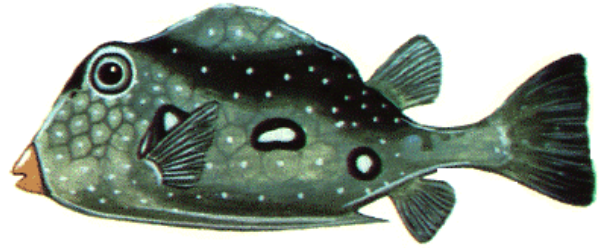


Biology of Fishes

Syllabus 2002



AQFI 2353

Meeting Times

Lecture MW 10:00-10:50 a.m. Applied Sciences Room 105C

Lab W 2:00-3:50 p.m. Applied Sciences Room 105C (and perhaps elsewhere)

Instructor:

Dr. Andy Goodwin

Office Phone 543-8137

Lab Phone 543-8034

Mobile 540-7811

Secretary 543-8123

Home Phone 879-6974

Email agoodwin@uaex.edu

Office hours: My office and lab are in the 1890 Extension Building across the street from S. J. Parker. The fish disease lab is in the back of the building, my office is room number 133 (just wander into the building and ask for directions). When I am not in class, I am usually in one of those two places. Feel free to drop in at any time, however, you must recognize that my research and fish disease diagnostic responsibilities frequently necessitate trips to other places both on and off campus. The best thing to do is catch me after class or on the phone and make arrangements to come see me. **Email is great.**

It is the policy of the University of Arkansas at Pine Bluff to accommodate students with disabilities, pursuant to federal and state law. Any disabled student who needs accommodation, for example in eating 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. Disabled students are also encouraged to contact Mr. Michael Washington in the Brown Infirmary, Room 107, Telephone Number (870) 575-8293. His e-mail is Washington_m@vx4500.uapb.edu.

When you need help: If there is ANY way that I can help you, PLEASE DO NOT HESITATE to see me before class, after class, by phone (at work or at home!), or by email. Don't be shy, don't wait until it is too late. If you have problems or worries, SEE ME! I've given you my home phone number, **don't be afraid to call me at home in the evening (8-10 p.m. is best) or on the weekend**, and it doesn't have to be an emergency. I want you to pass this class. I want you to get a good grade. Let me help you when you have problems! If you can't find me, my grad students may be able to help you. You can call Subin, Swapna, Kelly, or Lazendra, at my lab number. If you need help, they always know where to find me.



Academic Honesty: Sometimes you hear students say things like “Cheating is okay, it doesn’t hurt anybody” and “Everybody does it.” Let me set the record straight. It does hurt you, it does hurt your classmates, other UAPB graduates, and the University, and **NOBODY DOES IT IN MY CLASS!** If you cheat, you won’t learn the things that you must know to be successful and you will probably fail at your first job interview. That hurts you. In addition, if you graduate from UAPB and go out into the world and make a fool of yourself, it makes me look bad, it makes UAPB look bad, and it decreases the value of degrees held by other UAPB alumni that really earned theirs. That hurts other people. I will watch you like a hawk as you take tests and quizzes. I will look very carefully at assignments handed in for copying and plagiarism. If I catch you cheating on a test or assignment, I will give you a zero for it, I will notify our departmental chair of your transgression, **AND I will deduct *at least 10 percentage points from your final semester average*** (I’ll drop your grade by a whole letter or more). There is a very good chance that you won’t pass the course. **You can cheat on tests, but you can’t cheat on life.**

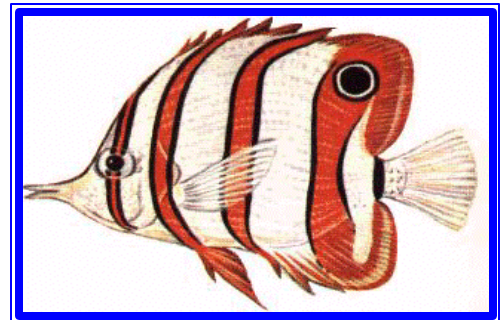
Test Rules:

For quizzes: All notebooks, book bags, etc. will be on the floor under your desk.
For Tests: All notebooks, backpacks, etc. will be placed at the front of the room, desks will be assigned by me, no hats.

Course description: A study of the anatomy and physiology of fish emphasizing applied aspects vital to aquaculturists and fisheries biologists.

Course objectives: Students will need to...

- 1) be able to identify the internal and external gross anatomy of fish
- 2) understand the structure and function of fish organ systems
- 3) understand how fish organ systems work together to help the fish grow, reproduce, and adapt to their environment
- 4) use knowledge of fish function and anatomy to analyze real-world problems in fisheries and aquaculture



Text: There are currently no textbooks that cover this subject well. Ichthyology textbooks have some anatomy and physiology but are principally taxonomy (scientific names). They fail to cover many areas vital to fisheries biologists and fish farmers (they don't even mention aquaculture, nutrition, toxicology, immunity...). Textbooks on fish physiology are very detailed and technical, they don't cover any anatomy, they describe many aspects of physiology that will probably never be of any use to the students in this class, and they emphasize salmonids. There are no textbooks for this course that meet my standards. Therefore, I have written my own book entitled "***How Fish Work: Applied Physiology and Anatomy for Fisheries and Aquaculture.***" The text has all of the lecture material and all of the figures that I will draw on the board plus photographs. It will be a very useful tool for studying. Now, this is the amazing part: The text is available only on the Internet and it is available at absolutely no charge! You can look at it whenever you want to. You can print things out if you like. I will show you how to connect to the server and access the class material. This will be a new way of doing things for many of you. It is very important that you learn to be comfortable with computers. This is another excellent opportunity to get some practice. The Aquaculture/Fisheries Department maintains a computer lab so that you can easily access what you need.

Attendance: University policy is that attendance is mandatory. You are allowed **three** unexcused absences in this course including no more than 1 lab. Absences for illness, court appearance, certain meetings, or bonafide family emergencies are excused but **THEY MUST BE ACCOMPANIED BY WRITTEN DOCUMENTATION.** It makes me very happy if you tell me beforehand that you will be missing class for

meetings etc. and if you call me when you are ill. Grades missed due to unexcused absences *may not be made up* and will adversely affect your grade. Tests and quizzes missed due to excused absences will be made up or dropped from your average. Test and quiz make-ups will be different from the test that the rest of the class takes. Attendance policy is neatly spelled out in the UAPB Student handbook (“The Roar”). If you have 3 unexcused absences you will be notified in writing that your grade is in jeopardy. If you have more than 3 unexcused absences, I may fail you at my discretion regardless of your grade average. Be sure that you are familiar with the quiz rules (below). Quizzes start right at 10 am and finish at 10:10. If you come to class late, it will kill your semester grade. It will also demonstrate to me that you don’t think my class is important. Imagine how that will affect things when you need a letter of reference or at the end of the semester if you have a borderline grade...

Grading

A=90-100%; **B**=80-89.9%; **C**=70-79.9%, **D**=60-69.9%, **F**=0-59.9%

No grades will be dropped (except for those due to excused absences as outlined above). There will be opportunities for bonus points (bonus questions, pop quizzes etc.) if I deem it necessary.

Points	Mid-Term	150
	Final	250
	Group Project	150
	Lab Reports	100
	Lab Practicals	100
	Quizzes	250
Total		1000



Group Project: Details of this project and group assignments will be provided within the next few weeks. Students working in groups will be assigned to construct models that demonstrate some aspect of fish function. The models will be large enough to use as class demonstrations (a couple of feet?) and must be anatomically correct, attractive, and useful aids in teaching how fish work. Things that move and function are especially desirable. Preliminary designs must be handed in no later than Monday 10/21. These designs must be well thought out and reasonably detailed. Failure to turn in an honest attempt at a preliminary design will result in a 5 pt/day penalty until the design is completed. I can help you with supplies, materials, and lab gizmos. The final project must be completed and ready for presentation by Wednesday, December 12.

Grading for the project will be in two parts. Fifty points of your grade will be based on an evaluation of your contribution to the group project. These points will be determined by the other members of your group who will fill out a confidential evaluation form. The form will be filled out honestly (there will be no collusion (inside deals) between group members; you can try I guess, but it never works out). The other 50 points will be determined by me and will be based on the quality of your model and on a group presentation of the model before the rest of the class. ***The required picture and description must be included in your SAFHS portfolio.***

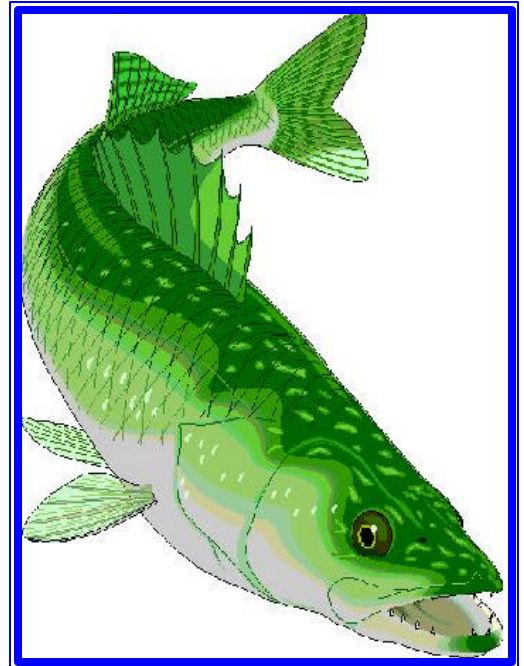
Lab: There will be 2 lab practicals dealing with fish anatomy (external and internal). They will be worth 50 points each. There will be 3 lab reports to do. On the day of each exercise, I will provide a handout detailing the desired format for each report and the due date. These reports will be short answer, data sheet kinds of deals. Lab reports that receive low grades, but that were turned in on time and were creditable attempts, may be improved and turned back in for a higher grade.

Quizzes: There will be a quiz on almost every Monday and Wednesday (marked by a * on the schedule). The quiz will contain material covered since the previous quiz.. The 25 quizzes are worth 10 points each. It's a bummer, but it will help you to keep current in your studies. Quizzes will be handed out precisely at 10:00 am and will be collected at 10:10 - **no exceptions**. Many quizzes will carry bonus points. Quiz format is always essay. There will usually be two short questions and a lot of empty space. Be prepared to think, not just memorize. Bonus questions will often be on the lecture material for the day the quiz is given (gee, you'll have to read the text before class!)

Mid-term and Final: Both will be comprehensive. The final will emphasize the second half.

Instructor Absences: Scientific meetings are very important for the extension and research portions of my job and are also very helpful in my teaching. This semester I am going to the 5th International Symposium of Viruses of Lower Vertebrates in Seattle and the International Symposium on Aquatic Animal Health in New Orleans. I am author or co-author at 6 talks at those meetings. I am giving lectures on virology, catfish anemia, toxicology, bacteriology, and catfish immunology. In New Orleans, I also have to attend Executive Committee meetings of the AFS-FHS. Because of the length of the meeting and the distances involved, I will have to miss classes on Wednesday August 28 and on Wednesday September 4. Class will still be held, but the grad students will be in charge. You will **always** get the full 50 minutes/lecture (and then some...) and classes/wk that you paid for. I will probably pester you by e-mail while I'm gone.

On other occasions, class may be canceled at the last minute due to reasons **beyond my control** (like last minute student assemblies!). In the event that this should happen, I will do my best to contact you and let you know what is going on. If you have any doubts, call or email me.



Personal Data Form: I am handing out a form for you to fill in. It will help me to get in touch with you if I need to. It will help me to tailor the class to your needs and to make good groups for the projects.

E-mail : You **must** have an email address and check it often. That is a **requirement** of this course. I will use email to send you hints on quizzes, test results, class schedule changes, and anything else that comes up. It is also a very good way for you to communicate with me. If you don't have a functional email account, we'll help you set one up.

Schedule

*=QUIZ day

- *Mon 8/26 Syllabus, paperwork, getting to know you, WebCT, e-mail
- *Wed 8/28 What is a fish? Intro to bony fish diversity
- Lab 8/28 Blue Planet**
- Mon 9/2 NO CLASS!!! HOLIDAY!!! YEE_HAAAAAAA! Celebrate labor by being lazy!
- *Wed 9/4 Intro to shark diversity
- Lab 9/4 Blue Planet II**
- Mon 9/9 Fish Evolution; Part 1
- *Wed 9/11 Fish Evolution; Part 2
- Lab 9/11 Big Bucket-o-Fish**
- *Mon 9/16 Intro to Fish Guts (how to find your way around)
- *Wed 9/18 The skeleton. Sing it “Oh, the lipidotrichia are connected to the hypurals...”
- Lab 9/18 Catfish Dissection**
- *Mon 9/23 Skin, scales, and muscles
- *Wed 9/25 The heart and circulation
- Lab 9/25 Dissection of exotic fish and presentations**
- *Mon 9/30 Basic fish gills, anatomy and function. Intro to hemoglobin.
- *Wed 10/2 Swim bladders, lungs, and other adaptations for air breathing
- Lab 10/2 Methemoglobin Lab**
- *Mon 10/7 Buoyancy and swimming
- *Wed 10/9 Digestion 1
- Lab 10/9 Buoyancy lab.** Lab practical- External Anatomy
- *Mon 10/14 Review for mid-term. Bring your questions!!!!
- Wed 10/16 Review for mid-term. Bring your questions!!!!

Lab 10/16 **Mid-Term**

Schedule (Continued)

- Mon 10/21 Go over the test.
- *Wed 10/23 Digestion continues - Liver, pancreas, and gall bladder.
- Lab 10/23 Review internal anatomy (dissection). Lab practical, internal anatomy**
- *Mon 10/28 Eyes and ears.
- *Wed 10/30 Taste and smell
- Lab 10/30 Osmoregulation lab 1 – the beads**
- *Mon 11/4 Lateral line, ampullary organs, and electrical generation
- *Wed 11/6 Osmoregulation part 1; principles and gills
- Lab 11/6 Osmoregulation lab 2 – the tato fish are a schoolin !**
- *Mon 11/11 Osmoregulation part 2; kidneys and endocrinology
- *Wed 11/13 Blood cells and hematopoiesis (spleen and head kidney)
- Lab 11/13 Hematology**
- *Mon 11/18 Immunolgy and disease resistance
- *Wed 11/20 The stress response
- Lab 11/20 Work on demonstration projects**
- *Mon 11/25 Reproduction
- *Wed 11/27 Sex determination and Genetics
- Lab 11/27 Turkey Gestation**
- *Mon 12/2 Leftovers, or something cool if time allows
- Wed 12/4 Review for final
- Lab 12/4 Present group model projects**

FINAL Exam 12/10 to 12/13

(sometime in there)

Personal Data Form

Name: _____

Class (Freshman, Sophomore...): _____

GPA (optional): _____

E-mail: _____

Preferred WebCT password: _____

Hometown: _____

Local phone number: _____

Career Goal:

Previous fish-related work experience:

Do you have a job this semester?:

Hours/wk at job: _____

Schedule: