



**Fisheries Techniques (3 credit hours)
Aquaculture/Fisheries (AQFI) 2247/2147
University of Arkansas Pine Bluff
Fall semester, 2008**



Instructor: Dr. Michael A. Eggleton
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Class Times: Lecture: Monday/Wednesday 8:00-8:50am in Woodard Hall, Rm 257
Laboratory: Thursday 2:00-3:50 pm in APSB (Holiday Hall), Rm. 105C
Other locations for labs announced as needed.
Turn off cell phones and pagers during *all* class activities (indoor and outdoor).

Office hours: 9:00am - 11:30am, Monday and Wednesday.
Other hours by appointment. Feel free to email or call me anytime. If I am unavailable, I will return your call provided you let me know when/where you can be reached.

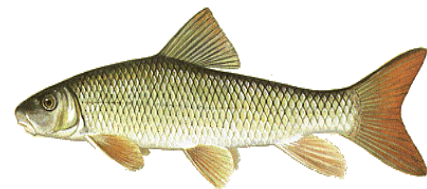
Prerequisite: None

Required Text: Murphy, B. R., and D. W. Willis, editors. 1996. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland. (These are in-stock in the University Bookstore)

Note: This textbook is not new, but is by far the best textbook for this class. American Fisheries Society updates this text about every 10 years (first two editions: 1983 and 1996). The 3rd edition is due out sometime in the next 2-3 years – we will switch to that edition when it becomes available.

You must provide a working email address that you check regularly. Announcements and other basic information about this course will be distributed by this manner. In addition, I routinely send out information on jobs, scholarships, and internships to the undergraduate list. So, if you are not checking your email or do not have email, you will be missing out on plenty.

Disclaimer: This course contains several field trips that will take place in and around deep water. If you are unable to swim, you are highly encouraged to complete a swimming class before taking this class. If not, be sure to identify yourself before we go to the field so that accommodations can be made.



1) COURSE OVERVIEW

Course Objectives:

This course is designed for sophomore and junior students who are Fisheries Biology majors in the AQFI Department. Students should have a genuine interest in fisheries, wildlife conservation, and natural resource issues, and be interested in professional careers in aquaculture and fisheries.

The primary objective of this course is to expose students to standard methods and techniques used by professional fisheries biologists in the southern United States. Specifically, these will include learning 1) basic fish collection techniques, 2) standard field and laboratory methods used in the analysis of fish and fisheries data, 3) basic techniques for data analysis, 4) basic interpretation of data, and 5) use and maintenance of field and laboratory equipment. In addition, students will gain experience in summarizing collected data and associated results into a series of laboratory reports, which will be written in the standard scientific format. Secondary objectives include exploring relationships between aquaculture and fisheries, exposure to methods/techniques used for fisheries not found in Arkansas, and discussion of natural resource and fisheries policy issues in general.

When you complete this course, you should be able to:

- 1) Design a legitimate sampling program appropriate for a fishery survey.
- 2) Sample wild fish populations and communities using at least five (5) different methods.
- 3) Become familiar with the use of boats.
- 4) Complete a standard laboratory work-up of fish specimens collected in the field.
- 5) Be able to extract fish aging structures and perform age and growth analysis.
- 6) Use basic water quality field meters and be able to quantify in-stream and riparian habitat.
- 7) Use Excel program to examine and analyze field data and compute basic fisheries statistics.
- 8) Interpret basic fish population and/or community data and various fisheries statistics.
- 9) Write a professional laboratory report that includes text, tables, graphs, and references.

Course Content:

This course is designed to be a basic introduction to the field and laboratory techniques used in the collection and interpretation of fisheries data. This course is a primer for Fisheries Management (AQFI 3371) that will be offered during spring semester.

Field trips to local streams, rivers, and lakes will provide hands-on experience with various sampling gears in addition to the use of field trucks, boats, and boat trailers. Many of these field trips will be scheduled during lab periods. However, at least two full-day field trips will be scheduled on Saturdays during the semester. One weekend long trip also is possible. Non-field laboratories will provide opportunities to analyze and interpret fisheries data collected during field trips. Full participation in field trips is required for the successful completion of this course.



Recommended Personal Gear for Field Labs:

Students are recommended to wear **appropriate field attire** for all labs scheduled for the field (marked 'F' in the outline). You will likely get wet, dirty, and/or sweaty during most field labs. Some indoor labs may also get messy, so dress appropriately.

A pair of **chest-wader boots** are recommended for protection from the elements during field labs. We have several pairs available, but there's no guarantee of the right foot size. If your personal comfort is important, you should have a pair of waders ready by the second week of class. If you don't mind getting wet, you can wear swimming trunks and old shoes for wading (but bring a towel to keep field vehicles clean). Sandals of

any type are not recommended - muddy stream and lake bottoms make them impractical. **Rain Suit** - depending on the weather - use your own judgment. **NEVER ASSUME** lab is cancelled because of weather. In these instances, I will arrange another activity. A **pocket knife** or Leatherman tool also are helpful for many field situations.

Other Recommended Supplies:

Calculator and some form of transportable media (e.g., thumb drives or diskettes) will be needed for class and labs. You will be accumulating datasets and other files during the semester – please keep them organized. Name files appropriately - e.g., ‘lab4_efishing_data.xls’ and put titles, headers, and/or tab labels in each file. This will help you stay organized. Do not use filenames like ‘fish.xls’ or ‘techniques.xls’ which could mean anything - you won’t remember what these are in a month.

Undergraduate Portfolio Project (SAFHS 5 and 10):

Students will do a biological and environmental assessment of a representative stream or lake (these will comprise the Saturday field labs). Students will sample and characterize fish communities, assess and quantify the physical habitat of the system, and examine relationships between the two. The results will be presented in a comprehensive laboratory report and be included in the student’s undergraduate portfolio during Senior Seminar class (AQFI 4201). The study area selected will be dictated by logistical considerations. The portfolio project will count as one of the three (3) required lab reports during the semester.

2) COURSE GRADING

Grades are earned separately for the lecture (AQFI 2247) and laboratory (AQFI 2147) sections.

Composition of Total Grade:

%Total grade

AQFI 2247 (lecture)

Exam I (100 points)	14
Exam II (100 points)	14
Final exam (150 points)	21
Short quizzes (6 total - 20 points each – 120 total)	18
Homework assignments (4 total – 50 points each)	29
Class participation (30 points)	4
Total (700 points)	100%



A = 630 points, B = 560 points, C = 490 points, D = 420 points, F=>420 points

AQFI 2147 (laboratory)

Report I (100 points)	29
Report II (100 points)	29
Report III (Portfolio project – 100 points)	29
Lab participation (50 points)	13
Total (350 points)	100%



A = 315 points, B = 280 points, C = 245 points, D = 210 points, F=>210 points

Grade Assignment:

Final grades for lecture and lab will be based on the total points accumulated from all exercises. Grades will be assigned according to the following schedule:

A = 90.0-100%
B = 80.0-89.9%
C = 70.0-79.9%
D = 60.0-69.9%
F = 0-59.9%



Exams:

As listed above, there will be two (2) 100-point exams during the semester and a 150-point final exam. The final exam will cover the third section of the course (equal to 100 points), and a comprehensive summary (equal to 50 points). These exams will be comprised of multiple-choice, matching, true/false, short essay, and/or problem-solving questions (for example, an exam may have all of these types of questions or only 2-3). Exams will cover all information presented in class lectures, required readings, and laboratory exercises.

Make-up exams will not generally be given. If an exam is missed without a valid excuse, you will receive a zero on that exam. Make-up exams will be considered only under extreme circumstances (e.g., death in the immediate family, student illness, athletics, program commitment), provided appropriate documentation can be provided to support such. The final decision lies with the instructor. Every effort should be made to take exams at their properly scheduled times. If an exam must be missed, the student should notify the instructor or department secretary (Delila) *prior* to the scheduled exam. If the instructor decides a make-up exam is warranted, it will be different from and harder than regularly scheduled exams, and will be scheduled at the convenience of the instructor (this may mean evenings or even weekends).

Quizzes:

Quizzes will be announced and based on required course readings and materials covered in lectures since the previous quiz. As many as six (6) quizzes will be given - roughly two (2) quizzes during each third of the semester. Each quiz will be worth 20 points and take only part of a class period - usually the first 15 or 20 minutes of class. Thus, class tardiness will hurt you on quizzes. Make-up quizzes will not be given in any circumstances. If a quiz is missed without a valid excuse, it will be scored as a zero. If a quiz is missed with a valid excuse, your other quizzes will count for more of your grade. However, you can do this only once - additional missed quizzes will be scored as zeros.

Laboratory Reports:

The student can expect a range of laboratory assignments during the semester. Some assignments will require the use of computer programs such as spreadsheets, databases, and graphics software. Three (3) laboratory reports will be required - each individual report will be worth 100 points. Each lab report will cover one or more individual lab periods and will be due on the date/time specified by the instructor. Lab reports will be penalized a letter grade (10%) per day late; reports over one week late will not be accepted. Students are encouraged to work together on lab reports, but the report you submit must be your own work. Directions on how to complete lab reports are contained in the handout entitled "*Format for Laboratory Reports*", which will be given out in our first laboratory session. Follow this report format on all reports.

Tentative content of lab reports (subject to change):

Report #1: Active and passive fish sampling methods (draft)

Report #2: Active and passive fish sampling methods (revised)

Report #3: Undergraduate portfolio project (described above)

Assignments:

The student also will receive several homework assignments that cover material from class. Individual assignments will usually be worth 50 points each. Specific instructions will be given for each assignment and they will due on the date/time specified by the instructor. Assignments will be penalized a letter grade (10%) per day late; assignments over one week late will not be accepted.

Class participation:

Active participation in class activities is expected at all times. This includes showing up on-time for lectures and labs. **Lack of punctuality is a measure of respect for your instructor and classmates.** Many of our lab activities will be across campus or sometimes off-campus and our time is limited. We may also be coordinating our activities with other people or groups, who cannot be kept waiting. Thus, the group will not wait nor will lab activities be delayed for a student who is late. Consistent tardiness by students in lectures and labs will be reflected in their class and lab participation grade. Typically, our field labs meet at the boat barn/fish shop area – you should be there and ready to work (or exit) by five minutes past the time of the lab.

Extra credit opportunities:

From time to time during the semester, extra credit opportunities will be offered. I will submit a question by email to the whole class. The first student who returns the correct answer(s) will earn extra credit points. So, check your email frequently.

Cheating policy:

***** Any form of cheating will be handled in the appropriate manner according to university policy. A zero on the assignment is the minimum repercussion. Cheating will result in a zero on the assignment at a minimum and possibly worse. Reminder - information copied directly from the Internet and presented as original work is cheating.**

Test/quiz rules: Book bags in the floor; no jackets, hats, sunglasses, laptop computers, or cell phones allowed out.

Lab report rules: You can work together but write them alone. It is very obvious when a student copies another's work and then rephrases or rewords small parts of it. Ditto for copying materials off of the Internet. I can easily use Google to locate Internet materials that have been copied verbatim.

UAPB and SAFHS Class Attendance Policy

The University requires regular class attendance of all students. While attendance and tardiness are primarily a student-teacher relationship, the University has a concern in the proper fulfillment of such obligations by the student.

1. At the beginning of each class period, the instructor will take the roll and note attendance or non-attendance in the roll book. Each course syllabus will carry a stipulation regarding tardiness and absences.

2. When a student accumulates as many unexcused absences as the number of credit hours represented by the course, the teacher will notify the student and document the notification.
3. An absence is excused when a student is absent from class due to participating in programs, activities, etc. that are sponsored by the University and verified by the sponsor, or such as death in the immediate family, a judicial case, or serious illness, etc. These absences will be excused only when the student presents official documentation of the situation to the teacher. All other absences are unexcused.
4. When a student misses classes in excess of the number outlined in item 2 above, whether due to negligence or some other reason, the instructor will warn the student that additional absences may result in failure to pass the course.
5. Each instructor is free to establish their own penalties for lack of class attendance.

Fisheries Techniques policies

Class and laboratory attendance is mandatory. This is a small class, so absences and tardiness are easily noticed. Attendance will be taken for each class and lab session. This is required by the University and reported periodically for financial aid qualification. Thus, excessive class absences may result in you losing your financial aid. Each student is responsible for all material presented in missed lectures and labs, and assignments made therein. If you miss a scheduled field lab with a valid excuse, you will have access to the data collected by your classmates for completion of the associated lab report or assignment. However, if your missing the field lab constitutes an unexcused absence (defined above for make-up exams), you will be penalized one letter grade for that lab report.

Pursuant with UAPB policy for a 3-credit course, if a student has four (4) unexcused absences, the instructor will call a meeting with the student to make him/her aware of the situation. A student with five (5) unexcused absences will incur a letter-grade penalty at the end of the course. A student with six (6) unexcused absences will incur a 2-letter grade deduction, and so forth for additional unexcused absences. In the case of excessive absences, the instructor will likely recommend that the student withdraw from the class and enroll again next year.

******Remember—all absences are unexcused until the student provides appropriate documentation. The instructor is not responsible for locating the student after missing class and informing him/her of missed material or assignments or seeking an excuse for the absence. This is your responsibility.***

Students with disabilities:

It is the policy of UAPB to accommodate students with disabilities, pursuant to federal law, state law, and the University's commitment to equal educational opportunities. Any student with a disability who needs accommodation, for example in seating placement or in arrangements for examinations, should inform the instructor at the beginning of the course. The chair of the department offering this course is also available to assist with accommodations. Students with disabilities are also encouraged to contact Mr. Ray Watley, Office of Veteran Affairs and Disability Services located in Caldwell Hall, Suite 205, Phone (870) 575-8293.

3) INSTRUCTIONAL APPROACH

Teaching strategy:

Fisheries techniques is a very hands-on course, and the formula for this course is fairly traditional. Basic information will be presented during lectures. Live demonstrations and hands-on experience will occur

during laboratory periods. Exams and quizzes will serve to validate learning. Laboratory reports will train the student to collect, interpret, and synthesize information and elucidate key results. Reports will be required to meet professional standards for format, style, consistency, and quality.

Teaching model:

I will be using a cognitive approach to teaching and work mostly at the knowledge level during the semester. I will use the “information processing approach” to develop a knowledge base, meaning that we will use a variety of exercises and techniques to move information from sensory memory to long-term memory. Following knowledge base development, I will emphasize: 1) Inquiry training and inductive thinking, which focuses on concept formation, interpretation of data, and formation of principles and theories; and 2) Concept attainment, which focuses on categorizing, concept formation, and concept attainment.

Instructional resources:

I will use predominately Powerpoint presentations for delivering lectures – I typically do not make these available to students, though I will occasionally for certain topics. Excel will be used for all of our computational homework assignments, which is available in the departmental computer lab. We will use some additional internet resources, but much of the course material is not well-delivered from pictures, pamphlets, or internet websites. The hands-on laboratories and subsequent data analysis / interpretation represent exercises in experiential learning and are critical for translating the information presented in lectures into first-hand experience.

Bibliography:

Some materials from other references will be used on a limited basis. As before, these texts are not all brand new, but are the most relevant references for our subject.

Bain, M.B. & N.J. Stephenson. 1999. Aquatic habitat assessment: common methods. American Fisheries Society, Bethesda, MD.

Guy, C.S. and M.L. Brown. 2007. Analysis and interpretation of freshwater fisheries data. American Fisheries Society, Bethesda, Maryland.

Hauer, F.R. & G.A. Lamberti. 1996. Methods in stream ecology. Academic Press, New York.

Kohler, C.C. & W.A. Hubert. 1999. Inland fisheries management in North America, 2nd edition. American Fisheries Society, Bethesda, Maryland. 718 pp.

Phillipp, D.P. & M.S. Ridgeway. 2002. Black bass: ecology, conservation and management. American Fisheries Society Special Symposium 16. American Fisheries Society, Bethesda, Maryland. 724 pp.

Schreck, C.B. & P.B. Moyle. 1990. Methods in fish biology. American Fisheries Society, Bethesda, Maryland. 684 pp.

Summerfelt, R.C. and G.E. Hall. 1987. Age and growth of fish. Iowa State University Press, Ames, Iowa. 544 pp.

4) COURSE OUTLINE (Fall 2008)

Tentative Course Outline/Schedule:

My goal is cover all of the material included in this outline, but I reserve the right to make changes and reschedule activities as needed. This is necessary as many of our lab activities are dependent on the weather

and other logistical considerations beyond my control. Some labs are indoors and others outdoors – they are denoted as F = field and L = laboratory.

Week	Date	Lecture (M-W)	Lab (TH)	Chapt
1	Aug 25			
	Aug 27		Class introduction – Syllabus review; Overview of labs, Review of lab report outline (L)	
2	Sep 1	Labor Day – No class		
	Sep 3	Planning for sampling	Fisheries basics – boat handling, trailer backing, etc. (F)	1
3	Sep 8	Care and handling of fishes		5
	Sep 10	Basic statistical concepts, sampling design	Basic use of spreadsheets, graphics, and tables (L)	2
4	Sep 15	Quantifying aquatic habitats		4
	Sep 17	Quantifying aquatic habitats (ctd.)	Quantifying aquatic habitats (ctd.) (L)	4
	Sep 20	Portfolio project field laboratory – Part I	All-day field sampling and data collection – quantifying habitat (F)	
5	Sep 22	Passive fish sampling		6
	Sep 24	Passive fish sampling	Trap/fyke nets, gill nets (F)	6
6	Sep 29	Active fish sampling		7
	Oct 1	Active fish sampling	Seining, barge electrofishing (F)	7
7	Oct 6	EXAM I		
	Oct 8	Exam return	Data analysis from previous labs (L)	
8	Oct 13	Electrofishing		8
	Oct 15	Electrofishing	Boat-mounted electrofishing (F)	8
9	Oct 20	Sampling with toxicants		10
	Oct 22	Length, weight, and associated indices for fishes	Length, weight, and associated indices for fishes (ctd.)	15

10	Oct 27	Ecological assessment of aquatic communities		Other
	Oct 29	Ecological assessment of aquatic communities	Ecological assessment of fish community data (L)	Other
	Nov 1	Portfolio project field laboratory (all day)	All-day field sampling and data collection – fish	
11	Nov 3	EXAM II		
	Nov 5	Fish age and growth	Fish age and growth (L)	16
12	Nov 10	Fish age and growth (ctd.)		16
	Nov 12	Fish marking and tagging	Trawling (F)	12
13	Nov 17	Fish marking and tagging (ctd.)		
	Nov 19	Sampling the recreational creel	Micro-tag and PIT demonstration (L)	20
14	Nov 24	Commercial fisheries surveys		21
	Nov 26	Human dimensions	Creel survey (L/F)	22
15	Dec 1	Fish dietary studies		17
	Dec 3	Class wrap-up and final review	Class wrap-up and final exam review	
	Dec 8	No class - study day		
	Dec 9-12	FINAL EXAM WEEK		

5) STUDENT SWIMMING AGREEMENT

I _____ acknowledge that this course (Fisheries Techniques Laboratory) will engage in many activities in and around deep water in streams, rivers, and ponds. I further certify that I am able to swim at an acceptable level such that I do not need special accommodations when working in or around water during laboratories.

Signature

Date

6) INSTRUCTOR-STUDENT AGREEMENT

I _____ have read and understand the Fisheries Techniques syllabus. I agree to abide by the rules outlined in the syllabus, and if I do not, will suffer the consequences outlined therein.

Signature

Date

Student email:

Student phone:

Please fill in your Fall 2008 class schedule: (darken in the blocks)

Time	M	Tu	W	Th	F
8:00am					
8:30am					
9:00am					
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