BIOL 485/585: Ichthyology
Fall 2010
Course Syllabus

Dr. Paul E. Brunkow

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Blackboard website will be made available

Teaching Assistant: Mike Rhaesa (nominally)

Office Hours: Probably None

Required Materials for Course:

Helfman, Colette, and Facey. *The Diversity of Fishes*. 2nd Edition (textbook services)
Pflieger, W.L. *The Fishes of Missouri*, revised edition (bookstore or order online)
Dissecting Kit (bookstore or you might have already)
Lab notebook (with perforated pages)

Recommended Materials for Course and Field Trips:

Page, L.M., and B.M. Burr. *Freshwater Fishes.* (availability announced in class).
Magnifying glass, trashy shoes (other items for field trips will be announced)

Grading:

Your grade in this course will be determined by a straight curve based on a percentage of points earned from a fixed number of points. There will be 805 points possible in the course: three lecture midterms (80 points each), one pseudo-cumulative lecture final (125 points), two laboratory practicals (80 pts.a nd 125 pts.), two lecture write-ups (80 pts. each), and two laboratory exercises (25 pts. and 50 pts.). Graduate students enrolled for BIOL 585 credit will have an additional presentation/paper at 100 points for a total of 905 points possible. Initially, a fixed curve will be used to calculate your grade (90 - 100% = A, 80 - 89% = B, etc.); grades will be curved in your favor if necessary but will not be curved against you (i.e., if you get 84% of the points, you'll get at least a B). There will not be any extra credit opportunities in the course. Improvement in grades throughout the semester and course participation will be considered in calculating final grades. A grade of "Incomplete" will not be assigned except under unusual circumstances.

Due Dates:

Assignments are due on the date specified during class (you will have plenty of time). Writing projects can be turned in late if this is arranged with me prior to the due date, and such assignments will be subject to a loss of a certain number of points per day late (to be determined when the assignment is given). Make-up lecture exams and laboratory practicals will not be given unless arranged with me at least one week prior to the test date; I reserve the right not to

allow a make-up exam except under pressing circumstances (e.g., I will not consider going to the next Rams game or vacationing in the Bahamas to be "pressing;" forgetting the previous Rams game might be considered pressing).

Attendance/Participation:

Attendance in lecture is not absolutely required, but strongly advised. You will be responsible for everything discussed in lecture regardless of its nature (e.g., information not present in any readings, material on handouts, changes in test dates, etc.). Attendance in lab is required; missing more than two labs will jeopardize your future in the course.

There will be five consecutive Saturday field trips scheduled, beginning September 4th. These will be half-day field trips to sites in Missouri (and possibly Illinois) during which you will learn field collection techniques and obtain materials for identification in lab. *You must attend at least three of the five field trips*. Failure to attend at least three field trips will result in you being withdrawn from the course. The objectives of the field trips will require cooperation by all present to accomplish; participation in all aspects of field work will be expected and duly noted. Additional information about field trips will be provided at appropriate times. One of these field trips will have an option of staying overnight at Reis Biological Station on the Friday night before collecting (September 24th-25th).

Grading Philosophy

I typically operate under a fairly simple grading rule: Your grade is your business. I do not *give* you a grade; rather, you *earn* a particular grade. I consider myself to be a very fair test-writer and grader. If you perform below your expectations on a particular exam, practical, or writing assignment, I will not entertain the notion that this is somehow my fault. *However*, that being said, I am fully cognizant that I *am* human and that I *can* make logistical and/or judgement errors in grading. I am very willing to address any such errors as long as they are brought to my attention in a timely fashion. I am also interested in having all students perform as well as they can in this class (fish are neat beasties, after all!). I encourage you to ask questions during lecture and lab exercises, make appointments to see me and ask questions, use e-mail to contact me and ask questions, and work together with your colleagues in this class as much as you can.

Course Objectives:

Ι - Increase your familiarity with evolutionary history and taxonomic diversity of fishes

Χ - Improve your understanding of the basic physiological and behavioral adaptations that fishes use to carry out their life cycle

Θ - Enhance your skills at collecting and identifying local fish species

ϒ - Expose you to some of the issues surrounding the conservation of fish biodiversity in the environment

Σ - Introduce you to some of the quantitative techniques used in describing fish biology, and reinforce concepts of experimental design and hypothesis testing.

BIOL 485/585: Ichthyology Fall 2010 Lecture Schedule

Note: This is a tentative schedule and is subject to change throughout the course of the semester. Such changes will be announced in class. You should assume that each lecture will have supplemental material (in the form of slides posted on Blackboard or handouts) to complement information presented in class. Readings are from Helfman, et al., 2nd edition; readings are limited by major sub-headings on indicated pages.

Date	Topic	Readings from Text
08/24	Introduction / Systematics	Ch 1, Ch 2
08/26	Evolution of Fishes	Lecture, Ch 11 (pp. 169-174)
08/31	Evolution of Fishes/Jawless Fishes	Ch 11 (pp. 169-174)
09/02	Jawless Fishes/Orig. of Jaws	Ch 13 (pp. 231-241), Lec., Ch 11 (pp. 175-185)
09/07	Primitive Jawed Fishes	Ch 11 (pp. 175-185), Ch 13 (pp. 241-248)
09/09	Chondrichthyes/Teleostei	Ch 12 (pp. 205-212, 220-222, 227-228), Ch 13 (pp. 248-258), Ch 14
09/14	Teleostei	Ch 14, Ch 15 (kind of...)
09/16	**Lecture Exam #1 (80 points)**	**********
09/21	Euteleost Jaws/Fish Feeding	Ch 3 (pp. 28-31, Box 3.1), Ch 8 (pp. 119-126)
09/23	Fish Feeding/Growth and Allometry	Ch 8 (pp. 119-126), Ch 10 (pp. 157-161)
09/28	Dissolved Gas Regulation	Ch 5 (pp. 57-66)
09/30	Buoyancy	Ch 5 (pp. 68-70, 50-52)
10/05	Osmoregulation	Ch 7 (pp. 100-105)
10/07	Zoogeography	Ch 16
10/12	Zoogeography	Ch 16
10/14	**Lecture Exam #2 (80 points)**	**********
10/19	Ecology - Fish Communities	Ch 24 (background), Ch 25
10/21	Ecology - Fishes in Ecosystems	Ch 25, Lecture, Box 15.2
10/26	Evolutionary Ecology - Sticklebacks and Sunfishes	Readings
10/28	Reproduction	Ch 21, pp. 52.54
11/02	Reproduction	Ch 21
11/04	Social Behavior	Ch 22
11/09	Social Behavior	Ch 22
11/11	**Lecture Exam #3 (80 points)**	**********
11/16	Sensory Physiology	Ch 6
11/18	Sensory Physiology	Ch 6
11/30	Conservation / Grand Canyon Story	Ch 26
12/02	Conservation	Ch 26
12/07	Graduate presentations	
12/09	Graduate presentations	

Final Exam: Wednesday, December 15, 8:00 - 9:40 am (125 points)

BIOL 485/585: Ichthyology Fall 2010 Laboratory Schedule

And if you thought the lecture schedule was tentative.....

Date	Topic
08/26	No Lab
09/02	Grouping Exercise (25 pts.)
09/09	Family Characteristics / Dissections
09/16	Family Characteristics / Dissections
09/23	Electroshocking Cougar Lake - meet at boat dock / Family characteristics
09/30	Family Characteristics / Dissections
10/07	**Family Identification / Dissection Practical (100 points)** / ID local fish
10/14	ID local fish
10/21	ID local fish
10/28	ID local fish
11/04	ID local fish
11/11	**Local Fish Practical (100 points)**
11/18	Morphometrics I
12/02	Morphometrics II (50 pts.)
12/09	Gyotaku / Course Shirts