphasis placed on anatomy, physiology, and ecology of selected types. Collection and identification of species required. 4 semester hours.

BIO 487 ORNITHOLOGY

Ecological relationships, avian aesthetics, ethological characteristics; evolutionary relationships among birds and their progenitors, techniques of study; skin preparation and use of museum resources; significance of avian studies in photoperiodicity, migration, disease and conservation. Field identification, skin preparation. 4 semester hours.

BIO 488 MAMMALOGY

Study of mammals including identification, life histories, ecological relationships and economic importance. Discusses research terminology. 4 semester hours.

BIO 489 VERTEBRATE BIOLOGY

Study of vertebrates; discusses classification, life histories, ethological characteristics, and status and future of vertebrates. 4 semester hours.

FACULTY INVOLVED IN THE ENVIRONMENTAL STUDIES MINOR

Below is a list of pertinent faculty, their research interests and the courses they teach in the environmental studies minor. Faculty listed with an asterik are available for advisement.

Stephen Arnold - Biological control of pest populations; population modelling; aquatic ecology. AQUATIC INVERTEBRATES/BIO 483, ENTOMOLOGY/BIO 485.

Jean Bobear - Economic botany; natural history; systematic botany; variation in flowering plants; relationships between plants and man. ECONOMIC BOTANY/BIO 426, PLANT TAXONOMY/BIO 482.

*Ronald Dilcher - Environmental surveys, impact analysis, land use decisions; wetlands and avian ecology, environmental education; development of outdoor education facilities and associated software. ECOLOGY/BIO 303, FIELD BIOLOGY/BIO 471, ORNITHOLOGY/BIO 487.

Clarence Gebris - Plant ecology; local plant communities, fossil plants and peat in the Irondequoit Bay area, post-glacial plant ecology. BOTANY/BIO 201.

Alfred Cienfagna - Horticulture; insect, disease and weed control; landscaping; seed and vegetative propagation, acclimatization of plants. GROUNDS MANAGEMENT/BIO 324.

*James Haynes - Environmental Impact studies in western New York; fisheries, aquatic ecology; effects of biotelemetry attachments on fish behavior, movements and ecology of salmonids in Lake Ontario and its tributaries. MARINE BIOLOGY/BIO 318, BIOLOGY OF POLLUTION/BIO 423, ICHTHYOLOGY/BIO 436

Robert Hellmann - Development and management of arboretum of native NY state trees and shrubs at the Fancher Campus; forestry; conservation of forest resources, analysis of woody vegetation. FOREST RESOURCES/BIO 316, WOODLAND MANAGEMENT/BIO 475.

*Joseph Makarewicz - Pollution of lakes, streams and oceans; limnology; pesticides in the environment; over-population. LIMNOLOGY/BIO 419, POPULATION BIOLOGY/BIO 422.

John Mosher - Applied ecology, alternate life styles; ecological approach to food and fiber production. CONSERVATION PRACTICUM/BIO 424.

*Karl Shump - Wildlife refuges; museum curation; foraging strategies, energetics, pesticide ecology. MAMMOLOGY/BIO 488, VERTEBRATE BIOLOGY/BIO 489.

Edward Southwick - Environmental management; physiological ecology; biophysical ecology and micro-climate; biology of honey bees and floral nectar. ENVIRONMENTAL RESOURCE MANAGEMENT/BIO 476 (with Shump).

Declaration of a minor

in

ENVIRONMENTAL STUDIES
in the Biological Sciences
Department of Biological Sciences

Name _____ S.S.# _____

Address _____ Major _____

Courses

Checklist

A. Required	Course	Date	Credits
BIO 202 Zoology or BIO 201 Botany	_____	_____	_____
BIO 303 Ecology	_____	_____	_____
BIO 423 Biology of Pollution	_____	_____	_____
B. One of the following			
BIO 318 Marine Biology			
BIO 419 Limnology			
BIO 422 Population Biology	_____	_____	_____
BIO 471 Field Biology			
C. One of the following			
BIO 316 Forest Resources			
BIO 324 Grounds Management			
BIO 424 Conservation Practicum	_____	_____	_____
BIO 426 Economic Botany			
BIO 475 Woodland Management			
BIO 476 Environmental Resource Management			
D. One of the following			
BIO 486 Ichthyology			
BIO 472 Algal Ecology			
BIO 482 Plant Taxonomy			
BIO 483 Aquatic Invertebrates	_____	_____	_____
BIO 485 Entomology			
BIO 487 Ornithology			
BIO 488 Mammalogy			
BIO 489 Vertebrate Biology			