

Ichthyology (Bio 162): Course Information

Fall 2016

Instructor:

Dr. Ron Coleman Office: 119 Humboldt
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Course Location & Times:

Lec: #86581 Mon, Wed 1:00 to 1:50 pm Room 124 HMB
Lab: #86596 Mon 2:00 to 4:50pm Room 124 HMB

Each student must attend both the lecture and laboratory portions of the course.

Office hours:

Ron Coleman Wed 2:00 - 5:00pm Room 119 Hmb

Catalog description:

BIO 162. Ichthyology: The Study of Fishes. Biology of fishes: structure, physiology, ecology, economic importance, propagation and classification. Methods of identification, life history study, propagation, collection and preservation. Lecture two hours; laboratory three hours. Field trips may be required. Fee course. Prerequisite: BIO 1 and BIO 2. Graded: Graded Student. Units: 3.0

What this course is about:

This course is about the amazing world of fishes. Fishes are the most diverse and most abundant vertebrates on this planet with over 32,800 species; that is more than all other vertebrates combined. The purpose of this course is to introduce you to this incredible biodiversity with an aim to understanding how fishes evolved and how they exist in the modern world. The focus will be on topics like ecology, evolution and behavior, with some discussion of anatomy and physiology.

Learning Objectives:

Conceptual

- Appreciate the diversity of fishes, the largest group of vertebrates
- Develop a basic understanding of the phylogeny of fishes
- Appreciate modern approaches to phylogeny (i.e., cladistics) and the difference between phylogeny and taxonomy
- Develop an appreciation of the relationship between form and function

Practical

- Research and compose a well thought-out term paper on a topic related to ichthyology, making use of the primary literature
- Be able to construct and analyze simple cladograms
- Learn to use a scientific key efficiently and effectively
- Build an appreciation for the use and construction of scientific nomenclature
- Gain practical experience working with museum specimens
- Understand the skeletal and soft anatomy of fishes
- Experience key techniques used by practicing ichthyologists
- Become proficient with the various field guides for identifying fishes
- Identify a core group of fishes (both local and from around the world)

Attendance and Deadlines:

I expect you to attend every lecture and lab; you miss class at your own risk. Anything I say is fair game for exams, whether it is in the text or not. Some things I say will definitely not be in the text, and some may contradict the text. In the latter case, what I say is taken to be the correct answer. If there is a difference between what I say and what is in the text or what you have learned elsewhere, **please ask about** it in lecture or after class and we will discuss the differences.

My goal as a lecturer is to guide and assist you in learning about this material. I cannot do that if you are not in class or if you do not tell me what you do not understand.

If you miss a class, it is your responsibility to get the notes from another student, not from me. I DO NOT hand out lecture notes, nor do I post them to the web.

Deadlines are strictly adhered to. It is not fair to students that complete work on time for other students to have extra time to do the same work. Plan ahead and schedule your time. Most importantly, do not leave things to the last minute; you do not need that kind of stress!

Bottom line: You cannot turn in assignments "late". Late assignments are worth 0 (zero, nada, nothing, zippo...) and late means 1 minute late. So, an assignment turned in 1 minute late is worth 0.

Email policy:

As a Sac State student, you are responsible for regularly checking your Saclink email account (i.e., at least daily). Failing to do an assignment because you did not check your Saclink email account is your problem. Furthermore, when corresponding with me about this course, you **MUST** use your Saclink email account, not a gmail, yahoo or any other email account. This is an official University policy (IRT-0102, January 1, 2010).

Textbook:

Helfman, G.S., Collette, B.B., Facey, D.E. and B.W. Bowen. 2009. *The Diversity of Fishes*. Biology, Evolution and Ecology. Second Edition. Wiley-Blackwell, New Jersey. ISBN: 978-1-4051-2494-2 **REQUIRED**. (You need the second edition, the first edition is not appropriate)

Exams:

There will be one midterm and a final for the lecture portion of the course. There will be a midterm and a final in the lab, both held during lab time. The midterm will be held during the lecture period and will be a mixture of fill-in the blank, short-answer and essay questions. I do not believe in multiple choice questions and do not use them.

Exams will be comprehensive, i.e., anything in the whole course up to that point in time is fair game. My previous students comment on two aspects of my exams: I am a hard grader and I am a fair grader. You can expect long exams that test your knowledge, but they will be exams without tricks. My goal is to have you tell me what you know and understand. You will have to work very quickly.

Grading:

This course is worth 3 units.

The number of points/questions on a particular exam is irrelevant to the exam's worth -- it is merely a tool for grading. What matters are the following percentages.

Your lecture grade will be calculated according to the following scheme:

Midterm	35
Final Exam	45
Term Paper	20

	100%

Your lab grade will be calculated according to the following scheme:

Midterm	20
Final	20
Labs (including "Jars")	60

	100%

NOTE: You must retain in some orderly fashion all assignments and graded materials until after the end of the semester (i.e., January). You may be asked to produce these at the end of the semester. Failure to produce an assignment will result in a grade of 0 for that assignment.

Your course grade will be a combination of your lecture and lab grades as follows:

Lecture	2/3	Lab	1/3
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Your letter grade will be calculated according to the following table:

A = 93 to 100%	C+ = 77 to 79.9%
A- = 90 to 92.9%	C = 73 to 76.9%
B+ = 87 to 89.9%	C- = 70 to 72.9%
B = 84 to 86.9%	D+ = 67 to 69.9%
B- = 80 to 83.9%	D = 60 to 66.9%
	F = 0 to 59.9%

I generally do not adjust or curve or scale grades; If you want an "A", work for it and make it happen!

I do not hesitate to correct any errors I make in grading (e.g., incorrect addition or if I missed grading an answer), but keep in mind that I am looking for clear, succinct answers, not answers that sort-of-show-you-possibly-might-know-what-you-mean. If you feel that your answer deserves a better grade, please return it to me promptly.

There are no "extra credit" assignments.

It is your responsibility to be aware of and understand University policies about drop dates, etc. For example, if you simply stop coming to class, you will be assigned an "F" for the course and you will not be allowed to "drop" the course after the drop deadline.

Honor Code:

Do not cheat. Besides the fact that we will be forced to take strong measures if we catch you -- including recommending your dismissal from the class and from the university -- I will be profoundly disappointed in you. Most importantly, **cheating indicates that you are a failure as a human being.**

Do not even think about doing any of the following:

- giving or receiving information from another student during an examination
- using unauthorized sources for answers during an exam such as writing answers on hats, clothing or limbs
- illegally obtaining the questions before an exam
- altering the answers on an already-graded exam
- any and all forms of plagiarism
- destruction and/or confiscation of school and/or personal property

Feedback:

I appreciate your feedback on this course. It is most useful to tell me things while the course is in progress, rather than waiting until the end of the course. If there is something that needs changing, LET ME KNOW and I will see what I can do about it. This course is a collaboration between you and me. I really enjoy teaching this class and I want you to have a great time as well.

Tentative list of lecture and lab topics. The list is subject to change.

Week	Mon	Wed
1	Aug 29: Intro to class Lab: Intro to keying, Basic Excel	Aug 31: Diversity of Fishes, History of Ich
2	Sept 5: Labor Day – no class	Sept 7: Term Paper, Literature
3	Sept 12: Diversity, Evolution of Diversity Lab: Key CA fish, Graphing, start bones	Sept 14: Natural selection
4	Sept 19: Directions of selection Lab: jars	Sept 21: Directions of selection ***Term paper proposal due, 1pm
5	Sept 26: Sexual selection Lab: boiling fish heads	Sept 28: Species definition
6	Oct 3: allopatric speciation Lab: fish head	Oct 5: sympatric speciation, isolating mechanisms
7	Oct 10: fish skull conceptually Lab: finish up lab stuff	Oct 12: rest of the skeleton
8	Oct 17: bone vs cartilage Lab Midterm	Oct 19: review
9	Oct 24: Lecture Midterm Lab: Video – Coelacanth	Oct 26: Actinopterygii part I ***Term paper PART 1 due, 1pm
10	Oct 31: Actinopterygii: part II Lab: weighing and measuring, regression	Nov 2: Actinopterygii part II
11	Nov 7: Actinopterygii part IV Lab: video (Sharks – Air jaws) , representative fishes, dissection	Nov 9: Actinopterygii part V
12	Nov 14: muscles, electricity, hearts Lab: video (swordfishes), Scientific terminology, posters, representative fishes	Nov 16: muscles, gas bladders
13	Nov 21: buoyancy, osmoregulation, thermoregulation, freezing Lab: posters, representative fishes ***Term paper due, 1pm	Nov 23: diadromy, locomotion
14	Nov 28: senses Lab: representative fishes	Nov 30: senses
15	Dec 5: Biogeography Lab Final	Dec 7: tba
16	Dec 12: 12:45-2:45pm FINAL EXAM	

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