

COURSE TITLE: FISH 6970, Special Topics in Aquatic Symbiosis
CREDIT HOURS: 2 credit hours, lecture only
LECTURE TIME / LOCATION: Tuesday 4:00 pm – 6:00 pm / Swingle Hall 303
OFFICE HOURS / LOCATION: open or call for appointment / Upchurch Hall 324/325
REQUIRED PREREQUISITES: none
INSTRUCTOR: Dr. Ash Bullard (office phone: 334-844-9278; sab0019@auburn.edu)

TEXTS & MAJOR RESOURCES:

Roberts, L. S. and J. Janovy, Jr. 2009. Foundations of Parasitology. McGraw Hill Higher Education, Boston, 701 pages.
Plumb, J. A. 1994. Health Maintenance and Principal Microbial Diseases of Cultured Fishes. Iowa State University Press, Ames, 328 pages.
Combes, C. 2001. The Ecology and Evolution of Animal Interactions and Symbionts. University of Chicago Press, Chicago, 728 pages.
Avisé, J. C. 2004. Molecular markers, natural history, and evolution. Sinauer Associates, Inc. Publishers, Sunderland, 684 pages.

COURSE DESCRIPTION: This course emphasizes fundamental biological concepts in aquatic parasitology and diseases of wild and cultured aquatic organisms, which includes animal interactions across the array of aquaculture, marine, freshwater, and estuarine ecosystems. These associations involve energy exchanges among organisms that impact fish health, aquaculture production, human health, ecosystem functioning, food webs, biodiversity, temporal and spatial distributions of animals, and animal behavior. A symbiont's lifestyle can be termed parasitic (requiring a host, obtaining energy from the host, and exhibiting a high level of ecological specificity to that host), commensal (a benign symbiont that benefits from the association but does not harm the "host"), or mutualistic (both organisms benefit from the association). Gaining familiarity with these types of intimate animal interactions is valuable to students of the aquatic sciences because (1) pathogens (a type of symbiont) seriously debilitate aquaculture production worldwide and (2) monitoring the health of free-living, farmed, and aquacultured organisms depends on an understanding of the symbiont's natural history and life cycle. Familiarity with the biological attributes of these host-symbiont relationships is of interest to those monitoring and conserving aquatic ecosystems because particular symbionts can indicate a deviation from normal ecosystem functioning, disease, or habitat alteration.

COURSE OBJECTIVES: Through a series of lectures, students of Aquatic Symbiosis will gain proficiency in the specific morphological characteristics, life history traits, host effects, and ecological interactions of aquatic parasites, commensals, and mutualists in aquaculture settings and the natural environment (principally in fishes).

COURSE CONTENT:

Week 1-2 Defining animal relationships
Week 3 Foundations in parasite ecology
Week 4 Classical and molecular approaches
Week 5 Trophic relationships
Week 6 Transmission strategies
Week 7 Epidemiology
Week 8 Ecology and evolution of infectious diseases
Week 9 Evolution of virulence
Week 10 Ecology and evolution of mutualism
Week 11 Myxozoa

Week 12	Platyhelminthes
Week 13	Nematoda
Week 14	Crustacea
Week 15	Review, Student Presentations

GRADUATE STUDENT COURSE REQUIREMENTS / EVALUATION / GRADING POLICY:

Lecture Examination #1:	30 possible points	
Lecture Final Examination:	30 possible points	
Lecture Quizzes:	10 possible points	
Term paper:	15 possible points	
Research Presentation:	15 possible points	
A = 100-90%		D = 60-69%
B = 80-89%		F < 60%
C = 70-79%		

COURSE POLICY STATEMENTS (see official handbook of Auburn University):

ATTENDANCE POLICY: You are expected to attend class. You will not be penalized directly for missing class, i.e., there is no mandatory attendance. However, keep in mind that there are no “make-up” quizzes for unexcused absences so missing an unannounced quiz will result in a 0% score for that quiz.

PARTICIPATION & ASSIGNMENT EXPECTATIONS: I expect that you will participate fully and, as a result, do well in this course. Although intuitive, below is a further explanation of the above listed grading regimen.

- 1. Lecture Examinations.** There will be a total of 2 closed-book lecture exams (including the final exam) for this course. The exam material comes from my lectures, the primary course textbook, lecture handouts, classroom discussions, and select secondary sources of course information.
- 2. Quizzes.** I will occasionally give an unannounced quiz. These quizzes help you ‘know what to expect’ for the lecture examinations. They are also intended to help you stay abreast of lecture and reading content.
- 3. Participation.** The concept of ‘shyness’ is not a valid excuse for abstaining from class discussions because without communication there is no learning and no advancement of knowledge. Moreover, consider that there are few or no positions in any society wherein you will be allowed to exist in isolation and forgo interacting and communicating with your peers. Doing “science” is an especially social endeavor because scientists tend to compulsively communicate their findings and observations with their colleagues and students through oral (lectures, seminars, professional society meetings, routine communications) and written (primary literature) correspondence. Becoming comfortable with both of these activities is one overriding goal for this course because it is requisite for being a professional scientist.

COURSE EVALUATIONS: A midterm and final course evaluation will allow you to submit anonymous constructive criticisms on how to improve this course. However, the quickest way to solve a problem is by bringing it to me as it occurs during the semester. We can work it out and make corrections then and there.

SCHEDULE POLICY (CHANGES TO SCHEDULE): The lecture schedule is subject to change and probably will change. Those changes will be announced during the lecture period. It is the student’s responsibility to stay abreast of such changes. Obviously, the easiest way to do that is to attend each lecture class. I am not obligated to answer e-mails requesting information about scheduling.

CONDUCT and CHEATING POLICIES: University guidelines and procedures will be followed. They can be found in the University's Tiger Cub.

E-MAIL POLICY: Here are five recommendations for emails regarding this course: concise emails will elicit the most rapid response!

- Your first and last name should be included in the body of the email; your email address does not suffice because it is an alias, not a proper name.
- If multiple recipients are listed in the "TO:" and/or "CC:" lines of your message, the text of your message should nevertheless specify (A) to whom you are sending information and/or (B) from whom you are requesting information. The latter avoids a 'no response' by the targeted recipient(s), who do not wish to duplicate effort(s).
- The subject line should include a helpful synopsis of why you are emailing, e.g., "stuff" and "question" are not helpful.
- The text should comprise complete sentences, or at least employ capital letters and periods enclosing a word string that communicates a subject-verb concept.
- Dictionary words should be used: email is not "text-messaging;" hence, your email should lack an abundance of acronyms.

ACCOMODATIONS FOR DISABILITIES: Students who need special accommodations in class, as provided for by the American Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes - or as soon as possible if accommodations are needed immediately. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms but need accommodations, make an appointment with The Program for Students with Disabilities, 1244 Halley Center, 334-844-2096 (V/TT) or email: scw0005@auburn.edu.

WITHDRAWING FROM COURSE: Departmental and University policies are followed herein; see appropriate semester schedule for those policies as well as their respective deadlines.

2010 H1N1 INFLUENZA ("SWINE FLU") CONTINGENCY: COURSE COMPLETION & SOCIAL DISTANCING: H1N1 Influenza is a potentially life-threatening viral pathogen of humans that can spread rapidly in aggregated settings such as a classroom, academic building, or university.

Understand that:

1. Auburn University is likely to face a full closure of the University during the semester.
2. Auburn University will likely be faced with a large number of absences.
3. For any individual, the H1N1 flu has a 5-7 day life cycle, meaning that, if infected, you may be expected to miss a full week of classes.
4. Absences will probably continue through the fall and into the spring term.
5. For individual students and faculty members, this need not be a semester-ending event, but it will be a frustrating and disruptive one in any case.
6. The office of Information Technology has been instructed to provide special support for the academic community so that education can continue, despite multiple absences of students and instructors, and ACES-Ag IT is coordinating this effort.

Hence, you as a student should stay alert and be advised that relevant information pertaining to the H1N1 status of AU campus will be available on the Auburn University web page (<http://www.ag.auburn.edu/adm/faculty-staff/H1N1.php>)

If you feel sick and are experiencing flu like symptoms (e.g., fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills, fatigue):

1. STAY HOME= DO NOT COME TO CLASS
2. Avoid contact with others as much as possible.
3. If you leave home and expect to be near others, WEAR A FACEMASK.
4. If possible, do not leave your home until 24 hrs after your fever is gone except to get medical care or for other necessities.
5. E-mail me (sab0019@auburn.edu) and tell me you are sick

**Do not concern yourself with how you will "make up" the work; your instructor will provide a regime for making up work and for you to receive the required course materials, i.e., if you are diagnosed with flu, you will be given a chance to get back on track. In that case, the instructor will require you to provide: A) a written excuse from your health care provider or B) your health care provider's name and phone number to confirm your health status.

Examples of work load compensation in the event of a flu outbreak are:

Special, extended office hours for students recovering (non-infective) from flu.

Email correspondence to transmit lecture and laboratory text materials.

Phone-based, pre-scheduled question-answer sessions.

Make-up periods for lecture and laboratory quizzes and exams.

Questions about H1N1 flu? See the Center for Disease Control's (CDC) website at <http://www.cdc.gov/h1n1flu/sick.htm> and <http://www.cdc.gov/h1n1flu/> or ask your instructor (who happens to also be a parasitologist).