

BIOL 481: ICHTHYOLOGY

Spring 2013

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Course Overview:

This course will cover most aspects of the biology of fishes encompassed within the range of species known. Fishes are the most numerous vertebrates and have long been of interest to man. The history of the study of fishes and their evolution will be dealt with first. This will be followed by a taxonomic survey of the different groups and the diversity represented by extant species. The details of anatomy, physiology, behavior, genetics, reproduction, and early development will be covered. The geographic distribution of fishes and their relationship with humans will complete the course.

Learning Outcomes:

- a basic knowledge of fish taxonomy
- the importance of fishes in vertebrate evolution
- pertinent details of fish anatomy, physiology, behavior, genetics, reproduction
- an appreciation of fishes in their environment and their relationship with humans

Course Prerequisites: BIOL 115 & 116 (or full year of introductory biology equivalent)

Course Website: BBLearn course site (accessed via <https://bblearn.uidaho.edu/>)

Lectures:

The lecture topics will follow the schedule outlined below. Information will be presented using a PowerPoint format although other media formats will be utilized (e.g., video) and all is fair game for examination purposes. Some material used in the lectures (e.g., diagrams, figures, graphs, etc.) is available on the course website. The recommended course texts, on reserve in the UI Library, are useful reference sources. Students are encouraged to ask questions about any course material they do not understand. There will be no lecture notes provided, therefore good in-class note taking is highly recommended.

Lecture examinations: Three (3) in-class examinations will take place during regularly scheduled lecture periods (i.e., 50 minutes duration) on the dates indicated in the

lecture schedule. These exams will be based solely on information provided in lecture. Each in-class examination will only cover information taken after the previous examination up to and including the lecture immediately beforehand (i.e., they are NOT cumulative). They will consist of short answer questions. A previous lecture exam has been placed on the course website to provide guidance on the format, type, and style of questions to be expected. **Note:** In the event that a student is unable to attend an in-class examination, because of a *legitimate* medical or personal reason, a make-up examination will be taken within one (1) week at a time agreed upon by the student and instructor.

Lecture Schedule:

Lectures will be held Monday, Wednesday, and Friday during the weeks (date beginning) indicated below from 9:30 -10:20am in JEB 328.

Week	Lecture Topic		
	Monday	Wednesday	Friday
January 9, 2013	-	Course Introduction	History of Ichthyology & fish taxonomy
January 14, 2013	Nomenclature & Classification	Evolution of fishes	Agnatha
January 21, 2013	NO CLASS	Chondrichthyes	Chondrichthyes
January 28, 2013	Sarcopterygii	Actinopterygii	Actinopterygii
February 4, 2013	Actinopterygii	Actinopterygii	Skeletal system
February 11, 2013	EXAM I	Muscular system	Locomotion
February 18, 2013	NO CLASS	Locomotion	Circulation
February 25 th , 2013	Respiration	Excretion & Osmoregulation	Buoyancy & Swim bladders
March 4 th , 2013	Nervous system	Sensory systems: Vision	Sensory systems: Mechano- and Electroreception
March 11 th , 2013	SPRING BREAK	SPRING BREAK	SPRING BREAK
March 18 th , 2013	Sensory systems: Chemoreception	Social behavior	Foraging
March 25 th , 2013	EXAM II	Digestion	Energetics & Metabolism
April 1 st , 2013	Growth	Genetics	Endocrine system
April 8 th , 2013	Reproductive physiology	Reproductive physiology	Reproductive strategies
April 15 th , 2013	Reproductive behavior	Early life history	Early life history (larval fish biology)
April 22 nd , 2013	Fish ontogeny	Fish speciation	EXAM III
April 29 th , 2013	Zoogeography	Fish & Humans	Review Session

Laboratories:

Each laboratory will follow an exercise described in the required *Laboratory Manual for Ichthyology* (available for purchase in the University of Idaho Campus Bookstore). The schedule of exercises is indicated below. Students will be responsible for providing a pen/pencil and notebook only. All other laboratory materials will be provided.

Maintaining a notebook with appropriate notes and sketches of materials studied will ensure success. Students who do not attend a laboratory are responsible for the material they miss; there will be no makeup labs. **Note:** It is departmental policy that lab fees will be refunded only to students who drop the course within the first two weeks of classes. A credit to your account will automatically be processed by Accounting Services.

Laboratory quizzes and reports: Based on the first six laboratory exercises a quiz (10 points) will be held the following week at the beginning of the scheduled laboratory period. For the purpose of this quiz students are responsible for all laboratory material from the previous week. The quiz will consist of 3-5 short answer questions. The portion of the course after Exercise 6 will consist of experiments or studies conducted both in/out of the laboratory period that will require written and/or oral reports. These reports in most instances will be due at the start of the next laboratory session (i.e., 1 week later).

Laboratory Schedule:

Laboratories (dates below) will be held in LIFE 341 on Tuesday or Thursday afternoons from 1:30-4:20 pm.

Week of	Laboratory topic	Assignment Due
January 14, 2013	Introduction to the laboratory; Ex. 1: External anatomy	
January 21, 2013	Ex. 2: Meristics, morphometrics, and aging techniques	
January 28, 2013	Ex. 3: Osteology and feeding mechanisms	
February 4, 2013	Ex. 4: Internal anatomy	
February 11, 2013	Ex. 5: Fishes of Idaho	
February 18, 2013	Ex. 6: Fish diversity	
February 25 th , 2013	Ex. 7: Fish identification	
March 4 th , 2013	Ex. 8: Shoaling behavior in fishes	
March 11 th , 2013	SPRING BREAK	
March 18 th , 2013	Ex. 9: Osmoregulation	Ex. 8 paper due
March 25 th , 2013	Ex. 10: Sperm density and fertilization	Ex. 9 paper due
April 1 st , 2013	Ex. 11: Paradise Creek field study	
April 8 th , 2013	Ex. 7 class presentations	
April 15 th , 2013	Ex. 10 cont'd	
April 22 nd , 2013	Ex. 11 cont'd	Ex. 10 paper due
April 29 th , 2013	Ex. 11 class presentations	written report due

Final examination:

The final examination will be two hours in duration and held on Monday, May 6 from 10:00am-12:00pm in JEB 328, as per the final exam schedule. This exam will be comprehensive and based on information drawn from all the lecture material. The final examination format will consist of both short answer and essay questions. A previous final exam has been placed on the course website to provide guidance on the format, type, and style of questions to be expected.

Grading Scheme:

The final numerical grade in this course will be determined as follows:

Lecture examination I	45 points
Lecture examination II	45 points
Lecture examination III	45 points
Laboratory quizzes	60 points (#1-6 = 10 points each)
Laboratory exercises	105 points (#7 = 20, #8 = 10, #9 = 20, #10 = 25, #11 = 30 points)
Final examination	100 points
Attendance	10 points (extra credit)
<u>In-class quizzes</u>	<u>15 points (extra credit)</u>
Total possible	425 points (Grade based on 400)

Letter grades will be assigned as follows, based on the final numerical grade:

- A = 360-400 points
- B = 320-359 points
- C = 280-319 points
- D = 240-279 points
- F = 239 points or less

List of required and recommended course books:

Required materials:

- Laboratory Manual for Ichthyology (available for purchase in the Campus Bookstore, \$8.75)
- TurningPoint clicker (available for purchase in the Campus Bookstore, \$39 used or \$52 new)

Recommended textbooks: (both on 1-day loan from reserve desk in UI library)

- Barton, M. (2007) Bond's Biology of Fishes. 3rd Edition, Thomson Higher Education Belmont, CA.
- Moyle, P.B. and J.J. Cech, Jr. (2004) Fishes. An Introduction to Ichthyology. 5th Edition, Prentice Hall, New York, NY. (Note: this book is on sale in the bookstore).

Disability Support Service:

Reasonable accommodations are available for students who have a documented disability. Please notify the course instructor during the first week of class of any accommodation(s) needed for the course. Late notification may mean that requested accommodations might not be available. All accommodations must be approved through *Disability Support Services* located in the Idaho Commons Building, Rm. 333.

Academic Dishonesty:

Any evidence of academic dishonesty (cheating on exams, plagiarism, etc.) will result in dismissal from the course.

University of Idaho Classroom Learning Civility Clause:

In any environment in which people gather to learn, it is essential that all members feel as free and safe as possible in their participation. To this end, it is expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning.

Should you feel our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with your instructor to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff (5-6757), the UI Counseling & Testing Center's confidential services (5-6716), or the UI Office of Human Rights, Access, & Inclusion (5-4285).