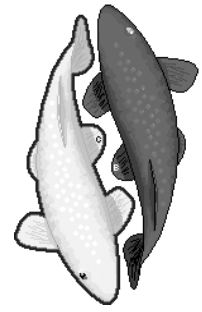


**Sustainable Aquaculture
FISH (WILD/MARS/ECOL) 4550/6550
Course Syllabus**



Instructors:

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Class location: Forestry Bldg 4 room 516

Class time: T,R 12:30 – 1:45 pm

Lab location: Aquatic Biology and Ecotoxicology Lab (ABEL), Whitehall Forest

Lab time: R 2:15 – 4:45 pm

Course Objectives and Learning Outcomes:

- Be conversant about the role of aquaculture in meeting global food demand and issues of sustainability.
- Understand basic life support needs for aquatic organisms and be familiar with various ways those needs are met in aquaculture
- Be familiar with the role of water quality and how different types of aquaculture systems are able to maintain sufficient water quality for aquatic animals.
- Have a basic understanding of genetics, stress, aquatic animal health, and common diseases of aquatic animals.
- Gain practical experience with culture of aquatic animals.
- Develop skills for oral presentations, writing, problem-solving and decision-making required for successful culture of various aquatic species.

Reference Materials:

Stickney, R. 2009. Aquaculture: an introductory text. 2nd ed. CABI, Cambridge, MS.

Bunting, S.W. 2013. Principles of Sustainable Aquaculture. Earthscan from Routledge. New York, NY

Southern Regional Aquaculture Center: <http://srac.tamu.edu>

Additional lecture and lab materials will be made available via **eLearning Commons (eLC;** www.elc.uga.edu) and materials may be provided in class and lab.

Exams: There will be three exams. Exams will be a combination of T/F, multiple choice, fill in the blank, short answer and essay.

Aquaculture Reference Manual: Each student will compile an Aquaculture Reference Manual throughout the semester. Materials will include SRAC documents, research articles and other materials as appropriate. Additional information will be provided in a separate handout.

Scientific Paper Reviews: Each student will prepare two reviews of recently research papers that deal with some aspect of sustainable aquaculture. These articles and reviews will be included in the Aquaculture Reference Manual. Additional information will be provided in a separate handout.

Individual Presentation: Each student will select a species and present a 15 min presentation on aquaculture approaches for that species, including environmental effects and alternatives for more sustainable culture. Presentation dates are **April 3, 5, 10**. More information will be provided in a separate handout.

Group Presentation: Students will form groups of 2-3 and will present an in-depth look at an issue central to the sustainability of aquaculture. Groups should objectively discuss the issue before giving their personal opinions on the matter. Each student in the group must give part of the presentation, which will last approx. 25 min + 5 min for questions/discussion. Presentations will be **Feb 22, 27, and March 1**.

Graduate Credit (FISH 6550): In addition to the coursework required for FISH 4550, graduate students are required to explore a recent development to increase the sustainability of aquaculture. A topic must be approved in writing by **February 1** and a detailed outline is due by **March 1**. Graduate students will give a 25 min (20 min + 5 min for questions) powerpoint presentation about their topic to the class on **March 29**. The student is expected to be able to answer questions on the topic (i.e., read beyond the paper). Additional materials will be provided regarding the paper and presentation.

Attendance: Lecture attendance is expected and lab attendance is mandatory. If you miss a meeting, handouts may be obtained from eLC. Attendance is necessary for participation so excessive absences will result in deductions from the 'Participation' grade. Attendance is **mandatory on all student presentation days** and questions for presenters will be noted and rewarded.

Participation: Active involvement in the class is expected. This means attending lectures and labs, being on-time, participating in class discussions, asking questions in class and being prepared to discuss content of lectures, lab activities, field trips and assigned readings.

Lab: Laboratory participation is essential for this course. Active learning to reinforce topics covered in lecture will involve individual activities, group projects, field trips and demonstrations. Most labs are held at Whitehall Forest (ABEL building) so students will need to arrange for transportation. Some lab activities may be off-campus and field trips may require an entire day so students will need to make arrangements for missing other obligations; dates for those trips will be finalized ASAP. Additionally, students will be responsible for culture duties outside of normal lab times. The lab schedule and activity information will be provided in lab and on eLC.

Grading:

	Undergraduate	Graduate
Exams	35%	30%
Reference Manual	15%	12.5%
Group Presentation	10%	7.5%
Species Profile	10%	7.5%
Lab	25%	25%
Participation	5%	5%
Grad paper, presentation	-	12.5%

Grading scale for all students (%): 100-94 (A), 93-90 (A-), 89-87 (B+), 86-84 (B), 83-80 (B-), 79-77 (C+), 76-74 (C), 73-70 (C-), 69-60 (D), < 60 (F)

Late and Make-up Policy: Absences from exams or other graded work must be arranged in advance and only for serious reasons. Re-writes for an un-notified absence from an exam will only be considered when there is an extreme and documented emergency and will be dealt with on a case by case basis. It is generally not possible to make up labs because of the prep time and because several labs are field trips that cannot be repeated. Late assignments will be penalized 10% per day and after one week will not be accepted (i.e., assigned a grade of zero).

University Honor Code and Academic Honesty Policy: All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any academic work.

The link to more detailed information about academic honesty can be found at:

http://www.uga.edu/honesty/ahpd/culture_honesty.htm

Students with Disabilities: Students with disabilities who require reasonable accommodations in order to participate in course activities or meet course requirements should contact the instructor within the first week of the semester so that suitable arrangements can be made.

NOTE: The syllabus and activity schedules are a general plan for the course; deviations may be necessary and will be announced to the class by the instructors and posted on eLC.

Lecture Schedule*

Month	Date	Topic	Readings	Assignments/Due
Jan	4	Course Introduction, Syllabus	Blue Frontiers	Blue Frontiers handout Seafood marketing handout
	9	Introduction, history	Ch. 1 Bunting, SRAC	DUE: Blue Frontiers
	11	Introduction, history; Seafood marketing, Blue Frontiers discussion	Ch. 2 Bunting	DUE: Seafood marketing Group presentation handout
	16	Global aquaculture	TBA	
	18	Water quality considerations	SRAC 4606	
	23	GA AFS	TBA	
	25	GA AFS	TBA	DUE: Four Fish
	30	Basic life support & Stress	SRAC 474	
Feb	1	Culture Systems - indoor	Bunting Ch. 6	DUE: Grad topic approval
	6	Culture Systems - indoor	SRAC 451, 452	
	8	Aquaponics	SRAC 5007	
	13	Culture Systems - outdoor	Bunting Ch. 4	
	15	Culture Systems - outdoor	SRAC 101, 160	
	20	Exam I		DUE: Aquaculture Manual
	22	<i>Groups: Land/Water/Energy, Pollution</i>	TBA	
	27	<i>Groups: Escapement, Socioeconomics</i>	TBA	
Mar	1	<i>Groups: Feed, Species Selection</i>	TBA	DUE: Grad outline
	6	No Class: Spring Break		
	8	No Class: Spring Break		
	13	Nutrition	SRAC 5003, 6003	
	15	Husbandry	SRAC 421, 424	
	20	Husbandry	SRAC 700	
	22	Genetic considerations	SRAC 5001	
	27	Exam II		DUE: Aquaculture Manual
	29	<i>Grad student presentations</i>	TBA	
Apr	3	<i>Species Profiles</i>	TBA	
	5	<i>Species Profiles</i>	TBA	
	10	<i>Species Profiles</i>	TBA	
	12	Tagging, anesthesia, transport, etc.	SRAC 3903, 390	
	17	Tagging, anesthesia, transport, etc.	SRAC 422, 3900	
	19	Disease, treatments	SRAC 4703, 4711	DUE: Aquaculture Manual
	24	Bivalve culture	SRAC 432, 433	
May	3	FINAL EXAM; Noon – 3 pm		

*Lecture schedule is subject to change by the instructors and changes will be announced in class and posted on eLC via Course Tools > Calendar. Supplementary materials will be made available on eLC.

Lab schedule*

Month	Date	Topic	Assignment** Due in lab
Jan	4	Syllabus	
	11	Fish Meat Documentary	
	18	Water Quality Assessment	Fish Meat handout
	25	GA AFS	Water Quality Report
Feb	1	Introduce Competition and Case Studies	
	8	System Design: Competition	Design handout, materials list, plan
	15	Competition Start	Initial lengths, weights
	22	Case Studies	TBA
Mar	1	Case Study Presentations	TBA
	8	NO LAB: SPRING BREAK	
	15	Competition wrap up	TBA
	22	Competition presentations	
	29	Husbandry, spawning, larval fish culture	
Apr	5	Husbandry, spawning, larval fish culture	
	12	Hatchery visit	Spawning Report
	19	Catch up	Hatchery Handout

* Lab schedule is subject to change by the instructors and changes will be announced in class and posted on eLC via Course Tools > Calendar.

**Assignments may require additional outside readings which will be provided in class or via eLC.