

# The University Senate of Michigan Technological University

## Proposal 7-11

(Voting Units: Academic)

### “MINOR IN FISH BIOLOGY”

Department of Biological Sciences

This is a proposal to establish a Minor in Fish Biology in the Department of Biological Sciences at Michigan Technological University.

#### Rationale:

A. At Michigan Tech, fish biology is an important component of a still-increasing emphasis on studies of aquatic ecosystems. The Minor in Fish Biology will further the development of our educational program in this field.

1. This Minor will permit us to incorporate some of our significant and unusual strengths in this area in our course offerings. These include

a. Our research programs on important fish and fish resources within the Great Lakes region, and specifically unique opportunities to study such species as Coaster Brook Trout and Lake Sturgeon, as well as commercially important fish like Ciscoes, Lake Trout and various introduced species;

b. Our regional placement within the Great Lakes, and the construction of the new Great Lakes Research Center.

2. There is a continued increase in student interest in fish biology at Michigan Tech, demonstrated by increased undergraduate involvement in fisheries research being conducted by faculty.

3. A minor in Fish Biology will be an attractive credential for students who are preparing for careers in Fisheries, Aquatic Ecology, Forestry and Wetlands, Applied Ecology, Wildlife Ecology, Environmental Engineering, and marine studies.

B. The Department of Biological Sciences has recently changed the structure of its undergraduate degree programs and has dropped all of its concentrations in areas of study that were listed as "options" under the BS in Biological Sciences. However, except for Fish Biology, all specialties of the previous options are still available to students as minors. The proposed Minor in Fish Biology will rectify the exclusion of this specialty.

#### Catalog Description:

##### I. Title

Minor in Fish Biology

## II. Catalog Description:

The Minor in Fish Biology offered in the Department of Biological Sciences provides students with a background in and knowledge of fish and of their importance in freshwater and marine food webs. The need for understanding of these organisms is critical; worldwide, the stocks or populations of significant species of marine fishes are dwindling to the point of non-sustainability. The Minor in Fish Biology will be most suitable for students majoring in Biological Sciences, Forestry, Applied Ecology and Environmental Science, Environmental Engineering, Social Sciences and Chemistry with a concentration in Environmental Chemistry.

## III. List of Courses

To earn a Minor in Fish Biology, students will have to complete 16-18 required semester credit hours. No more than 4 credit hours will be earned at the 1000- and 2000-level. Students must earn at least 6 credit hours of 3000-level or higher courses which are not required for their Major degree program except as free electives.

<u>Courses</u>	<u>Prerequisites (including not listed in minor)</u>
A. BL1040 Principles of Biology (4) <i>or</i> BL1020 General Biology II (4)	None BL1010 General Biology I (4)
B. BL4440 Fish Biology (4)	BL1040 Principles of Biology (4) <i>or</i> BL1020 General Biology II (4)
C. BL4450 Limnology (4)	CH1120 University Chemistry II (4) <i>or</i> CH1122 Studio Laboratory II (5) <i>or</i> [CH1160 University Chemistry II (3) and CH1161 University Chemistry II Lab (1)]
D. BL4455 Research Methods in Aquatic Ecology (2)	BL3400 Ecology (4) <i>or</i> BL4450 Limnology (4) <i>or</i> FW4220 Wetlands (4) <i>or</i> ENVE4505 Surface Water Quality Engineering (3)
E. <u>Select one of the following courses</u>	
BL3190 Evolution (3)	BL1020 General Biology II (4) <i>or</i> BL1040 Principles of Biology (4)
BL4090 Tropical Island Biology (2)	None
BL4470 Analysis of Biological Data (4)	MA1135 Calculus for Life Sciences
BL4465 Biological Oceanography (3)	None
BL4120 Environmental Remediation and Toxicology (3)	BL1020 General Biology II (4) <i>or</i> BL1040 Principles of Biology (4)
BL4461 Ecosystem Ecology (3)	CH1120 University Chemistry II (4) <i>or</i> CH1122 Studio Laboratory II (5) <i>or</i> [CH1160 University Chemistry II (3) and CH1161 University Chemistry II Lab (1)]

FW3410 Conservation Biology (3)                      None

FW4220 Wetlands (4)                                      None

FW4370 Forest & Landscape Hydrology (4)      None

#### **IV. New Courses**

No new courses are required for the Minor in Fish Biology

#### **V. Estimated Costs**

There are no new costs associated with the establishment and offering of the Minor in Fish Biology. The Minor has existed previously as an area of concentration. There are adequate library and electronic resources for the minor.

#### **VI. Planned Implementation Date**

Fall 2011

**Introduced to Senate: 08 December 2010**

**Adopted by Senate: 19 January 2011**

**Approved by Administration: 29 January 2011**