CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

NEW COURSE PROPOSAL

PROGRAM AREA _____BIOLOGY_____

1. **Catalog Description of the Course.** *[Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of ___ units); time distribution (Lecture ___ hours, laboratory ___ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]*

   BIOL 450 ICHTHYOLOGY: THE BIOLOGY OF FISHES (4)
   Three hours of lecture and three hours of laboratory per week.
   Prerequisite: BIOL 200
   This course will survey the diversity of living and fossil fishes. Fishes are the largest and most diverse group of vertebrate animals. Aspects of the ecology, physiology and evolutionary history of these animals will be examined. Extensive human interactions with fishes and particularly conservation issues will be highlighted. Emphasis will be placed on the identification and biology of California coastal and inland species. Field trips will be required. A lab fee is required.

2. **Mode of Instruction.**

	Units	**Hours per Unit**	**Benchmark Enrollment**
Lecture	____3____	____1____	___20_____
Seminar	_____	_____	_____
Laboratory	_____1___	____3____	___20_____
Activity	_____	_____	_____

3. **Justification and Learning Objectives for the Course.** (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*

This will be an elective course for biology majors.

Ichthyology is a diversity survey course. The topics can range far beyond the group of organisms in question to include ecology, physiology, evolution, conservation, *etc*. In this way, as the students gain understanding of the target group, they are exposed (or reexposed) to key concepts and principles, thus sharpening and continuing to build upon their basic biological knowledge.

Fishes are the most varied group of vertebrate animals. This course aims to introduce the students to this diversity in the form of a systematic survey of the group. Numerous aspects of the biology of fishes (physiology, ecology, evolution) are addressed throughout this survey with specific groups as examples (*i.e*., life-history specialization in salmon; morphological and physiological adapatation in deep sea fishes; osmotic physiology in lampreys, sharks and salmon; conservation and management in desert fishes, *etc*.). Such a survey allows students to sharpen, apply and expand their basic vocabulary of biological concepts. Conservation, economic and management issues are also raised in numerous instances in which humans and fishes interact.

Field trips to local aquatic ecosystems provide experience in capturing, handling and identifying live, local fishes.

The lab focuses on fish identification and anatomy.

Learning Objectives
Students who successfully complete this course will be able to:

- explain the progression and major steps in fish evolution.
- describe and apply the classification system of fishes.
- apply basic physiological and ecological concepts to fishes.
- identify major fish groups and local native species, and describe their key characteristics.
- identify human impacts on fish populations, and the ecosystems in which they live.

4. **Is this a General Education Course** **YES** **NO**
   If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Life Sciences)	
C (Fine Arts, Literature, Languages & Cultures)	
D (Social Perspectives)	
E (Human Psychological and Physiological Perspectives)	

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*

1. Introduction to ichthyology to include basic tenets of zoological classification and phylogenetics.
2. Review of basic ecological and evolutionary principles.
3. Overview of fish biology, anatomy and physiology
4. Systematic survey of fishes, with diversions on more detailed discussions of fish biology, as appropriate.
5. Conservation and fishery management issues.

6. References. *[Provide 3 - 5 references on which this course is based and/or support it.]*

Fishes: Introduction of Ichthyology, 4th ed., by P. B. Moyle. 2000. Prentice Hall.
Inland Fishes of California, 2nd ed., by P. B. Moyle. 2002. University of California Press.
The Diversity of Fishes by Gene S. Helfman, Bruce B. Collette, Douglas E. Facey. 1997. Blackwell Science Inc.
Biology of Fishes, 2nd edition by Carl E. Bond. 1996. Brooks-Cole.
Fishes: A Field and Laboratory Manual on Their Structure, Identification and Natural History by Gregor Cailliet, Milton Love, Alfred Ebeling. 1996. Waveland Press.

7. List Faculty Qualified to Teach This Course.

Biology faculty

8. Frequency.

a. Projected semesters to be offered: Fall _____ Spring __x___ Summer _____

9. New Resources Required.

a. Computer (data processing), audio visual, broadcasting needs, other equipment
b. Library needs
c. Facility/space needs

Equipped Biology lab, with capacity to maintain a limited number of live fishes; Collection of representative preserved specimens; Field gear (nets, collecting jars).

10. Consultation.

Attach consultation sheet from all program areas, Library, and others (if necessary)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

Ching-Hua Wang _____5 Dec 03_____
Proposer of Course Date