2023 Caribbean Fisheries Professional Development Program

*Distance Learning Scholarships in **Fisheries Science and Management***

The 2023 Fall Semester Program

We are pleased to announce for the 2023 fall academic semester, a scholarship program for Gulf and Caribbean-based fisheries professionals to undertake distance learning courses provided by the University of Florida's Fisheries and Aquatic Sciences Program.

Competitive applicants will be offered learning options that include classes in quantitative fisheries science, management and aquaculture.

These are challenging graduate-level courses that will reward participants with new knowledge and perspectives in fisheries science and management. Successful completion of this coursework will require commitment on the part of selected applicants and of their government ministry or organization.

Distance Learning Courses Offered

Applicants will select one course from the following options.

1. FAS 6705 – Fisheries & Aquaculture Economics
2. FAS 6355C – Fisheries Management
3. FAS 6932 – Marine Protected Areas
4. FAS 5015 – Aquaculture 1
5. FAS 5203/6932 – Biology of Fishes
6. FAS 6337– *Fish Population Dynamics
   *Prerequisite: Basic R-programming and statistics

See course descriptions and requirements appended to this document.

Application of Knowledge

To facilitate knowledge sharing and follow-up among program participants and sponsors, scholarship awardees will participate in periodic video-conference meetings with sponsors. Courses will involve on-line learning sessions with instructors but will require a facility for independent learning by selected applicants.

Award Requirements

Applicants must be employed by a fisheries resource management NGO, ministry, or government agency located in the Gulf or Caribbean region or affiliated with a member state of the Caribbean Regional Fisheries Mechanism (Anguilla, Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago and the Turks and Caicos Islands. At a minimum, applicants must possess a bachelor's degree (e.g., BA or BS) or a professional degree (e.g., Juris Doctorate) from an accredited college or university.

Candidates must prove fluency in English.

We anticipate funding coursework for the top three to four applicants.

Program Sponsors

- Florida Sea Grant
- The Gulf & Caribbean Fisheries Institute
- The UF Fisheries & Aquatic Sciences Program
- The Caribbean Regional Fisheries Mechanism

GCFI

CRFM Caribbean Regional Fisheries Mechanism

Sea Grant FLORIDA

UF UNIVERSITY of FLORIDA

Application Parts

Please format your application according to the following six (A-F) sections.

A. Contact information

Please provide your:

- Full name
- Full mailing address
- Telephone number
- Email address

B. Job status

Please describe your current job and professional interests (250-500 words).

C. Training interests

Please identify one course of interest from the choices offered above. Describe how you will apply new knowledge or skills learned to an ongoing project or propose a project that you would like to develop and explain how the implementation of that project would benefit from your participation in this training opportunity (500-1,000 words).

D. Letter of endorsement

Please include a letter of endorsement from an individual or supervisor who is familiar with your professional status and accomplishments.

E. Educational credentials

Please include a scanned image of your Bachelors, Masters, Ph.D., or other professional degree (e.g., Law) that you earned from an accredited college or university.

F. Professional accomplishments

Please provide a current resume. Your resume should highlight additional relevant education, training experiences, publications and/or reports, honors and/or awards.

Submitting Your Application

- All six sections (A-F above) of the application must be labeled, scanned, combined in order, and emailed in Adobe Acrobat format (PDF file) to Florida Sea Grant c/o Dr. Nancy Montes (nancymontes@ufl.edu).
- Applications must be complete. Partial applications will not be accepted.
- Florida Sea Grant will confirm receipt of applications via email at the time they are received.
- Please direct questions regarding this opportunity to Florida Sea Grant c/o Dr. Nancy Montes (nancymontes@ufl.edu) or to the Caribbean Regional Fisheries Mechanism c/o Dr. Sandra Grant (sandra.grant@crfm.int).

Application Deadline: June 23, 2023

Please follow these instructions carefully when preparing your application.

Evaluation Criteria and Selection Process

A panel consisting of program sponsors will evaluate applications according to the following criteria.

- Quality of your response to training interests (application section C) - 50%
- Strength of the letter of endorsement (application section D) - 25%
- Educational / professional accomplishments (application sections E, F) - 25%

Important Dates

Application Opens: May 12, 2023
Application Deadline: June 23, 2023
Scholarship Notification: July 14, 2023
Classes Begin: August 23; End: December 15, 2023

FAS 6705 Fisheries and aquaculture: An economics perspective

1 Course Overview

Short description:

This course introduces students to important issues in fisheries and aquaculture management from an economic perspective, exploring the incentives of various stakeholders in utilizing and conserving fisheries resources, as well as the impacts and effects of differing management systems on industry and ecosystems. Appropriate for students with little or no background in economics or fisheries sciences.

2 Overview

In many ways the oceans and our waterways are the last frontier. Fisheries are the last major hunting industry, and fishing is also an important recreational activity. During recent decades, global aquaculture production has exploded and has now surpassed fisheries as a source for food, primarily due to new technologies and knowledge that create new opportunities. At the same time, these evolving industries create new pressures on the ecosystem.

To a large extent, the use of the ocean and water resources is about exploiting economic opportunities, given the constraints provided by the natural resources in the system. Since these opportunities involve the use of public natural resources, it is not surprising that there are a number of conflicts between different user groups such as aquaculture producers, commercial fishers, conservationists, consumers, environmentalists, fisheries managers and recreational fishers.

Lectures and discussions are used to introduce students to key concepts and methods, and follow-up discussions will be provided in class. Please note that there will not be a class every week. The class dates can be found in Section 5. Prepared questions are encouraged for class participation.

- 3 Credits
- Fall 2022
- Pre-recorded lectures with face-to-face class meetings (synchronous virtual participation available). Class meetings will be Tuesdays at 4.05pm at NZH 222 at the scheduled dates.
- Canvas site is available at http://ufl.instructure.com or http://elearning.ufl.edu

Course Prerequisites: None

Instructor: Dr. Frank Asche (Professor), G099 at McCarty B, email: frank.asche@ufl.edu

- Office hours: Tuesdays, 2-4. Additionally available by email or phone by appointment.

Textbook(s) and/or readings: There is no required text for the course. Selected readings from primary literature are included in Reading List below.

3 Learning Outcomes

At the end of this course, each student will be able to:

- Describe economic opportunities in in the production, use and conservation of seafood resources.
- Describe ways fishers and aquaculturists may create environmental externalities that lead to exploitation of the ecosystem.
- Describe methods by which management systems can protect natural resources.
- Analyze the impacts of management systems design relative to various stakeholder interests.
- Analyze the economic and market effects of various management systems.
- Evaluate costs and benefits associated with various uses of fisheries and coastal resources.
- Evaluate the impact of international trade on fisheries and coastal resources.

4 Course Logistics

Students may access lectures, assignments, readings, and supporting materials through the course Canvas site as they become available.

Technology Requirements:

- A computer or mobile device with high-speed internet connection.
- A webcam, headset and/or microphone, and speakers.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. What browser am I using?
- Installation of proctoring software may be required and will be provided if so.

Synchronous online sessions may be recorded. By sharing your video, screen, or audio during any synchronous online class sessions, you are consenting to being recorded for the benefit of students who cannot attend live as well as for class review during the current semester. If you have special circumstances or concerns about privacy, it is your responsibility to discuss it with your instructor.

4.1 Description of Assessments & Activities

Reading Reflections.

Throughout the semester, you will be expected to complete four (4) of six (6) possible reflection papers on assigned readings. These reflections should be 1-2 pages in length and should provide evidence of critical thinking about the literature, including questions you have, unaddressed issues in the science or policy, etc. Citation is required, and additional references to the required readings are encouraged but not required.

- Each reflection is worth 11.25% of the total grade for a total of 45%.

Reflection topics
1. Why is so much seafood traded? Discuss the importance of demand as well as supply factors:
Due date: September 9, 2022

2. Fisheries management: Is an outcome that is environmentally, economically and socially sustainable possible?
Due date: September 30, 2022

3. Recreational fisheries: Are they different?
Due date: October 14, 2022

4. Aquaculture: Good, bad or a mix depending on technologies, markets, etc.?
Due date: November 4, 2022

5. Is there any reason to believe the sustainable seafood movement makes any difference? If so, how?
Due date: November 25, 2022

6. Discuss one topic based on the lecture series.
Due date: December 2, 2022

Case Study Project/Writing Assignment.

A significant portion of the grade is a paper where the student chose a case to analyze based on the materials provided in the course. This paper will be split into two (2) submissions:

- Initial topic and case study site selection (participation grade), Due date: September 20, 2021
- Final paper (50%), including at least the following sections:
    - Introduction
    - Background
    - Analysis
    - Recommendations
    - References

The final submission should be between 10-15 pages not including references. Use correct *Marine Resource Economics* journal style for citations and writing. See rubric in Canvas Assignments for more details.

Due date: December 12, 2022

Participation.

Attendance at all course meetings (virtual or face-to-face) is expected.

4.2 Grades & Grading Scale

10% Attendance, initial topic submission, and participation in discussions

40% Reflection papers (4 required out of 6 possible, 10% each)

50% Case study: Final submission of complete case study

Grades will be allocated as: A (93-100%), A- (90-92%), B+ (88-89%), B (81-87%), B- (78-80%), C+ (74-77%), C (67-73%), C- (63-66%), D+ (59-62%), D (55%-58%), D- (51-54%), E (<50%). Rounding to the nearest whole.

For information on current UF policies for assigning grade points, see
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

5 Learning Content

Week	Topics
1	• Introduction • Important challenges for utilization and conservation of seafood • Background on some of the conflicts • The economic incentives: Opportunities and challenges • Lecture available: August 26; Class: August 30.
2	• Overview of global and U.S. seafood production and consumption including aquaculture and fisheries as production technologies • Overview of global seafood production • Why trade? • Livelihoods and communities • Lecture available: August 26; Class: August 30.
3	• The tragedy of the commons, causes and consequences • The benefits of regulating fisheries in the environmental and economic dimensions • Lecture available: September 2; Class: September 6.
4	• Fisheries regulations and incentives • Command and control • The race to fish • Overcapacity and subsidies • Lecture available: September 9; Class: September 13.
5	• Fisheries regulations and incentives • Individual Fishing Quotas • Quota Transferability • Lecture available: September 9; Class: September 13.
6	Reading reflections
7	• Recreational fishing • Conservation and hatcheries • Competition between recreational and commercial fishers • Lecture available: September 30; Class: October 4.
8	• Aquaculture: Farming not hunting

	• Why do aquaculture production grow so rapidly? • Lecture available: October 7; Class: October 11.
9	• Aquaculture: Environmental issues, regulation and livelihoods • Why is not much farmed fish being produced in the U.S.? • Lecture available: October 14; Class: October 25.
10	• Markets • Lecture available: October 21; Class: November 1.
11	• Supply chains • Lecture available: October 28; Class: November 1.
12	• Seafood trade • Lecture available: November 4; Class: November 15.
13	• The sustainable seafood movement • Eco-labeling • Lecture available: November 11; Class: November 22.
14	• Illegal, unreported and unregulated (IUU) fishing • High-seas stocks: Exploitation and management • Lecture available: November 11; Class: November 22.
15-16	Work on final paper

6

6.1 Readings

Lecture 1.

Asche, F. and M.D. Smith (2018) Induced Innovation in Fisheries and Aquaculture. *Food Policy*. 76(April), 1-7.

Love, D.C., F. Asche, Z. Conrad, R. Young, J. Harding, R. Neff (2020) Food Sources and Expenditures for Seafood in the United States. *Nutrients*, 12(6), 1810.

Love, D.C., F. Asche, R. Young, E.M. Nussbaumer, J.L. Anderson, R. Botta, Z. Conrad, H.E. Froehlich, T.M. Garlock, J.A. Gephart, A. Ropicki, J.S. Stoll, A.L. Thorne-Lyman (2022) An Overview of Retail Sales of Seafood in the United States, 2017-2019. *Reviews in Fisheries Science and Aquaculture*. 30(2), 259-270.

Lecture 2.

Asche, F. C. A. Roheim and M.D. Smith (2014) Markets, Trade, and Seafood. In *Encyclopedia of Natural Resources* (ed Y. Wang). CRC Press, pp. 791-797.

Knapp. G. (2017) A fishy introduction to Economics. Unpublished manuscript.

Filipski, M., and B. Belton (2018) Give a Man a Fishpond: Modeling the Impacts of Aquaculture in the Rural Economy. World Development 110, 205-223.

Lectures 3-5.
Hardin, G. 1968. The Tragedy of the Commons. *Science* 162:1243-47.

Ostrom, E. 1999. Coping with tragedies of the commons. Ann. Rev. Polit. Sci. 2: 493–535.

Wilen, J. E. (2006) "Why Fisheries Management Fails: Treating Symptoms Rather than Causes", Bulletin of Marine Science, 78: 529-546.

Asche, F., J. L. Anderson and T. M. Garlock (2018) Food from the water – Fisheries and Aquaculture. In G.L. Kramer, K.P. Paudel and A. Schmitz (ed.) The Routledge Handbook of Agricultural Economics. Routledge, NY, pp. 134-159.

Lecture 7.
Fenichel, E., J. K. Abbott and B. Huang (2013) Modelling angler behaviour as a part of the management system: synthesizing a multi-disciplinary literatureFish and Fisheries, 14, 137-157.

Arnassson, R (2012), Managing Commercial and Recreational Fisheries: Issues and challenges

Lectures 8-9.
Asche, F., J. L. Anderson and T. M. Garlock (2018) Food from the water – Fisheries and Aquaculture. In G.L. Kramer, K.P. Paudel and A. Schmitz (ed.) The Routledge Handbook of Agricultural Economics. Routledge, NY, pp. 134-159.

Asche, F. (2008) Farming the Sea. *Marine Resource Economics*, 23(4), 527-547.

Garlock, T., F. Asche, J.L. Anderson, T. Bjørndal, G. Kumar, K. Lorenzen, A. Ropicki, M. D. Smith and R. Tveterås (2020) A Global Blue Revolution: Aquaculture Growth across Regions, Species, and Countries. *Reviews in Fisheries Science and Aquaculture*. 28(1), 107-116.

Knapp, G., & Rubino, M. C. (2016). The political economics of marine aquaculture in the United States. *Reviews in Fisheries Science and Aquaculture*, *24*(3), 213–229.

Kobayashi, M., Msangi, S., Batka, M., Vannuccini, S., Dey, M. M., & Anderson, J. L. (2015). Fish to 2030: The role and opportunity for aquaculture. *Aquaculture Economics & Mana*gement, 193, 282-300.

Naylor, R.L., R.J. Goldburg, J. Primavera, N. Kautsky, M. Beveridge, J. Clay, C. Folke, and J. Lubchenco (2000). Effects of aquaculture on world fish supplies. *Nature* 405(29): 1017–1024.

Tveterås, S. (2002). Norwegian salmon aquaculture and sustainability: The relationship between environmental quality and industry growth. *Marine Resource Economics* 17(1): 121–132.

Lectures 10-12.

Anderson, J.L. (2002). Aquaculture and the future. *Marine Resource Economics* 17(2): 133–152.

Asche, F., J. L. Anderson and T. M. Garlock (2018) Food from the water – Fisheries and Aquaculture. In G.L. Kramer, K.P. Paudel and A. Schmitz (ed.) The Routledge Handbook of Agricultural Economics. Routledge, NY, pp. 134-159.

Lecture 13-14.
Fonner, R., & Sylvia, G. (2015). Willingness to Pay for Multiple Seafood Labels in a Niche Market. *Marine Resource Economics, Vol. 30*, 51-70.

Roheim, C. A. An Evaluation of Sustainable Seafood Guides: Implications for Environmental Groups and the Seafood Industry. *Marine Resource Economics* **24**, 301-310 (2009).

Tlusty, M. F. Environmental improvement of seafood through certification and ecolabelling: theory and analysis. *Fish and Fisheries* **13**, 1-13

7 Policies and Requirements

This course plan and syllabus are subject to change in response to student and instructor needs. Any changes will be clearly communicated in advance through Canvas.

7.1 Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

7.2 Communication Courtesy and Professionalism

Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. **Respect for individual differences and alternative viewpoints will be maintained in this class at all times.** All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

7.3 Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

7.4 Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following 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."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied*: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless them instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated.

Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

7.5 Inclusive Learning Environment

This course embraces the University of Florida's Non-Discrimination Policy, which reads,

> *The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.*

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: http://multicultural.ufl.edu.

7.6 Services for 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. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

7.7 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.

8 Campus Helping Resources

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | http://elearning.ufl.edu
- Library Help Desk support http://cms.uflib.ufl.edu/ask
- SFRC Academic Hub https://ufl.instructure.com/courses/303721

8.1 Student Life, Wellness, and Counseling Help

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.

- Counseling and Wellness resources http://www.counseling.ufl.edu/cwc/
- U Matter, We Care http://www.umatter.ufl.edu/
- Career Connections Center http://career.ufl.edu/
- Other resources are available at http://www.distance.ufl.edu/getting-help for online students.

8.2 Student Complaint Process

The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered.

If you have a more urgent concern, your first point of contact should be the SFRC Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: http://www.distance.ufl.edu/student-complaint-process
- Students in face-to-face courses: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

FAS 6355c Fisheries Management

Course Syllabus, Fall 2022, 4 Credits

Lectures for all sections: online
Weekly discussion (on-campus)*: Wednesday 09:00– 10:30 AM, NZ 222
Weekly discussion (online): Wednesday 8:00-9:30 PM Eastern, Zoom Meeting
(*contingent on participation of at least five students)

Course Description

Integrating scientific, social, political and legal factors in fisheries management.

Overview

Fisheries are an important source of food and recreational opportunities, yet many are in poor shape due to overfishing and/or habitat degradation. Managing fisheries sustainably and restoring fisheries that have been degraded is a complex task that requires a broad set of competencies from fisheries professionals. The course aims to help students develop key competencies including knowledge of essential ecological, social, institutional, and economic dimensions of fisheries management; skills in fisheries systems analysis, interview and social survey techniques, resource assessment and modeling, institutional analysis, participatory planning and reflection-in-action; and a repertoire of case studies. The course also aims to foster motivation for problem solving in an interdisciplinary and participatory manner, critical thinking and innovation. Lectures will be used to outline key concepts and approaches, and laboratories and homework assignments will provide experience in applying key methods. Throughout the course, all students will develop a case study on a fishery of their choice, applying what they have learned, providing concrete examples for class discussions, and eventually providing an independent review and recommendations for the further management of the fishery. Graduate students will also conduct a project design practicum: a service-oriented project aimed at addressing a current fisheries management issue through innovative science and/or professional practice. This interdisciplinary course is intended for graduate or undergraduate students majoring in any subject relevant to fisheries management including fisheries/aquatic science, wildlife, resource economics, geography, and political science.

Course Objectives

1) Appreciate the complex, multi-dimensional nature of fisheries management problems and the benefits of integrative-interdisciplinary approaches to addressing them
2) Understand key relevant concepts in the areas of fisheries systems, stakeholder characteristics and behavior, fisheries governance, fish stock dynamics, fisheries economics, and management and planning processes

3) Gain practical skills in interview and survey methods, institutional analysis, fisheries assessment, economic analysis, and participatory planning.
4) Gain practical experience in analyzing fisheries management issues in a problem- and outcome-oriented, interdisciplinary manner.
5) Strengthen communication skills.
6) Gain practical experience in designing a project aimed at addressing a current fisheries management issue through scientifically informed professional practice.

Teaching and learning approach

The course involves both, structured lectures and labs/homework assignments and more open-ended, student-driven learning. From you as a student, the course requires enthusiasm for grappling with complex and poorly defined real-world fisheries management issues ("messes"). Many students enjoy these challenges but some don't. If you want to be told what to do at all times, are uncomfortable engaging with problems that don't have a right or wrong answer, then this course may not be for you.

The course is available fully online or in hybrid online and on-campus format, the latter contingent on a minimum of five students participating in the on-campus sessions. All students are expected to attend weekly, synchronous discussion sessions regularly.

Instructors

Dr. Kai Lorenzen (Professor), Fisheries and Aquatic Sciences, SFFFGS, 7922 71st Street, Gainesville, FL 32653. Phone 352-273 3646, Email: klorenzen@ufl.edu,
Web Page: http:// fisheriessolutions.org.
Office hours: Tuesdays 11 am to 12 noon

Ricardo Platero, SFFGS, Newins-Ziegler Hall, Gainesville, FL 32653. Email: rplatero@ufl.edu
Office hours: Tuesdays 11 am to 12 noon

Guest lecturers

Dr. Edward Camp, SFRC, UF (fisheries economics)
Dr. Chelsey Crandall, SFRC, UF (communication, conflict management)
Dr. Nia Morales, WEC, UF (quantitative social surveys)

Course delivery

The class is offered in "reverse classroom" mode. Lectures are available online and can be watched at any time within the relevant module. Lectures are complemented with live discussion sessions and various classwork assignments. Discussion sessions are held online in Zoom (voice and video chat). Discussion sessions are an essential part of the class and participation is required and graded.

All students must upload a personal introduction clip and an introduction clip about their case

study fishery via the VoiceThread system. Students will also use voice thread to upload case study presentations.

All participants are encouraged to maintain contact and discuss questions throughout the course using a suitable means agreed upon at the start of class (e.g. Canvas chat room).

E-learning and distance learning support

A Canvas site is available. Course material and interactive elements are organized as follows:

Announcements

- All important announcements are posted on the Canvas site and copied to your email.

Resources

- Access to resources such as lecture slides and key readings is via a Canvas web interface, organized by module/week. Lecture slides uploaded for sessions that have not yet been held are preliminary and are normally updated around the time a lecture is given (the course evolves constantly and so do the lectures!).
- Coursework assignments are posted under *Assignments*. Please turn in your coursework through the *Assignments* functionality. (We will accept assignments submitted by email, but only under exceptional circumstances).
- You will receive feedback and grades through the same channel.

VoiceThread

- Use VoiceThread to upload and view clips, presentations etc.

Chatroom

- Please use Canvas chat room to post questions and thoughts of general interest to the class.
- Post your questions for the discussion sessions here – by the previous day at the latest!

Outline of topics, lectures/activities and recommended readings

Topic	Lecture/activity	Recommended reading
Class introduction, problem definition and synthesis	Introduction to the course: Course overview, student introductions.	
	Discussion: Importance of fisheries, what do we expect from a 'good' fishery, how do fisheries measure up, what is the role of professionals in achieving good fisheries?	FAO 2020; Gutierrez et al. 2011; Hilborn 2007b; Post et al. 2002; Welcomme et al 2010; Worm et al. 2009; Asche et al. 2018.
	Course synthesis: Problem-solving in fisheries management	
Fisheries systems	Understanding fisheries systems and identifying options for improving outcomes	Degnbol & McCay 2006; Garcia & Charles 2007; Lorenzen 2008
	Case study presentations and discussions	
	Reflective practice in fisheries management	Schőn 1983; Sarewitz 2004; Jentoft 2006
Fisheries governance	Fisheries governance	Sutinen 1999; Hilborn et al. 2005; Ostrom 2007; Branch 2009; Fujita et al. 2010; Gutierrez et al. 2011, NOAA 2007
	Gulf Council SSC Meeting Class will attend via streaming or in person	Documents will be on www.gulfcouncil.org
	Gulf Council Meeting Class will follow selected parts via streaming link	Documents will be on www.gulfcouncil.org
	Florida FWC Meeting Class will follow selected parts via the Florida Cannel	Documents will be on www.myfwc.com
	Reforming fisheries management: change and processes	McCay (1989); Grimes (1996); Harris et al. (2007); Shelley (2012); Wondolleck & Yaffee (2000)
Understanding and engaging stakeholders	Stakeholders as individuals: values, attitudes, assets and drivers of behavior	Salas & Gaertner 2004; Smith et al. 2005; Arlinghaus & Mehner 2006; Hutt & Bettoli 2007

	Qualitative interview studies in fisheries management	Acheson 1982; Weiss 1994; Kuehn et al. 2006; Adkins 2010; Turner 2010; Guion et al. 2011
	Quantitative social surveys (Nia Haynes Morales)	Dillman et al. 2009
	Stakeholder engagement and workshop facilitation (Chelsey Crandall)	Tierny 2011
	Managing fisheries conflicts (Chelsey Crandall)	Covey 1990; Fisher & Uri 1991, Pomeroy et al. 2007; Pomeroy & Rivera-Guieb 2006
	Communicating Fisheries Science (Chelsey Crandall)	Kaplan & Kaplan 2009, Monroe et al. 2009
Quantitative assessment of fisheries status and management options	Fisheries assessment using biomass dynamics models	Hilborn & Walters 1992 (Ch. 8); Haddon 2001 (Ch. 10); Cooper 2006; Methot 2009; Edwards et al. 2012; Lorenzen et al 2016
	Fisheries assessment: Models and data	Hilborn & Walters 1992 (Ch. 10); Haddon 2001 (Ch. 2, 11); Cooper 2006; Edwards et al. 2012
	Economics of fisheries management (Ed Camp)	Milon et al. 1999; Conrad 1999 (Ch. 3); Whitmarsh 2011 (Ch. 2)
Ecosystem, spatial and recreational fisheries management	Ecosystem-based fisheries management	Francis et al. 2006; Hobday et al. 2011; Rice 2011
	Spatial and place-based fisheries management	Fogarty & Botsford 2007; Lorenzen et al. 2010
	Managing recreational fisheries: do different principles apply?	Radomski 2001; Post et al. 2002; Arlinghaus et al. 2007; Arlinghaus et al. 2019; Johnston et al. 2014; TRCP 2014; Sutinen & Johnston 2003

Assessment & Grading

Graduate

A variety of different assessment approaches will be used, with emphasis on evaluating understanding of key concepts, development of core skills, critical thinking, and creative problem solving. The different assessments and their weighting are:

Lab reports (4)	20%
Case study presentation	20%
Fisheries project design practicum	20%
Participation in discussions	15%
Interim exam	25%
Total	100%

Grading information

Grades will be allocated as: A (93 - 100 %), A- (90 - 92 %), B+ (86 - 89 %), B (82 - 85 %), B- (78 - 81 %), C+ (74 -77 %), C (67 - 73 %), C- (63 - 66 %), D+ (59 - 62 %), D (55 - 58 %), D- (51 - 54 %), E (< 50 %).

Click here for UF grading information for students: http://www.registrar.ufl.edu/hubstudents.html

Coursework requirements

Introductory clips

All students are required to upload introductory clips about themselves and their case study to Voice Thread.

Lab/homework assignments

Lab/homework assignments are designed to help students exercise key skills in qualitative interviewing, quantitative social surveys, fisheries assessment, and bio-economic analysis. Reports are due within 2 weeks of the assignment being given.

Four lab/assignment reports are required:

1) Qualitative interviews
2) Quantitative social surveys
3) Fisheries assessment: biomass dynamics modeling
4) Bio-economic modeling

Reports should concisely address the questions posed in the assignments in writing, supported by pertinent figures and/or tables. It is not necessary to provide introductory material or describe methods, though knowledge and understanding of both should be evident in the presentation and interpretation of results. Lab reports will normally be around 3-5 pages in length.

Grading criteria: The report answers all questions posed in the assignment in a clear and concise manner. Text is supported by key figures and/or tables, all of which are appropriately labeled, described in a legend and referenced in the text. Interpretation of results shows good understanding of the underlying concepts and methods.

Integrative fisheries case study

All students will develop an integrative case study on a fishery or a fisheries-related natural resource of their choice. The aim of the case study is to conduct and present an integrative-interdisciplinary analysis of the outcomes of a fishery, the factors that led to these outcomes, options for improving management (or sustaining positive outcomes), and generic lessons that can be learned from the case study. Taken together, the case studies will become part of the student's 'repertoire'.

In the spirit of reflective practice, students will develop the case study in multiple steps interspersed with feedback and reflection.

1) Identification of case study topic
2) Completion of an information checklist summarizing key information on all attributes of the case study and information sources
3) Instructor feedback
4) Initial case study presentation (VoiceThread)
5) Peer and instructor feedback
6) Final case study presentation (VoiceThread)

Grading criteria: The presentations provide a clear, integrative and concise assessment of the fishery, possible management responses, and any generic lessons that can be learned from this specific case. Statements are appropriately supported by reference to publications, information from stakeholders, or personal observations. The presentation shows ability to synthesize and critically evaluate information.

Problem-based project design practicum

In the practicum, students design a project aimed at addressing a real, current fisheries management problem through innovative professional practice. Where appropriate, students are encouraged to select problems related to their research or professional practice and to design projects they may subsequently implement as part of these activities. Students also have the option of obtaining credit for implementing their projects as part of a special study following the class.

Project design involves:

- a clear analysis of the management problem
- a realistic appreciation of what the proposed project will contribute to addressing the problem and over what time scale
- a set of well-designed, scientifically and professionally sound, and fully developed and pre-tested project activities
- an assessment of resources required to implement the project (budget, personnel, etc.)

Project design will normally require students to interact with stakeholders in order to aid problem analysis, design of activities, and pre-testing of specific tools such as survey instruments. Proposed project activities may include e.g. interview studies or social surveys, modeling studies involving interaction with stakeholders, conducting stakeholder workshops, or development of educational materials. All proposed activities must be grounded in sound science and professional practice and defined and pre-tested to the extent that they are ready to be implemented.

The project design practicum is conducted in five steps:
(1) Drafting of a pre-proposal
(2) Peer and instructor review of pre-proposals
(3) Development of the main proposal including consultation with stakeholders, pre-testing of activities etc.
(4) Peer and instructor review of pre-proposals
(5) Submission of final proposal.

The pre-proposal should be about 3 pages in length and include: (a) background; (b) problem definition; (c) aims and objectives; (d) project activities; (e) timeline; (f) outputs (g) intended contributions of the project to addressing the problem identified. The full proposal should follow the same format and be about 10 pages in length, plus appendices.

Grading criteria: the management problem is clearly identified; the project activity is clearly described, of appropriate scope, and designed to a high standard.

Interim exam

A take-home interim exam will be held in week 12. The exam will consist of essay questions.

Discussion meetings

Discussion meetings are held weekly for all students. The meetings are synchronous voice meetings in Zoom or in-person (when offered) with occasional screen sharing. The purpose of the meetings is to discuss the topics covered in lectures, lab/homework assignments and any other issues or questions that may arise in the course of the class.

Schedule

Note: details of the schedule may change in response to external circumstances or pedagogical needs of the course. Always check Canvas for the most current version.

Week (starting)	Lectures	Lab/ assignment	Integrative case study	Design practicum
1 (8/22)	Fisheries Management: Introduction Understanding Fisheries Systems (I & II)	Introductory clip		
2 (8/29)	Fisheries Governance (I, II & III) Stakeholders as Individuals (I & II)		Topic	
3 (9/05)	Qualitative Interview Studies in Fisheries Management	Assignment Interviewing opens		
4 (9/12)	Social Survey Design and Implementation Engaging Stakeholders: Meetings and Workshops		Information checklist	
5 (9/19)	***Gulf Council SSC 9/21-23*** Reforming Management: Change and Process	Assignment Interviewing due		
6 (9/26)	***FWC Commission 9/28-29*** Managing Recreational Fisheries Recreational Fisheries Allocation			
7 (10/03)	Fisheries Assessment Using Biomass Dynamics Models (I & II)	Assignment Social surveys due	Presentation (due 10/10)	
8 (10/10)	Case study presentations		*Peer feedback on pres.*	Topic (due 10/20)
9 (10/17)	Fisheries Economics Synthesis of Presentations	Assignment Biomass dynamics due		

Week (starting)	Lectures	Lab/ assignment	Integrative case study	Design practicum
10 (10/24)	***Gulf Council 10/24-27*** Managing Fisheries Conflicts Communicating Fisheries Science			Pre-proposal (due 10/26)
11 (10/31)	Ecosystem-Based Management Spatial and Place-Based Management	Assignment Economics due		*Peer feedback on pre-prop.*
12 (11/07)	Interim exam (open 11/08-11/16)			
13 (11/14)	Reflective Practice in Fisheries Management			
14 (11/21)	No lectures or discussion meetings (Thanksgiving)		Final presentation (due 12/06)	
15 (11/28)	Discussion on design projects			Final proposal (due 11/29)
16 (12/05)	Class Synthesis: Problem-Solving in Fisheries Management			

Textbooks

There are no required text books, but students may refer to the following for many aspects of the course:

Charles, A.T. 2001. *Sustainable Fishery Systems*. Wiley-Blackwell, London.
Haddon, M. 2011. *Modelling and Quantitative Methods in Fisheries*. Chapman and Hall, London.

Key readings

Acheson, J.M. (1975) Fisheries management and social context: the case of the Maine lobster fishery. *Transactions of the American Fisheries Society* 104: 653-668.

Adkins, T.J. (2010) Fishing for masculinity: Recreational fishermen's performances of gender. M.A. Thesis, Kent State University. 64pp.
Allison, E.H. & Ellis, F. (2001) The livelihoods approach and management of small-scale Fisheries. *Marine Policy* 25**:** 377-388.
Arlinghaus, R. & Mehner, T. (2006) Determinants of management preferences of recreational anglers in Germany: Habitat management versus fish stocking. *Limnologica* 35: 2-17.
Arlinghaus, R. et al. (2007) Understanding the complexity of catch-and-release in recreational fishing: an integrative synthesis of global knowledge from historical, ethical, social, and biological perspectives. *Reviews in Fisheries Science* 15: 75-167.
Arlinghaus, R. et al. (2019). Opinion: Governing the recreational dimension of global fisheries. *Proceedings of the National Academy of Sciences* 116: 5209-5213.
Asche, F. et al. (2018). Three pillars of sustainability in fisheries. *Proceedings of the National Academy of Sciences* 115: 11221-11225.
Branch, T. (2009) How do individual transferable quotas affect marine ecosystems? *Fish and Fisheries* 10: 39-57.
Charles, A.T. (2001) *Sustainable Fishery Systems*. Oxford: Blackwell Science.
Cochrane, K.L., Andrew, N.L. & Parma, A.M. (2011) Primary fisheries management: a minimum requirement for provision of sustainable human benefits in small-scale fisheries. *Fish & Fisheries* 12: 275–288.
Conrad, J.M. (1999) *Resource Economics*. Cambridge University Press.
Cooper, A. (2006) *Guide to Fisheries Stock Assessment: from Data to Recommendations*. University of New Hampshire/NH Sea Grant.
Covey, S.R. 1990. Principles of Empathic Communication. In *The Seven Habits of Highly Effective People*. New York: Simon and Schuster.
Dillman, D.A., Smyth, J.D. & Christian, L.M. (2009) *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method*. Wiley: Hoboken, N.J. 499 pp.
Degnbol, P., & McCay, B. J. 2006. Unintended and perverse consequences of ignoring linkages in fisheries systems. *ICES Journal of Marine Science* 64: 793–797.
Edwards C.T.T., Hillary R.M., Levontin P., Blanchard J. & Lorenzen K. (2012) Fisheries assessment and management: a synthesis of common approaches with special reference to deepwater and data-poor stocks. *Reviews in Fisheries Science* 20: 126-153.
Essington, T.E., Beaudreau, A.H. & Wiedenmann, J. (2006) Fishing through marine food webs. *Proceedings of the National Academy of Science* 103:3171-3175.
FAO (2020) State of World Fisheries and Aquaculture. Rome, FAO. http://www.fao.org/publications/sofia/2020/en/
Fisher, R. and W. Ury. 1991. *Getting to Yes: Negotiating Agreement Without Giving In*. Chapters 1 and 3.
Fogarty, M.J. & Botsford, L.W. (2007) Population connectivity and spatial management of marine fisheries. *Oceanography* 20: 112-123.
Francis, R.C., Hixon, M.A., Clarke, M.E., Murawski, S.A. & Ralston, S. (2007) Ten commandments for ecosystem-based fisheries Scientists. *Fisheries* 32: 217-233.
Fujita, R.M., Honey, K.T., Morris, A., Wilson, J.R. & Russell, H. (2010) Cooperative strategies in fisheries management: integration across scales. *Bulletin of Marine Science* 86: 251-271.

Garcia, S.M. & Charles, A.T. (2008) Fishery systems and linkages: implications for science and governance. *Ocean and Coastal Management* 51: 505-527.

Garcia, S. & Rosenberg, A. (2010) Food security and marine capture fisheries: characteristics, trends, drivers and future perspectives. *Philosophical Transactions of the Royal Society B* 365: 2881-2896.

Grimble, R. & Wellard, K. (1997) Stakeholder methodologies in natural resource management: a review of principles, contexts, experiences and opportunities *Agricultural Systems* 55: 173–193

Grimes, S.R. (1996) The 1994 net ban constitutional amendment: A case study of fisheries management in Florida. M.S. Thesis, Texas A&M University.

Gutierrez, N.L., Hilborn, R. & Defeo, O. (2011) Leadership, social capital and incentives promote successful fisheries. *Nature* 470: 386–389.

Haddon, M. 2001. *Modelling and Quantitative Methods in Fisheries*. Chapman and Hall, London.

Harris, J.M. et al. (2008) Redressing access inequities and implementing formal management systems for marine and estuarine subsistence fisheries in South Africa. In: *Fisheries Management: Progress Towards Sustainability* (Ed. T.R. McClanahan & J.C. Castilla). Wiley.

Hilborn, R. (2007a) Defining success in fisheries and conflicts in objectives. *Marine Policy* 31: 153-158.

Hilborn, R. (2007b) Moving to sustainability by learning from successful fisheries. *Ambio*, 36: 296-303.

Hilborn, R. & Walters, C. (1992) *Quantitative Fisheries Stock Assessment*. New York: Chapman & Hall.

Hilborn, R., Orensanz, J.M. & Parma, A.M. (2005) Institutions, incentives and the future of fisheries. *Philosophical Transactions of the Royal Society* B, **360:** 47-57.

Hobday et al. (2011) Ecological risk assessment for the effects of fishing. *Fisheries Research* 108: 372–384.

Hutt, C.P. & Bettoli, P.W (2007) Preferences, Specialization, and Management Attitudes of Trout Anglers Fishing in Tennessee Tailwaters. *North American Journal of Fisheries Management* 27: 1257-1267.

Jentoft, S. (2006) Beyond fisheries management: The *Phronetic* dimension. *Marine Policy* 30: 671-680.

Johnston, F.D., Arlinghaus, R. & Diekmann, U. (2013) Fish life history, angler behaviour and optimal management of recreational fisheries. *Fish and Fisheries* 14: 554-579.

Kaplan, S. & Kaplan, R. (2009) Creating a larger role for environmental psychology: The Reasonable Person Model as an integrative framework. *Journal of Environmental Psychology* 29: 329-339.

Kuehn, D.M., Dawson, C.P.& Hoffman, R. (2006): Exploring fishing socialization among male and female anglers in New York's Eastern Lake Ontario area. *Human Dimensions of Wildlife: An International Journal* 11: 115-127

Lorenzen, K. (2008) Understanding and managing enhancement fisheries systems. *Reviews in Fisheries Science* 16:10-23.

Lorenzen, K., Steneck, R.S., Warner R.R., Parma, A.M., Coleman, F.C. & Leber, K.M. (2010)

The spatial dimensions of fisheries: putting it all in place. *Bulletin of Marine Science* 86: 169-177.
Lorenzen, K. et al. (2016). Stock assessment in inland fisheries: a foundation for sustainable use and conservation. *Reviews in Fish Biology and Fisheries* 26: 405-440.
McCay, B.J. (1989) Co-management of a clam revitalization project: the New Jersey "spawner sanctuary" project. In: *Co-operative Management of Local Fisheries* (Ed. E. Pinkerton). UBC Press.
Methot, R. D. (2009). Stock assessment: operational models in support of fisheries management. In *The Future of Fisheries Science in North America* (pp. 137-165). Springer, Dordrecht.
Milon, W.J., Larkin, S.L. & Erhardt, N.M. (1999) Bioeconomic models of the Florida commercial spiny lobster fishery. Sea Grant Report Number 117, Florida Sea Grant College Program, Gainesville, Florida.
Monroe, M.C., Oxarat, A., McDonell, L. & Plate, R. (2009) Using community forums to enhance public engagement in environmental issues. *Journal of Education for Sustainable Development* 3: 171-182.
National Academies of Science, Engineering, and Medicine (NASEM). (2021) *Data and Management Strategies for Recreational Fisheries with Annual Catch Limits*. Washington, D.C.: The National Academies Press.
NOAA (2007) *Magnuson-Stevens Fishery Conservation and Management Act*. Public Law 94-265.
Ostrom, E. (2007) A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences* 104: 15181-15187.
Pido, M.D., Pomeroy, R.S. Garces L.R. & Carlos, M.B. (1996) *A Handbook for Rapid Appraisal of Fisheries Management Systems*. Manila, ICLARM.
Pomeroy, R.S. & Berkes, F. (1997) Two to tango: the role of government in fisheries co-management. *Marine Policy* **21:** 465-480.
Pomeroy, R.S. & Rivera-Guieb, R. (2006) *Fishery Co-Management: A Practical Handbook*. Wallingford, CABI Publishing.
Pomeroy, R. et al. 2007. Fish wars: conflict and collaboration in fisheries management in Souteast Asia. *Marine Policy* 31: 645-656.
Post, J.R. et al. (2002): Canada's recreational fisheries: the invisible collapse? *Fisheries* 27: 6-17
Prager, M.H. & Shertzer, K.W. (2010) Deriving acceptable biological catch from the overfishing limit: implications for assessment models. *North American Journal of Fisheries Management* 30: 289-294.
Prince, J. (2010) Rescaling fisheries assessment and management: a generic approach, access rights, change agents, and toolboxes. *Bulletin of Marine Science* 86: 197-220.
Radomski, P.J., Grant, G.C., Jacobson, P.C. & Cook, M.F. (2001). Visions for recreational fishing regulations. *Fisheries* 26: 7-18.
Rice, J. (2011) Managing fisheries well: delivering the promises of an ecosystem approach. *Fish and Fisheries* 12, 209-231.
Salas, S. & Gaertner, D. (2004) The behavioural dynamics of fishers: management implications. *Fish and Fisheries* 5: 153–167
Sarewitz, D. (2004) How science makes environmental controversies worse. *Environmental Science & Policy* 7: 385-403.

Schőn, D.A. (1983) *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books. 374 pp.
Shelley, P. (2012) Have the managers finally gotten it right? Federal groundfish management in New England. *HeinOnline - 17 Roger Williams U. L. Rev.* 21.
Smith L.E.D., Nguyen-Khoa, S. & Lorenzen, K. (2005) Livelihood functions of inland fisheries: policy implications in developing countries. *Water Policy* **7:** 359-383.
Sutinen, J.G. (1999) What works well and why: evidence from fishery-management experiences in OECD countries. *ICES Journal of Marine Science* 56: 1051–1058.
Sutinen, J.G., & Johnston, R.J. (2003). Angling management organizations: integrating the recreational sector into fishery management. *Marine Policy* 27: 471-487.
TRCP (2014) *A vision for managing America's saltwater recreational fisheries*. Washington DC: Theodore Roosevelt Conservation Partnership. http://www.trcp.org/assets/pdf/Visioning-Report-fnl-web.pdf
Tierney, J. 2011. Do you suffer from decision fatigue? New York Times article, August 17 2011.
Turner, D.W. (2010) Qualitative interview design: a practical guide for novice investigators. The Qualitative Report 15(3): 754-760. http://www.nova.edu/ssss/QR/QR15-3/qid.pdf
Walters, C.J. (2007) Is adaptive management helping to solve fisheries problems? *Ambio* 36: 304-307
Weiss, R.S. (1994) *Learning from Strangers: The Art and Method of Qualitative Interview Studies*. Simon & Schuster, New York.
Welcomme, R.L., Cowx, I.G. Coates, D. Béné, C., Funge-Smith, S., Halls, A.S. & Lorenzen, K. (2010) Inland capture fisheries. *Philosophical Transactions of the Royal Society B* 365: 2881-2896.
Whitmarsh, D. (2011) *Economic Management of Marine Resources*. London: Earthscan.
Wondolleck, J.M. & Yaffee, S.L. (2000) Making Collaboration Work: Lessons from Innovation in Natural Resource Management. Island Press. (Summary article in: Conservation in Practice 1: 17-24).
Worm, B. et al. (2009) Rebuilding global fisheries. *Science* 325: 578-585.
Young, E., & Quinn, L. (2002) Writing Effective Public Policy Papers: Guide for Policy Advisers in Central and Eastern Europe. Local Government and Public Service Reform Initiative.

Policies and Requirements

This course plan and syllabus are subject to change in response to student and instructor needs. Any changes will be clearly communicated in advance through Canvas.

Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.
For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

Communication Courtesy and Professionalism

Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. Respect for individual differences and alternative viewpoints will be maintained in this class at all times. All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest, Fisheries, & Geomatics Sciences will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following 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."

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless them instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated.

Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

Inclusive Learning Environment

This course embraces the University of Florida's Non-Discrimination Policy, which reads,
The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.
If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: http://multicultural.ufl.edu.

Services for 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. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

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

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | http://elearning.ufl.edu
- Library Help Desk support http://cms.uflib.ufl.edu/ask
- SFFGS Academic Hub https://ufl.instructure.com/courses/303721

Student Life, Wellness, and Counseling Help

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.

- Counseling and Wellness resources http://www.counseling.ufl.edu/cwc/
- U Matter, We Care http://www.umatter.ufl.edu/
- Career Connections Center http://career.ufl.edu/
- Other resources are available at http://www.distance.ufl.edu/getting-help for online students.

Student Complaint Process

The School of Forest, Fisheries, & Geomatics Sciences cares about your experience and we will make every effort to address course concerns. We request that our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered. You can also submit feedback anytime at https://ffgs.ifas.ufl.edu/contact/.

If you have a more urgent concern, your first point of contact should be the Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: http://www.distance.ufl.edu/student-complaint-process
- Students in face-to-face courses: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

Marine Protected Areas- FAS4932/6932

1. Overview

Lectures will address the logic of marine protected areas (MPAs) and their advantages and disadvantages. The science of MPAs will be presented as well an overview of traditional approaches of fisheries management. The importance of ecological principles when creating an MPA will be emphasized. An overview of sampling theory and the need for empirical data to document the success or failure of MPAs will be presented.

- 3 credits
- Fall Semester
- 100% Online
- http://elearning.ufl.edu/

Instructor: Dr. Nick Funicelli

- Please use the Canvas message/Inbox feature for fastest response.
- Office hours: Monday, Wednesday Friday one to three. I am also available by appointment email or call me to arrange: jungian7@gmail.com |CELLS: 352.328.4583 ; 352-872-8998 PLEASE NOTE LEAVE MESSAGES AT ANY NUMBER
- Can also arrange a Skype

Teaching Assistant: Shelby C Thomas

- Please use the Canvas message/Inbox feature for fastest response.

Textbook(s) and/or readings: There is no required text for the course. Online readings will be provided for many learning topics.

2. Learning Outcomes

At the end of this course, each student will be able to:

- Understand the advantages and disadvantages of MPAs as a fisheries and conservation management tool
- How to test a hypothesis relative to the success or failure of the creation and monitoring of an MPA
- Comprehend the vested interest of various stakeholders and user groups relative to the creation of an MPA

3. Course Logistics

This course is entirely web-based and students may access lectures, readings, and supporting materials as they become available each week.

Technology Requirements:

- A computer or mobile device with high-speed internet connection.
- A headset and/or microphone and speakers; a web cam is suggested.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. What browser am I using?
- [Voicethread: http://ufl.voicethread.com (more instructions will be provided)]

3.1. Assignments & Deliverables

Graduate Students:

All students will introduce themselves via a voice thread 100 points

Discussions. 1400 points

- There are 14 discussions. Please remember that unless you post to the Discussion board, the instructor cannot know that you are completing and understanding the course material. Each week a general question will be posted to get a discussion going, but comments and or answers need not be limited to that general topic. **Please feel free to post your own discussion topics** based on the unit focus and readings each week. These discussions can, and should, be just like a good in-class discussion. They are a way for you to test out your ideas related to the material and enhance your knowledge from the perspectives and experiences of your colleagues in the course. Please remember our discussions are a safe place and we can disagree but always be polite and courteous.
- Your post can be audio, video or written. I hope to use all three types of media and encourage you to do the same.
- Until you post you will not have access to other posts in the discussion.

Each discussion will begin on at 12:01 AM Monday morning and your first response is due by Wednesday of each of the 14 weeks.

Species Profile paper for Graduates 3 for 300 points each with a total of 900 points

Critique Three (3) Peer-Reviewed Articles 100 points each with a total of 300 points

- Choose a peer reviewed journal article, related to Marine Protected Areas. This assignment is to critically review an article. Your critique should include discussing the author's findings, reviewing their materials and methods, analyzing their experimental design. You should

determine any shortcomings of their experiment as well as the overall contributions their findings make to understand MPA's.

Final Project – 1600 points

Outline for Final Power Point Presentation. 400 points - Students will submit a 1-2 page (double spaced) outline of your final presentation. Your outline must be approved prior to your final power point presentation.

- **PLEASE REMEMBER BOTH OUR TA AND ME ARE AVAILABLE FOR A ZOOM DISCUSSION RELATIVE TO THIS ASSIGNMENT**.
- I encourage you to take advantage of this opportunity.

- **1200 points for Power Point Presentation**
- Each student will give a short Power Point Presentation to the class (less than 15 minutes). This presentation will be the creation of a Marine Protected Area. This creation could be real or imagined.
- The goal(s) of the MPA.
- The hypothesis and science of why the MPA will (should) be successful.
- The presentation should illustrate the size, shape and habitats of the proposed MPA.
- It should include the rational for what is NOT allowed in the MPA.
- It should itemize possible stakeholders and what vested interest they each have in the proposed MPA.
- A monitoring program to document the success or failure of the MPA.
- An adaptive management plan relative to possible outcomes of the monitoring program.

Final Power Point Presentation 1200 Points

If you anticipate problems with making your submissions on time, contact me in advance. Late work will be penalized

Undergraduate Students:

All students will introduce themselves via a voice thread 100 points

Discussions. 1400 points

- There are 14 discussions. Please remember that unless you post to the Discussion board, the instructor cannot know that you are completing and understanding the course material. Each week a general question will be posted to get a discussion going, but comments and or answers need not be limited to that general topic. Please feel free to post your own discussion topics based on the unit focus and readings each week. These discussions can, and should, be just like a good in-class discussion. They are a way for you to test out your ideas related to the material, and enhance your knowledge from the perspectives and experiences of your colleagues in the course.
- Your post can be audio, video or written. I hope to use all three types of media and encourage you to do the same.
- Until you post you will not have access to other posts in the discussion.
- Each discussion will begin on at 12:01 AM Monday morning and your first response is due by Wednesday of each of the 14 weeks.

Species Profile paper 1 for undergraduates - 300 points

Critique one (1) Peer-Reviewed Article - **100 points**

- Choose a peer reviewed journal article, related to Marine Protected Areas. This assignment is to critically review an article. Your critique should include discussing the author's findings, reviewing their materials and methods and analyzing their experimental design. You should determine any shortcomings of their experiment as well as the overall contributions their findings make to understand MPAs.

Final Project – 1600 points

Outline for Final Power Point Presentation. 400 points - Students will submit a 1 -2 page (double spaced) outline of your final presentation. Your outline must be approved prior to your final power point presentation.

- **PLEASE REMEMBER BOTH OUR TA AND ME ARE AVAILABLE FOR A SKYPE DISCUSSION RELATIVE TO THIS ASSIGNMENT**.
- I encourage you to take advantage of this opportunity.

- **1200 points for Power Point Presentation**
- Each student will give a short Power Point Presentation to the class (less than 15 minutes). This presentation will be the creation of a Marine Protected Area. This creation could be real or imagined.
- The goal(s) of the MPA.

- The hypothesis and science of why the MPA will (should) be successful.
- The presentation should illustrate the size, shape and habitats of the proposed MPA.
- It should include the rationale for what is NOT allowed in the MPA.
- It should itemize possible stakeholders and what vested interest they each have in the proposed MPA.
- A monitoring program to document the success or failure of the MPA.
- An adaptive management plan relative to possible outcomes of the monitoring program.

Final Power Point Presentation 1200 Points

If you anticipate problems with making your submissions on time, contact me in advance. Late work will be penalized

4. Grades & Grading Scale

For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Grading Scale (%)
A 93-100
A- 90-92
B+ 88-89
B 83-87
B- 80-82
C+ 77-79
C 73-76
C- 70-72
D+ 67-69
D 63-66
D- 60-62
E > 60

5. Course Content

- See “Modules” in Canvas.

6. Policies and Requirements

This syllabus represents current plans and objectives for this course. As the semester progresses, changes may need to be made to accommodate timing, logistics, or to enhance learning. Such changes, communicated clearly, are not unusual and should be expected.

6.1. Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, discussions, etc. and to maintain satisfactory progress in the course.

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket

number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

6.2. Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required, but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide UF with feedback on the quality of instruction in this course using a standard set of university and college criteria (UF Faculty Evaluations). These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

6.3. Netiquette: Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Failure to do so may result in loss of participation points and/or referral to the Dean of Students' Office. http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf

6.4. Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following 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."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied*: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless them instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated.

Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

6.5. University Policy on Accommodating Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

6.6. 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.

7. Getting Help

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | http://elearning.ufl.edu
- Library Help Desk support http://cms.uflib.ufl.edu/ask
- SFRC Academic Hub https://ufl.instructure.com/courses/303721

7.1. Student Life, Wellness, and Counseling Help

- Counseling and Wellness resources http://www.counseling.ufl.edu/cwc/
- U Matter, We Care http://www.umatter.ufl.edu/
- Career Resource Center http://www.crc.ufl.edu/
- Other resources are available at http://www.distance.ufl.edu/getting-help for online students.

7.2. Student Complaint Process

The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered.

If you have a more urgent concern, your first point of contact should be the SFRC Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: http://www.distance.ufl.edu/student-complaint-process

- Students in face-to-face courses: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

Aquaculture I

FAS 5015 (3 credits) Fall, 2022

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

***Jeffrey E. Hill**, Ph.D.*
jeffhill@ufl.edu
UF/IFAS Tropical Aquaculture Laboratory (TAL)
1408 24th Street SE
Ruskin, FL 33570
813-671-5230 x118

Office hours: 2-4 pm Tuesday (office, zoom, email, phone). Available other times by appointment

***Cortney L. Ohs**, Ph.D.*
cohs@ufl.edu
UF/IFAS Indian River Research and Education Center (IRREC)
2199 South Rock Road
Ft. Pierce, FL 34945
772-468-3922

Office hours: 11-12 am Thursdays. Available other 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.*
- *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

Grade	Percentage	Points
A	90-100	≥ 450
B+	85-89.99	425-449
B	80-84.99	400-424
C+	75-79.99	375-399
C	70-74.99	350-374
D+	65-69.99	325-349
D	60-64.99	300-324
E	< 60	≤ 299

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 24 – Classes start
August 24-October 7 – Modules 1-9 available (Quizzes and Discussions)
October 8-14 – Mid-term exam available
October 10-December 7 – Modules 10-21 available (Quizzes and Discussions)
November 18 – Writing/Voicethread assignment due
December 7 – Classes end
December 8-9 – Reading days
December 10-15 – 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

USDA. 2013. Aquaculture. U.S. Department of Agriculture National Agricultural Statistics Service.

USDA. 2013. 2012 Census of agriculture. U.S. Department of Agriculture National Agricultural Statistics Service.

USDA. 2013. Census of aquaculture. U.S. Department of Agriculture National Agricultural Statistics Service.

FAO. 2014. The state of world fisheries and aquaculture. Food and Agriculture Organization of the United Nations.

FAO. 2015. FAO Global Aquaculture Production database updated to 2013—summary information. Food and Agriculture Organization of the United Nations.

Introduction to Fish Biology

FWC. 2016. Fish anatomy. Florida Fish and Wildlife Conservation Commission. http://myfwc.com/fishing/freshwater/fishing-tips/anatomy/ .

Water Quality Management

Durborow et al. 1997. Ammonia in Fish Ponds. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 463.

Durborow et al. 1997. Nitrite in Fish Ponds. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no.

Hargreaves and Brunson. 1996. Carbon Dioxide in Fish Ponds. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 468.

Hargreves and Tucker. 2002. Measuring Dissolved Oxygen Concentration in Aquaculture. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 4601

Morgan and Brunson. 2002. Toxicities of Agricultural Pesticides to Selected Aquatic Organisms. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 4600.

Swann. A Fish Farmer's Guide to Understanding Water Quality. Illinois-Indiana Seagrant Program Aquaculture Extension. Fact sheet AS-503.

USDA. Pond Fertilization: Initiating an Algal Bloom. U.S. Department of Agriculture Western Regional Aquaculture Center. Publication no: 104.

Recirculating Aquaculture Systems

Dunning et al. 1998. The Economics of Recirculating Tank Systems: A Spreadsheet for Individual Analysis. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 456.

Masser et al. 1999. Recirculating Aquaculture Tank Production Systems: Management of Recirculating Systems. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 452.

Losordo et al. 1998. Recirculating Aquaculture Tank Production Systems: An Overview of Critical Considerations. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 451.

Losordo et al. 1999. Recirculating Aquaculture Tank Production Systems: A Review of Component Options. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 453.

Swann. Potential of Recirculating Aquaculture Systems in the Midwest. U.S. Department of Agriculture Illinois-Indiana Seagrant Program Aquaculture Extension.

Farm Ponds

Steeby et al. 1998. Repairing Fish Pond Levees. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 104.
Wellborn. 1988. Site Selection of Levee-Type Fish Production Ponds. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 100.
Wellborn and Brunson. 1997. Construction of Levee-Type Ponds for Fish Production. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 101.

Net Pens
Masser. 1997. Cage Culture: Species Suitable for Cage Culture. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 163.
Masser. 1997. Cage Culture: Cage Construction, Placement, and Aeration. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 162.
Swann and Selock. 1994. Cage Culture of Fish in the North Central Region. U.S. Department of Agriculture Illinois-Indiana Seagrant Program. Technical Bulletin no: 110.

Feed Manufacture and Nutrition
Robinson and Li. 1999. Catfish Protein Nutrition. Mississippi State University Division of Agriculture, Forestry, and Veterinary Medicine Office of Agricultural Communications. Bulletin: 1090
Robinson et al. 2001. A Practical Guide to Nutrition, Feeds, and Feeding of Catfish. Mississippi State University Division of Agriculture, Forestry, and Veterinary Medicine Office of Agricultural Communications. Bulletin: 1113

Handling and Transporting Fish
Cole et al. 1999. Shipping Practices in the Ornamental Fish Industry. Center for Tropical and Subtropical Aquaculture. Publication no: 131.
Jensen and Brunson. 1992. Harvesting Warmwater Fish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 394.
Jensen. 1990. Transportation of Warmwater Fish: Equipment and Guidelines. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 390.
Jensen. 1990. Transportation of Warmwater Fish: Procedures and Loading Rates. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 392.
Jensen. 1990. Transportation of Warmwater Fish: Loading Rates and Tips by Species. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 393.
Swann. 1993. Transportation of Fish in Bags. U.S. Department of Agriculture North Central Regional Aquaculture Center. Fact Sheet Series no: 104.
Watson et al. 2010. Shipping Fishes in Boxes. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 3903.

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.

Rottman et al. 1991. Introduction to Hormone-Induced Spawning of Fish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 421.
Rottman et al. 1991. Capturing, Holding Handling, Transporting, Injecting and Brood Fish for Induced Spawning. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 422.
Rottman et al. 1991. Determining Sexual Maturity of Broodstock for Induced Spawning of Fish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 423.
Rottman et al. 1991. Hormonal Control of Reproduction in Fish for Induced Spawning. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 424.
Rottman et al. 1991. Hormone Preparation, Dosage Calculation, and Injection Techniques for Induced Spawning of Fish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 425.
Rottman et al. 1991. Techniques for Taking and Fertilizing the Spawn of Fish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 426.

Disease

Camus. 2004. Channel Catfish Virus Disease. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 4702.
Camus et al. 1998. Aeromonas Bacterial Infections — Motile Aeromonad Septicemia. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 478.
Durborow. 2003. Protozoan Parasites. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 4701.
Durborow and Crosby. Mississippi State University Extension Service. Information Sheet 1390.
Durborow et al. 1998 Ich (White Spot Disease). U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 476.
Durborow et al. 1998. Columnaris Disease: A Bacterial Infection Caused by Flavobacterium columnare. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 479.
Durborow et al. 2003. Saprolegniasis (Winter Fungus) and Branchiomycosis of Commercially Cultured Channel Catfish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 4700.
Hawke et al. 1998. ESC — Enteric Septicemia of Catfish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 477.
Mitchell et al. 1998. Proliferative Gill Disease (Hamburger Gill Disease). U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 475.
Lane and Morris. 2000. Biology, Prevention, and Effects of Common Grubs (Digenetic trematodes) in Freshwater Fish. U.S. Department of Agriculture, Iowa State University Department of Animal Ecology. Technical Bulletin Series no: 115.
Swan and White. Diagnosis and Treatment of "Aeromonas hydrophila" Infection of Fish. U.S. Department of Agriculture Illinois-Indiana Sea Grant Program Aquaculture Extension. Fact Sheet AS-461.

Prawns/Shrimp

Ebeling and Rishel. Performance Evaluation of Geotextile Tubes. Aquaculture Systems Technolgoies, The Conservation Fund The Conservation Fund Freshwater Institute.
Hargreaves. 2013. Biofloc Production Systems for Aquaculture. Channel Catfish. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 4503.

Catfish
Durborow. 2000. Catfish Farming in Kentucky. Kentucky State University Aquaculture Program.
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.
Ohs. 2004. Channel Catfish (Ictaluris punctatus) Production Methods.
Ratliff. 2003. Scientists Tackle "off flavor" Catfish. Mississippi State University.
Robinson et al. 1998. Feeding Catfish in Commercial Ponds. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 181.
Robinson et al. 2001. A Practical Guide to Nutrition, Feeds, and Feeding of Catfish. Mississippi State University Division of Agriculture, Forestry, and Veterinary Medicine Office of Agricultural Communications. Bulletin: 1113
Silva et al. 2001. Processing Channel Catfish. . U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 183.
Tucker. 1991. Water Quantity and Quality Requirements for Channel Catfish Hatcheries. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 461.
Tucker and Ploeg. 1999. Managing Off-Flavor Problems in Pond-Raised Catfish. . U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 192.
Wellborn. Catfish Farmers Handbook. U.S. Department of Agriculture, Mississippi State University Extension Service. Publication 1549.

Hybrid Striped Bass
Dunning. Aquaculture in North Carolina: Hybrid Striped Bass. North Carolina Department of Agricultural and Consumer Services.
Dunning and Daniels. 2001. Hybrid Striped Bass Production in Ponds: Enterprise Budget. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 3000.
Hodson. 1989. Hybrid Striped Bass: Biology and Life History. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 300.
Hodson and Hayes. 1989. Hybrid Striped Bass: Hatchery Phase. U.S. Department of Agriculture 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: 303.
Kohler. 2004. A White Paper on the Status and Needs of Hybrid Striped Bass Aquaculture in the North Central Region. U.S. Department of Agriculture North Central Regional Aquaculture Center.
Morris et al. 1999. Pond Culture of Hybrid Striped Bass in the North Central Region. U.S. Department of Agriculture North Central Regional Aquaculture Center. Fact Sheet Series no: 107.
Ludwig. 2004. Hybrid Striped Bass: Fingerling Production in Ponds. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 302.
McGinty and Rakocy. 1989. Caage culture of Tilapia. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 281

Tilapia
McGinty and Rakocy. 1989. Caage culture of Tilapia. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 281
Popma and Masser. 1999. Tilapia: Life History and Biology. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 283.

Rakocy, 1989. Tank Culture of Tilapia. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 282.
Rakocy and McGinty. 1989. Pond Culture of Tilapia. U.S. Department of Agriculture Southern Regional Aquaculture Center. Publication no: 280.
Fornshell. 2001. Settling Basin Design. U.S. Department of Agriculture Western Regional Aquaculture Center. Publication no: 106.

Salmonids

Cain and Garling. Trout Culture in the North Central Region. U.S. Department of Agriculture North Regional Aquaculture Center.
Fornshell. 2001. Settling Basin Design. U.S. Department of Agriculture Western Regional Aquaculture Center. Publication no: 106.
Hinshaw. 1990. Trout Production: Handling Eggs and Fry. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 220.
Hinshaw. 1990. Trout Farming A Guide to Production and Inventory Management. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 222.
Hinshaw. 1999. Trout Production Feeds and Feeding Methods. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 223.
Hinshaw et al. 1990. Budgets for Trout: Production Costs and Returns for Trout Farming in the South. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 221.
Kinnunen et al. 1990. Salmonid Egg and Fingerling Purchases, Production, and Sales. U.S. Department of Agriculture North Central Region. Technical Bulletin Series no: 103.
Ladewig and Morat. 1995. Rainbow Trout. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 224.
Crosby et al. 2005. Harvesting Ornamental Fish From Ponds. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-117.

Freshwater Ornamentals I

Cole et al. 1999. Shipping Practices in the Ornamental Fish Industry. Center for Tropical and Subtropical Aquaculture. Publication no: 131.
Crosby et al. 2005. Harvesting Ornamental Fish From Ponds. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-117.
Crosby et al. 2005. Grading Ornamental Fish. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-118.
Crosby et al. 2005. On-Farm Transport of Ornamental Fish. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-119.
Crosby et al. 2005. Preparation of Ornamental Fish for Shipping. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-120.
Hill and Yanong. 2002. Freshwater Ornamental Fish Commonly Cultured in Florida. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Circular 54.

Kam et al. 2006. Feasibility of Direct Marketing Hawaii's Cultured Freshwater Ornamentals. Center for Tropical and Subtropical Aquaculture. Information Sheet no: 152.

Livengood and Chapman. 2007. The Ornamental Fish Trade: An Introduction with Perspectives for Responsible Aquarium Fish Ownership. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-124.

Watson and Shireman. 1996. Production of Ornamental Aquarium Fish. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-35.

Freshwater Ornamentals II

Bailey and Cole. 1999. Spawning the tinfoil barb, *Barbodes schwanenfeldi* in Hawaii. Center for Tropical and Subtropical Aquaculture. Publication no: 136.

Cole et al. 1999. A Manual for Commercial Production of the Gourami, *Trichogaster Trichopterus*, A Temporary Paired Spawner. Center for Tropical and Subtropical Aquaculture. Publication no: 135.

Cole et al. 1999. Spawning and Production of the Lemon Tetra *Hyphessobrycon pulchripinnis*. Center for Tropical and Subtropical Aquaculture. Publication no: 142.

Cole and Haring. 1999. Spawning and Production of the Serpae Tetra, *Hyphessobrycon serape*. Center for Tropical and Subtropical Aquaculture. Publication no: 138.

Tamaru et al. 1997. A Manual for Commercial Production of the Tiger Barb, *Capoeta tetrazona*, A Temporary Paired Tank Spawner. Center for Tropical and Subtropical Aquaculture. Publication no: 129.

Tamaru et al. 2001. A Manual for Commercial Production of the Swordtail, *Xiphophorus helleri*. Center for Tropical and Subtropical Aquaculture. Publication no: 128.

Marine Ornamentals

Bronson. Culturing Corals: Rules and Regs. Florida Dept of Agriculture and Consumer Services Division of Aquaculture. DACS-P-01545.

Ellis. Spawning and Early Larval Rearing of Giant Clams (Bivalvia: Tridacnidae). Center for Tropical and Subtropical Aquaculture. Publication no: 130.

Palmtag and Holt. 2001. Captive Rearing of Fire Shrimp (*Lysmata debelius*). Sea Grant Office, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Texas A and M University.

Watson and Hill. 2006. Design criteria for recirculating, marine ornamental production systems. Aquacultural Engineering. 34:157-162.

Marine Baitfish

Cassiano et al. 2009. Candidate Species for Florida Aquaculture: Pigfish, *Orthropristis chrysoptera*. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-160.

Creswell et al. 2007. Candidate Species for Florida Aquaculture: Atlantic Croaker, *Micropogonias undulates*. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-148.

Ohs et al. 2010. Candidate Species for Florida Aquaculture: Pinfish, *Lagodon rhomboides*. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-168.
Wallace and Waters. 2004. Growing Bull Minnows for Bait. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 1200.

Other Important Species

Avery et al. 1998. Crawfish Production: Production Economics, Pond Construction and Water Supply. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 240.
D'abramo et al. 2004. Semi-Intensive Production of Red Swamp Crawfish in Earthen Ponds without Planted Forage. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 2401.
Davis and Locke. 1997. Culture of Largemouth Bass Fingerlings. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 201.
Engle and Stone. 1996. Baitfish Production: Enterprise Budget. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 122
Gunderson and Tucker. 2000. A White Paper on the Status and Needs of Baitfish Aquaculture in the North Central Region. U.S. Department of Agriculture North Central Regional Aquaculture Center.
Heidinger. 2000. A White Paper on the Status and Needs of Largemouth Bass Culture in the North Central Region. U.S. Department of Agriculture North Central Regional Aquaculture Center.
Hill and Yanong. 2002. Freshwater Ornamental Fish Commonly Cultured in Florida. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Circular 54.
Lazur and Chapman. 1996. Golden Shiner Culture: A Reference Profile. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-34.
Meronek et al. 1997. The Bait Industry in Illinois, Michigan, Minnesota, Ohio, South Dakota, and Wisconsin. U.S. Department of Agriculture Cooperative State Research Education and Extension Service, Georgia Department of Natural Resources Fisheries Section. Technical Bulletin Series no: 105.
Stone and Thomforde. 2001. Common Farm-Raised Baitfish. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 120.
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.
Tidwell et al. 2000. Species Profile: Largemouth Bass. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 722.
USDA. 1998. Feeding Practices for Baitfish. U.S. Department of Aquaculture Southern Regional Aquaculture Center. Publication no: 123.
Wallace. 1998. Growing Bull Minnows in Alabama. Auburn University Marine Extension and Research Center. Circular ANR-1103.

Watson and Shireman. 1996. Production of Ornamental Aquarium Fish. University of Florida Fisheries and Aquatic Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. Document FA-35.

Syllabus: FAS 5203/6932, Biology of Fishes
Fall 2022

Instructor: Dr. Will Patterson, Fisheries and Aquatic Sciences, School of Forest Resources and Conservation; Email: will.patterson@ufl.edu; Office Phone: 352-273-3647

Teaching Assistant: None

Credits: 3 hours

Class Meeting Days and Times: Weekly online lectures and assignments

Prerequisites: Graduate student in good standing

Course Description: This 3-hour on-line graduate course is a survey of the diversity of fishes, including their anatomy, taxonomy, ecology, and conservation. Evolutionary trends are stressed, along with biogeography and biodiversity hotspots. The last section of the course is focused on fish ecology and conservation. Webinar-based review discussions will occur weekly. Weekly quizzes will be based on course readings and online lectures. Three exams also will be given during the semester, and students will write a review paper on the evolution, taxonomy, morphology, ecology, and conservation of a fish family prevalent in Florida waters.

Course Objectives: Upon completion of this course, you will be able to

- accurately employ biological terminology related to fish biology;
- reproduce the phylogenetic tree of fishes and describe evolutionary trends among different groups.
- detail novel morphological designs and when they first appeared in fishes and higher vertebrate groups;
- detail the various organ systems of fishes and higher vertebrates and their functions;
- describe the various aspects of the ecology of fishes, including the diversity in their life history strategies, feeding ecologies, and habitats utilized;
- and, understand conservation issues facing fishes and the potential policy solutions to conserving biodiversity among them.

Email Communication: All email correspondence to Dr. Patterson must be from your ufl.edu account, have your full name in the body of the email, and contain your course and section number in the subject line. Emails not meeting these requirements may not be recognized by our email filters, and thus may not be answered. If you email Dr. Patterson through the Canvas app, your UF information will be conveyed.

Required Textbook: Helfman G.S. et al. (2003) The Diversity of Fishes: Biology, Evolution, and Ecology, 2nd Edition. Wiley-Blackwell, New York, 720 pp. ISBN-13: 978-1405124942, ISBN-10: 9781405124942

Course Requirements: Course requires students to read assigned text readings, view recorded lectures, read assigned papers from the primary scientific literature, participation in online

discussions, complete weekly quizzes, write fish family review paper, and complete three online exams. Dates and times for biweekly paper discussions will be set once the semester starts.

Course Reading and Lecture Schedule:

Week	Date	Lectures	Helfman Reading
1	Aug 24	Intro to Biology of Fishes Intro to the Diversity of Fishes	Ch. 1: The science of ichthyology
2	Aug 29	External Anatomy, Skeleton, Musculature, Swimming Modes and Types	Ch. 3: Skeleton, skin, & scales Ch. 8a: Locomotion
3	Sep 5	Respiration and Circulation Thermoregulation and Buoyancy	Ch. 5: O_2, metabolism, & energetics Ch. 7: Homeostasis
4	Sep 12	Osmoregulation and Sensory Systems I Sensory Systems II	Ch. 7: Homeostasis Ch. 6: Sensory Systems
5	Sep 19	Sensory Systems III Jaw Evolution and Feeding	Ch. 6: Sensory Systems Ch. 8b: Feeding
6	Sep 26	Reproduction and Life History I Reproduction and Life History II	Ch. 9: Early life history Ch. 10: Life stages
7	Oct 3	**Exam I:** Monday, October 3th Evolution and Systematics	Ch. 2: Systematic procedures
8	Oct 10	Primitive fishes I Primitive fishes II	Ch. 11: A history of fishes Ch. 13: Primitive fishes
9	Oct 17	Chondrichthyes	Ch. 12: Chondrichthyes
10	Oct 24	Teleosts I Teleosts II	Ch. 14: Teleosts at last I Ch. 15: Teleosts at last II
11	Oct 31	Zoogeography Special habitats and adaptations	Ch. 16: Zoogeography Ch. 18: Special habitats and adaptations
12	Nov 7	**Exam II:** Monday, November 7th Fish as predators and prey	Ch. 19: Fish as predators Ch. 20: Fish as prey
13	Nov 14	Feeding ecology and trophic position Communities and ecosystems	Ch. 25: Communities, ecosystems & the functional role of fishes
14	Nov 21	**No Course Material**	
15	Nov 28	Population dynamics Fisheries	
16	Dec 5	Conservation Invasive fishes	Ch. 26: Conservation **Graduate student paper due 12/7**
17	Dec 12	**Exam III**: Monday, December 12th	

Lectures: Lectures will be posted on the Canvas site. Lecture format will be video files of powerpoint presentations presented by Dr. Patterson. In addition, weekly vocabulary and review questions will be posted on the courses Canvas site. Students should read the Helfman chapters assigned for a given week, watch lecture videos, and study vocabulary and review questions prior to taking a weekly timed (30 min) quiz, which will be open-note and administered in Canvas. Quiz questions will be pulled from a question bank and randomized, so no two students will take the exact same quiz.

Weekly Quizzes: Quizzes will be available on the Canvas site. You will have access to each quiz for

one week. Each quiz will be available from midnight on the Sunday and disappear on Saturday at 11:59 p.m. of a given week. Once you open a quiz, you will have a maximum of 30 minutes to answer 10 questions. The questions will be randomly pulled from a bank of 50 questions for each week. Questions will be locked once answered, so there will be no opportunity to go back to previous questions. There will be no quizzes during exam weeks, thus a total of 12 quizzes will be given. The two lowest grades will be dropped, including zeros.

Review/Discussion Sessions: Weekly review/discussion sections will be held on Wednesday evenings at 7 p.m. eastern time. These sessions will be conducted in zoom, with weekly links posted on the course webpage. Zoom sessions will be recorded and posted for those who could not attend. Bring questions on material covered up to that point in the course. These sessions will last 1 hour unless students run out of questions.

Exams: There will be three exams given during the course; see syllabus for dates. Exams will be available and proctored through an exam-taking app (HonorLock) that will be described in greater detail prior to first exam. Students will be required to have a web cam available to view while taking the exam; cameras integrated into laptops or tablets will suffice. Exam format will be 10 fill in the blank (1 pt each), 6 definitions (4 pts each), 4 short answer questions (8 pts each), and two long-answer questions (17 pts each). We will review the exam format prior to the first exam.

Paper Assignment: Each student will select a fish family of ecological or economic importance to Florida. Topics to be covered include the family's taxonomic diversity, evolutionary history and phylogeny, unique anatomical characters, predominant ecology (e.g., longevity, growth, reproductive mode, feeding ecology, life history strategy, etc.) among species in the group, human impacts, and conservation status. Your paper should be 8-10 pages, double-spaced, and 12-pt Times New Roman font. You may use subheadings between sections but otherwise leave no extra spacing between paragraphs.

Grading: Course grade will be based on weekly quizzes (20%), participation in paper discussions (10%), exam grades (20% each; 60% total), and paper assignment (20%). The grading scale is below; see current UF policies for assigning grade points: http://gradcatalog.ufl.edu/index.php.

Grading Scale:

Point Range (%)	Letter Grade	GPA Equivalent
≥93.0	A	4.00
90.0-92.9	A-	3.67
87.0-89.9	B+	3.33
83.0-86.9	B	3.00
80.0-82.9	B-	2.67
77.0-79.9	C+	2.33
73.0-76.9	C	2.00
70.0-72.9	C-	1.67
67.0-69.9	D+	1.33
60.0-66.9	D	1.00
60.0-62.9	D-	0.67
<60.0	F	0.00

Policies and Requirements

This course plan and syllabus are subject to change in response to student and instructor needs. Any

changes will be clearly communicated in advance through Canvas.

Late Submissions & Make-up Requests
It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx
Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.
For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

Communication Courtesy and Professionalism:
Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. Respect for individual differences and alternative viewpoints will be maintained in this class at all times. All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

Semester Evaluation Process:
Student assessment of instruction is an important part of efforts to improve teaching and learning. At approximately the mid-point of the semester, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Academic Honesty Policy:
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following 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."
You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless them instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes,

exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

Inclusive Learning Environment:
This course embraces the University of Florida's Non-Discrimination Policy, which reads,
The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act. If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: http://multicultural.ufl.edu.

Services for 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. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.disability.ufl.edu/

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
For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:
- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | http://elearning.ufl.edu
- Library Help Desk support http://cms.uflib.ufl.edu/ask
- SFRC Academic Hub https://ufl.instructure.com/courses/303721

Student Life, Wellness, and Counseling Help:
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.
- Counseling and Wellness resources http://www.counseling.ufl.edu/cwc/
- U Matter, We Care http://www.umatter.ufl.edu/
- Career Connections Center http://career.ufl.edu/

- Other resources are available at http://www.distance.ufl.edu/getting-help for online students.

Student Complaint Process:
The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered. If you have a more urgent concern, your first point of contact should be the SFRC Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: http://www.distance.ufl.edu/student-complaint-process
- Students in face-to-face courses: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

FAS6337C – FISH POPULATION DYNAMICS

FALL 2023

Credits: 4 hours

Course Description:

Course will demonstrate the analysis of fish population data for management purposes. Methods for estimating fish population parameters (e.g., growth, recruitment, and mortality) will be conducted. You will predict yield and catch composition for recreational and commercial fisheries as well as assess effects of harvest restrictions for fisheries management problems. This course is intended for graduate students in SFFGS or other natural-resource departments. We will use R and Microsoft Excel in the course.

Course Objectives:

Your objective is to become proficient with tools to conduct basic assessments for recreational and commercial fisheries. Lectures will demonstrate the methods used and laboratories will provide experience in using the various assessment tools. At the end of this course, you should be proficient in basic parameter estimation and stock assessment of fish populations. You will have experience in data analysis and interpretation and its use for management. You should be able to analyze data and interpret the results to diagnose overfishing and explore how management policies can improve fisheries.

Instructor:

Dr. Zach Siders
Fisheries and Aquatic Sciences
School of Forest, Fisheries, and Geomatics Sciences
email: zsiders@ufl.edu
Main: 352-273-3644
Cell: 571-205-6826
Office: Dequine Bldg. 106

Teaching Assistants:

Diana Perry
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Liam Kehoe
Graduate Research Assistant
Fisheries and Aquatic Sciences
School of Forest, Fisheries, and Geomatic Sciences
email: lkehoe@ufl.edu

Office Hours: By appointment and Mondays, 6-7pm.

Evaluation:

Your grade will be composed of two components: laboratory assignments and the mid-term exam; there is no final exam.

Component	Number	Part-worth	Note	Total
Laboratory Assignments	10	8%	Lowest dropped	72%
Mid-term Exam	1	28%		28%

Assignments: The assignment, data, Excel sheet, and/or *R* code for all labs can be obtained from the UF eLearning page. Each laboratory will include a lab report that includes:

1. Your data analysis, including your R program and/or Excel sheet
2. Short answers to questions presented for each lab exercise.

There is an example lab report in the Assignment #1 module.

With most assignments, there is an interactive component to either assist students in understanding the material or to answer specific assignment questions. Each interactive module (in R Shiny) can be access from the Assignment page in UF eLearning or by navigating to the interactive welcome module.

Midterm exam: The midterm exam will consist of conducting the analyses learned from Weeks 1-8 on a simulated fish population and fishery as well as answering short answers. The purpose of the exam is to reinforce your analytical and inference skills generated in the first section of the course.

Grading Policy: Please see the UF grading policy for the assignment of letter grades and GPA.

Recommended Reading List

Walters, C. J., and S. J. D. Martell. 2004. Fisheries management and ecology. Princeton University Press, Princeton, New Jersey.

Haddon, M. 2000. Modelling and Quantitative Methods in Fisheries. Chapman and Hall, London. ISBN 1-58488-177-1

Ricker, W. E. 1975. Computation and interpretation of biological statistics of fish populations. Bulletin 191 of the Fisheries Research Board of Canada.

Schedule Overview:

Each week, students can expect to spend time listening to lecture and laboratory analysis materials hosted at UF eLearning; the approximate hours for each is listed below in the weekly schedule breakdown. We will also have a 1–1.5 hour virtual discussion that will be scheduled at the start of the semester by poll sent to students. In addition to the weekly virtual recordings and discussions, students will have an assignment to complete based on that week's material. Each assignment will typically open at midnight each Monday and close the Wednesday of the following week at 11:59pm; giving students approximately 1.5 weeks per assignment. This is to allow students flexibility in turning in assignments but take care to not fall behind on the material. Students will have a mid-term exam on Week 9 (October 18–22, 2021). Further details will be provided but expect to spend a minimum of 2 days this week on the exam (average is 3 days).

Schedule Detail:

Below is the lecture, lab, and assignment schedule for each week(s). The various content titles are provided along with the approximate time of the recording, and, in the last column, the difficulty of the material (blue – easy; yellow – moderate; red – hard).

Week	Content	Time	
1	***Date: August 24, 2022***		
1	Lecture: Introduction to instructors and course	30 m	
1	Lab: Introduction to parameter estimation	1 h 40 m	
1	Lab: Introduction to R	40 m	
1	Asgmt: Introduce yourself; ***due: August 29, 2022***	15 m	
2	***Date: August 29, 2022***		
2	Lecture: Growth	30 m	
2	Lecture: Weight and size structure	35 m	
2	Lecture/Lab: Analyzing size structure	20 m	
2	Lab: Analyzing size structure in R	1h 20 m	
2	Asmgt: Lab 1; ***due: September 7, 2022***		
3	***Date: September 5, 2022***		
4	***Date: September 12, 2022***		
3/4	Lecture: Somatic growth part 1 – growth models	30 m	
3/4	Lecture: Somatic growth part 2 – Excel example	35 m	
3/4	Lecture: Somatic growth part 3 – estimation challenges	31 m	
3/4	Lab: Analyzing growth in Excel	55 m	
3/4	Lab: Analyzing growth in R	1 h 22 m	
3	Asmgt: Lab 2, part 1; ***due: September 14, 2022***		
4	Asmgt: Lab 2, part 2; ***due: September 21, 2022***		
5	***Date: September 19, 2022***		
5	Lecture: Mortality part 1 – Terms and conversions	23 m	
5	Lecture: Mortality part 2 – Catch curve & estimators	37 m	
5	Lecture: Mortality part 3 – Discrete fishery	20 m	

5	Lecture: Mortality part 4 – Continuous fishery	20 m	
5	Lecture: Mortality part 5 – Compensatory mortality	21 m	
5	Lecture: Mortality part 6 – Direct estimation & surrogates	11 m	
5	Lab: Estimating mortality in R	1 h 28 m	
5	Asgmt: Lab 3; ***due: September 28, 2022***		
6	***Date: September 26, 2022***		
6	Lab: Assessing sexual maturity	1 h	
6	Asgmt: Lab 4; ***due: October 5, 2022***		
7	Date: ***September 30, 2022****		
7	Lecture: Yield-per-recruit part 1 – CPUE	20 m	
7	Lecture: Yield-per-recruit part 2 – Use of regulations	30 m	
7	Lab Lecture: Introduction to Yield-per-recruit models	13 m	
7	Lab: Yield-per-recruit models in Excel	1 h 20 m	
7	Lab: Conditional formatting in Excel	14 m	
7	Asgmt: Lab 5; ***due: October 12, 2022***		
8	***Date: October 10, 2022***		
8	Lecture: Recruitment part 1 – basics and models	42 m	
8	Lecture: Recruitment part 2 – models and challenges	30 m	
8	Lab: Fitting recruitment models	1 h 34 m	
8	Asgmt: Lab 6; ***due: October 29, 2022***		
9	***Date: October 17, 2022***		
9	Midterm Exam; ***due October 21, 2022, 11:59 pm***		
10/11	***Date: October 24, 2022***		
10/11	Lecture: Stochastic Yield-per-recruit	42 m	
10/11	Lab: Stochastic Yield-per-recruit in Excel	1h 3 m	
10/11	Lab: Stochastic Yield-per-recruit in R	1h 5 m	
10/11	Lab Tutorial: Stochastic Yield-per-recruit in R	~ 30 m	
10/11	Asgmt: Lab 7; ***due November 9, 2022***		
12	***Date: November 7, 2022***		
12	Lecture/Lab: Estimating U (harvest rate)	1 h 3 m	
12	Asgmt: Lab 8; ***due November 16, 2022****		
13	***Date: November 14, 2022***		
13	Lecture: Virtual Population Analysis	22 m	
13	Lab: Virtual Population Analysis	1 h 3 m	
13	Asgmt: Lab 9; ***due: November 30, 2022****		
14	***Date: November 28, 2022***		
14	Lecture/Lab: Angler Effort Dynamics	50 m	
14	Asgmt: Lab 10; ***due December 7, 2022***		

*Opens early

**Extra time

Downloads

For this course you will need several applications. We will work through these in class but please download these applications to your laptop.

1. R
2. RStudio
3. (Optional) SublimeText
    a. SublimeText is a free text editor with a lot of functionality for coding in a variety of languages including in R. I personally use SublimeText as my default editor for 95% of my programming. We will use RStudio in the class, as it is the standard for R programming, but I encourage you to check out SublimeText if you find R is to your liking.

A note on R: R is an open-source development program and platform. You can easily use others' programs (called packages, we will use several) as well as develop your own. One of the packages you will certainly run into in your R journey is *tidyverse*. This is an ecosystem of packages by a variety of developers originally melded out of a series of packages developed by Hadley Wickham. *Tidyverse* is very popular, especially among data scientists, and is the package most frequently used by the R support groups at UF. We do not use *tidyverse* in this course. Our intention is to teach you the basics of R programming as well as how to write your own functions. We feel this enables you to choose your own route in developing your R skills, whether you continue to develop your own functions or grab off-the-shelf options like *tidyverse*. If you wish to learn *tidyverse* there are a variety of quantitative and R programming courses with SFFGS and IFAS that employ it.

Attendance Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Students are expected to attend all weekly discussions. Students who need accommodations for late or missed assignments are expected to request accommodations in a timely manner from the instructor.

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. Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. Click here to get started with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Academic Honesty

Students are encouraged to work with other classmates to understand the course materials and troubleshoot problems with assignments. Each module will have its own discussion board to ask questions of the instructors and of fellow students. However, the assignments and midterm must be completed independently unless explicitly defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

In 1995 the UF student body enacted 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.

(Source: 2010-2011 Undergraduate Catalog)

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

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.

Class Recordings

All group discussions will be recorded and posted on the UF eLearning page for this course and accessible to all students.

University policy: Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Campus Helping Resources

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.

University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.

On-Line Students Complaints: View the Distance Learning Student Complaint Process.