Aquaculture I
FAS 5015 (3 credits) Fall, 2023

Includes Continuing Education (CE) requirements

Course Description

Provides an overview of the field of aquaculture, including water quality, production systems, nutrition, spawning, and the common fish and invertebrate groups cultured in the United States. The course is entirely web-based, with narrated PowerPoint lectures followed by readings and other resources for each learning topic. Weekly topics are included in asynchronous class discussions.

Instructors

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Office hours: Available times will be announced and additional times by appointment

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Office hours: Available times by appointment

Student Learning Outcomes

At the end of this course, each student will:
- Have an understanding of the basic principles of aquaculture
- Have an understanding of culture methods for common aquaculture species
- More effectively communicate through scientific writing
- Have a foundation for graduate studies in aquaculture or a career in aquaculture

Course Meeting Times

This course is entirely web-based and students may access lectures, readings, and supporting materials at their own pace. Exams are available only on the dates listed in the syllabus.
Required Texts/Readings

There is no required text for the course. Online readings will be provided for each learning topic (list attached). A computer with internet connection and sound speakers are required. The UF Canvas E-Learning site can be accessed at http://elearning.ufl.edu/ using your Gatorlink account.

Class Format, Policies on Attendance and Make-up Exams

The class is in an asynchronous, web-based format. There are no pre-requisites for taking this course. Attendance records will not be maintained. **It is the responsibility of the student to access on-line lectures, readings, quizzes, discussions, and exams and to maintain satisfactory progress in the course.** Two exams are scheduled (see schedule below) and are only available on the days scheduled. **Missed exams cannot be taken after the scheduled date without prior written consent of the instructor except under exceptional circumstances.** Cases of serious illness, bereavement, or activities covered under the Twelve-Day Rule will be considered for make-up. Appropriate documentation must be provided in all cases. Computer or other hardware failures, except failure of the UF E-Learning system, will not excuse students for missing exams. For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352-392-4357 (option 2). A writing or presentation assignment is due. Late assignments will be penalized 10% for the first day and 5% per day thereafter unless prior written arrangements are made or there is an exceptional circumstance.

Continuing Education (CE) student requirements

CE students will complete all learning modules (including lectures, readings, discussions, and quizzes). CE students are NOT required to complete mid-term or final exams, or to complete a paper/presentation.

Assignments

- Learning modules consisting of one or more lectures (narrated PowerPoint or video), readings, supporting material, discussion, and a quiz are provided online for each topic. Learning modules build on previous modules so you should complete the learning modules in the order presented.
- Learning modules covered on the mid-term exam (modules 1-9) are available from the beginning of the semester. Learning modules covered on the final exam (modules 10-21) are available after the mid-term exam. You may access and complete learning modules at your own pace. Once a module is completed (quiz taken), you will have access to the next module.
• Each learning module will have a narrated PowerPoint presentation/video. Each presentation will have numerous photographs or diagrams and will summarize important information for each topic. You will be able to go back and view and listen to each slide as many times as you wish during the initial viewing of the lecture or at a later date.

• Each learning module has required readings beyond the lecture. This information will be covered on quizzes and exams. These files will all be made available for you to view on your computer, save, or print. There will also be references to additional (optional) readings if you desire further investigation of a topic.

• Most learning modules will have a discussion related to the topic of the module. Students are required to participate in at least 5 discussions in the first half of the semester (Modules 1-9) and at least 5 in the second half (Modules 10-21). Participation can include posting answers or additional, pertinent questions. A robust discussion rather than a few simple answers will make this a more useful enterprise. In particular, students posing questions/thoughts discussed by other students in the class will provide an excellent learning environment. Instructors and a TA will assist in moderating to ensure a fact-based discussion.

• Each learning module will have a quiz. The questions will require the student to go through the PowerPoint presentation, watch any attached videos, and read the assigned readings to answer the questions correctly. These quizzes will contribute to the grade. Quizzes in Modules 1-9 are taken prior to the Mid-term and quizzes in Modules 10-21 are taken prior to the final exam. All quizzes will be taken from your computer.

• Mid-term and final exams: Each exam will consist of 50 questions. Some of the questions will come directly from the lecture quizzes. These exams will consist of multiple choice questions and maybe a few matching questions. There may be a discussion/long-answer question. The mid-term will consist of questions from the first half of the learning modules. The final exam will consist of questions from the last half of the learning modules. The exams will be taken on your computer. Exams are only available on the days indicated.

• Graduate students will complete either a review paper or Voicethread presentation on a pre-approved aquaculture topic. The review paper or Voicethread presentation should cover all of the following: species, stages of culture, specific culture methods for each stage, system requirements, potential commercial application, current or potential markets. The review paper should be between 8 and 10 pages of text, have complete references, and include appropriate charts, photos, or tables. One or more examples will be provided. If you choose a Voicethread presentation, you will create and narrate a 20-minute PowerPoint presentation and load it on the Voicethread website for all students to view and comment on it, all of the required information for the review paper will also be included in the Voicethread presentation. The review paper or Voicethread presentation will be equivalent to an exam in points.
Evaluation of Student Learning

30% or 150 points Quizzes (total of 205 points available—percentage earned placed on 150-point scale)
10% or 50 points Discussion participation
20% or 100 points Mid-term exam (Learning modules 1-9)
20% or 100 points Writing or Voicethread assignment
20% or 100 points Final exam (Learning modules 10-21)

500 points total

Grading Scale

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<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100</td>
<td>≥ 450</td>
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<tr>
<td>B+</td>
<td>85-89.99</td>
<td>425-449</td>
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<tr>
<td>B</td>
<td>80-84.99</td>
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<tr>
<td>C+</td>
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<td>300-324</td>
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<tr>
<td>E</td>
<td>&lt; 60</td>
<td>≤ 299</td>
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Schedule of Class Topics

Learning Modules
1. Introduction to Aquaculture
2. Fish Biology
3. Water Quality Management
4. Recirculating Aquaculture Systems
5. Farm Ponds
6. Net Pens
7. Nutrition and Feed Manufacture
8. Handling and Hauling
9. Spawning
10. Disease
11. Prawns/Shrimp
12. Catfish
13. Hybrid Striped Bass
14. Tilapia
15. Salmonids
16. Freshwater Ornamentals I
17. Freshwater Ornamentals II
18. Marine Ornamentals
19. Marine Baitfish
20. Clams, Oysters, Scallops
21. Other Important Species
Important Dates:
August 23 – Classes start
August 23-October 8 – Modules 1-9 available (Quizzes and Discussions)
October 9-13 – Mid-term exam available
October 11-December 6 – Modules 10-21 available (Quizzes and Discussions)
November 17 – Writing/Voicethread assignment due
December 6 All modules- lectures, quizzes, assignments completed by 11:59PM on Dec 6
December 7-8 – Reading days – NO late quizzes or assignments accepted
December 9-15 – Final exam available

Other Information

Academic Honesty, Software Use, UF Counseling Services, Services for Students with Disabilities

In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior.

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court.

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor.
This policy will be vigorously upheld at all times in this course.

**Software Use:**

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

**Campus Helping Resources**

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/]*

  Counseling Services

  Groups and Workshops

  Outreach and Consultation

  Self-Help Library

  Training Programs

  Community Provider Database

- *Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/]*

**Students with Disabilities**

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/]
Readings for Aquaculture I

Introduction to Aquaculture

Introduction to Fish Biology

Water Quality Management

Recirculating Aquaculture Systems
Farm Ponds


Net Pens

Feed Manufacture and Nutrition

Handling and Transporting Fish

Spawning
Chapman and Eenennaam. 2007. Sturgeon Aquaculture - Specialized Techniques Determining the Stage of Sexual Maturity in Female Sturgeon for Artificial Spawning: The Egg Polarization Index or PI. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA153.

Disease

Prawns/Shrimp
Catfish
Morris. 1993. Pond Culture of Channel Catfish in the North Central Region. U.S. Department of
Agriculture North Central Regional Aquaculture Center. Fact Sheet Series no: 106.
Southern Regional Aquaculture Center. Publication no: 181.
University Division of Agriculture, Forestry, and Veterinary Medicine Office of Agricultural
Communications. Bulletin: 1113
Aquaculture Center. Publication no: 183.
Department of Agriculture Southern Regional Aquaculture Center. Publication no: 461.
of Agriculture Southern Regional Aquaculture Center. Publication no: 192.
Extension Service. Publication 1549.

Hybrid Striped Bass
Dunning. Aquaculture in North Carolina: Hybrid Striped Bass. North Carolina Department of
Agricultural and Consumer Services.
Department of Agriculture Southern Regional Aquaculture Center. Publication no: 3000.
Southern Regional Aquaculture Center. Publication no: 300.
Southern Regional Aquaculture Center. Publication no: 301.
Hodson and Hayes. 1989. Hybrid Striped Bass: Pond Production of Foodfish. U.S. Department of
Agriculture Southern Regional Aquaculture Center. Publication no: 302.
North Central Region. U.S. Department of Agriculture North Central Regional Aquaculture Center.
Department of Agriculture North Central Regional Aquaculture Center. Fact Sheet Series no:
107.
Southern Regional Aquaculture Center. Publication no: 302.
Regional Aquaculture Center. Publication no: 281

Tilapia
Regional Aquaculture Center. Publication no: 281
Southern Regional Aquaculture Center. Publication no: 283.

**Salmonids**
Cain and Garling. Trout Culture in the North Central Region. U.S. Department of Agriculture North Regional Aquaculture Center.

**Freshwater Ornamentals I**


Freshwater Ornamentals II


Marine Ornamentals


Marine Baitfish


**Other Important Species**


Stone et al. 1998. Preparing and Stocking Golden Shiner Fry Ponds. U.S Department of Agriculture, University of Arkansas Cooperative extension Program in Aquaculture and Fisheries. FSA9080-1M-12-98N.

Stone et al. Tank Spawning and Hatching of Golden Shiners. 1998. U.S Department of Agriculture, University of Arkansas Cooperative extension Program in Aquaculture and Fisheries. FSA9081-1M-12-98N.


