

## FAS 6273: Trophic Ecology of Fishes (Spring 2025)

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**Instructor:** Dr. Debra J. Murie

**Main Office** Program of Fisheries and Aquatic Sciences, School of Forest, Fisheries & Geomatics Sciences, 7922 NW 71<sup>st</sup> Street, Gainesville

**Office Hours** Thursday (7-8 pm) (Florida time) via Zoom (zoom address will be provided to all class participants via our Canvas course site). I am also available to schedule a Zoom meeting as needed, or email me with your questions and I will respond within 24 hrs (most times I will be able to respond to your emails much sooner unless I am in the field).

**Contact:** Please email me or use the Canvas message/inbox feature. Alternatively, my phone at fisheries is (352) 273-3601 and it is equipped with Voice IP so if you leave a message then I will receive it as an email notification and I will respond within 24 hrs (most likely earlier unless I am in the field).

**E-mail:** [dmurie@ufl.edu](mailto:dmurie@ufl.edu)

**Format:** Asynchronous online (100%)

### **Course Description:**

Trophic ecology of fishes, including: food habit analyses, food chains and webs, trophic cascades, isotopic analysis of trophic pathways, foraging behavior, prey selection, digestion and evacuation of prey, estimating consumption, feeding bioenergetics, tradeoffs among feeding, growth & reproduction, bioaccumulation, and a discussion-based introduction to ecosystem-based trophic models.

### **Prerequisites:**

A course in fish biology or ecology (e.g., Biology of Fishes, Ichthyology, or equivalent) and an introductory course in statistics at a minimum (e.g., STA 2023), with an advanced course recommended (e.g., STA 6166, STA 6093, etc.); students should be familiar with the basic use of Excel.

### **Learning Outcomes:**

On completion of this course, students should be able to:

- Discuss and explain central concepts in fish trophic ecology
- Critically evaluate the primary literature on trophic ecology of fishes
- Apply metrics and models of trophic dynamics to interpret feeding ecology of fishes

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## **Recommended Text and Instructional Materials:**

There is no required texts for this course. Reviews and discussion boards will be based on papers from the primary literature posted to specific modules.

Instructional materials for this course consist of only those materials specifically reviewed, selected, and assigned by the instructor. The instructor is only responsible for these instructional materials.

## **Course Communication and Technology Requirements:**

Course information will be posted on Canvas (<http://elearning.ufl.edu>) and will allow you day-to-day access to lecture outlines, assignments, and your grades.

### *Netiquette: Communication Courtesy*

Overall, please conduct yourself in a professional manner and give consideration to your fellow classmates. 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 in all email messages and discussions.

Technology requirements for this course include:

- 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.

## **Course Format and Assessments:**

This course is offered for 3 credits in the spring semester of each year. It consists of 13 modules with associated activities (Module 12 on Bioenergetics is a 2-week module). An individual module will open on Monday (12:01 am), runs throughout the week, and closes on Sunday at 11:59 pm. Please see individual modules for opening days and times on our Canvas site. All times are for Florida (EDT or EST).

**Please note:** The modules have a weekly schedule of completion so that everyone progresses through the course sequentially and everyone is able to contribute significantly to the group discussions. Please plan your schedule accordingly (i.e., it is not a “progress-at-your-own-pace” course because we have online group discussions).

Each module has one or more videos associated with it (posted via links to youtube), with an accompanying outline (pdf), in combination with a weekly assignment that is either: 1) a written review of a journal article; 2) a group discussion of a journal article posted to an online discussion board; or 3) a homework exercise applying the methods and metrics discussed in the lectures. There are no formal exams in this course.

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### Primary Literature Reviews:

A selected journal article from the primary, peer-reviewed literature will be posted to our Canvas site, along with a review assignment based on this paper. The review assignment is based on discussing 2-3 directed questions on the methods used, interpretation of the results, biases introduced, etc., rather than a summary of the entire paper. Reviews average around 3 double-spaced pages (with a maximum of 5 pages). There will be 4 reviews worth 20 points each.

### Group Discussion:

A selected journal article from the primary, peer-reviewed literature will be posted to our Canvas site and will act as a focal point for a group discussion on our online discussion board. Each student is expected to participate fully by contributing to the ongoing discussion board on two or more days, for a minimum of three times during the open comment period (i.e., not just in the last few hours of the discussion board). Your grade for each group discussion will be based on the level of your contribution to the discussion thread, with quality preferred over quantity of postings. For example, responding to a point posted by another student or starting a new thread of questioning will facilitate the discussion while re-stating a point already previously posted will not. There will be 4 discussion threads worth 20 points each.

### Homework Exercises:

Several modules will have homework exercises associated with them that require calculations and interpretation of data. Students will work through the exercises independently and upload their responses online as a written document, along with their Excel spreadsheets. There will be 5 homework exercises worth 20 points each.

### Course Grading:

Activity	#Assignments	Points/Activity	Total Points	% Final Grade
Literature Reviews	4	20	80	25
Group Discussions	4	20	80	25
Homework Exercises	5	20	100	50
TOTAL			260	100

This course follows UF grading policies for assigning grade points (<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>):

A (93-100%), A- (90-92.99%), B+ (86-89.99%), B (82-85.99%), B- (78-81.99%), C+ (74-77.99%), C (67-73.99%), C- (63-66.99%), D+ (59-62.99%), D (55-58.99%), D- (51-54.99%), E (<51%).

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## **Late Assignments & Make-Up Requests**

Assignments that are posted to our Canvas site later than the due date and time will be decreased by 10% per day (any portion of 24 hr after the due date/time, and thereafter). If you have a legitimate reason (e.g., jury duty, etc.) for having a late assignment then please contact me before it is due (if possible) so that we can work out an alternative arrangement. **Please note:** The group discussion bulletin board will close on the due date and time, and therefore no additions can be made after it closes since it is a group activity.

Requirements for make-up quizzes, 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 (352-392-HELP = 352- 392-4357, option 2) 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.

## **Changes to the Course and Syllabus**

The Instructor reserves the right to make changes to the course, schedule, and syllabus. If any changes occur, students will be informed through a Canvas announcement, and a revised syllabus will be posted.

## **Course Evaluation:**

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

## **UF Honor Code:**

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."*

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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."* **Please note, this includes, but is not limited to, generative artificial intelligence, large language models, content generation bots, or other non-human intelligence or digital tools (i.e., you cannot use any form of AI to generate your reviews, discussions, or homework exercises).** The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. See the UF Conduct Code website for more information. If you have any questions or concerns, please consult with the instructor in this class.

It is assumed that you will complete all work independently in this course (e.g., reviews, homework) unless the instructor provides explicit permission for you to collaborate on course tasks (e.g., group discussions). 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 and will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <https://policy.ufl.edu/regulation/4-040/>

### **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 an inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: <http://multicultural.ufl.edu>.

### **Accommodations for Students with Disabilities:**

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. See the "Get Started With the DRC" webpage on the Disability Resource Center site <https://disability.ufl.edu/get-started/>. 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. Accommodations are not retroactive and you must therefore submit the documentation letter prior to submitting assignments or scheduling exams. Students should therefore contact the Disability Resource Center as soon as possible in the term for which they are seeking accommodations.

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## **Student Life, Wellness, and Counseling**

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources below. 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 and academic goals which interfere with their academic performance. These resources include:

### **Whole Gator App**

The Whole Gator website and app connects UF students with resources dedicated to supporting overall health and well-being. In addition to many of the resources below it also has strategies to practice self-care (<https://one.uf.edu/whole-gator/topics>).

### **Health and Wellness**

- *U Matter, We Care*: If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit *U Matter, We Care* website (<http://www.umatter.ufl.edu/>) to refer or report a concern and a team member will reach out to the student in distress.
- Counseling and Wellness Center: Visit their website (<http://www.counseling.ufl.edu>) 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 their website (<https://shcc.ufl.edu/>).
- University Police Department: Visit their website (<https://police.ufl.edu/>) 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. Visit their website at <https://ufhealth.org/locations/uf-health-shands-emergency-room-trauma-center>
- GatorWell Health Promotion Services: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit their website (<https://gatorwell.ufsa.ufl.edu/>) or call 352-273-4450
- Student Success Initiative, <http://studentsuccess.ufl.edu>

### **Academic Resources**

- E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto: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. Call 866-281-6309 or email [ask@ufl.libanswers.com](mailto:ask@ufl.libanswers.com) for more information.
- Teaching Center: 1317 Turlington Hall, 352-392-2010, or to make an appointment 352-392-6420. General study skills and tutoring.



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- Writing Studio: Daytime (9:30am-3:30pm): 2215 Turlington Hall, 352-846-1138 | Evening (5:00pm-7:00pm): 1545 W University Avenue (Library West, Rm. 339). Help brainstorming, formatting, and writing papers.
- Academic Complaints: Office of the Ombuds; Visit the Complaint Portal webpage for more information.
- Enrollment Management Complaints (Registrar, Financial Aid, Admissions): View the Student Complaint Procedure webpage for more information.

### **Student Complaints:**

- Residential Course: <https://www.ombuds.ufl.edu/complaint-portal/>
- Online Course: <https://pfs.tnt.aa.ufl.edu/state-authorization-status/#student-complaint>

### **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.

### **In-Class Recording:**

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 education 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 deliver by an 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 presentation 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 guest lecturer during a class session.

Publication without the 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

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a person injured by the publication and/or discipline under UF Regulation 4.040  
Student Honor Code and Student Conduct Code.



## Schedule of Modules with opening and due dates:

Module #	Module Opens on Monday	Module Topic	Lecture Topics within Module	Review Assignment	Discussion Assignment	Homework Exercise	Review Assignment Due	Discussion Board Due	Homework Exercise Due
1	13 Jan	Introduction to Course	Introduction to course: topics, assignments, grading, outcomes	No	Yes	No		22 Jan by 11:59 pm EST (delayed to Wednesday)	
2	20 Jan	Food Habit Analysis: Quantifying Composition	Identifying prey; quantitative methods of analysis; biases	No	No	Yes			26 Jan by 11:59 pm EST
3	27 Jan	Metrics of Food Habit Analysis	Niche breadth, overlap, similarity analysis	No	No	Yes			2 Feb by 11:59 pm EST
4	3 Feb	Food Chains and Food Webs	Chains versus webs, trophic levels, trophic pyramids	No	Yes	No		9 Feb by 11:59 pm EST	
5	10 Feb	Trophic Cascades	Bottom-up versus Top-down control; trophic cascades	Yes	No	No	16 Feb by 11:59 pm EST		
6	17 Feb	Integrating Field Feeding Ecology	Integrating concepts in field feeding ecology studies	No	Yes	No		23 Feb by 11:59 pm EST	
7	24 Feb	Isotopic Analysis of Feeding Ecology	Isotope analysis of prey and trophic levels; isotopic niches; isotope mixing models	No	No	Yes			2 Mar by 11:59 pm EST
8	3 Mar	Foraging Behavior	Optimal foraging; foraging arenas; prey selectivity; predator-prey size relationships	Yes	No	No	9 Mar by 11:59 pm EST		
9	10 Mar	Digestion and Evacuation of Prey	Factors of differential digestion of prey; digestion indices; evacuation models	No	No	Yes			23 Mar by 11:59 pm EDT (Tuesday)
<b>16 - 23 March SPRING BREAK (No classes)</b>									
10	24 Mar	Estimating Food Consumption	Chronology of feeding; consumption models	No	No	Yes			30 Mar by 11:59 pm EDT
11	31 Mar	Bioaccumulation through the food chain	Bioaccumulating substances; bioaccumulation and biomagnification factors	No	Yes	No		6 Apr by 11:59 pm EDT	
12	7 Apr	Bioenergetics (2 week module)	Field versus lab consumption rates; bioenergetic schemes and models; Growth and reproductive tradeoffs based on consumption and energy storage	Yes	No	No	20 Apr by 11:59 pm EDT		
13	21 Apr	Ecosystem Models Based on Trophic Analyses and Wrap up!	Ecosystem-based Fisheries Management; OSMOSE; Ecopath with EcoSim; Atlantis	Yes	No	No	27 Apr by 11:59 pm EDT		
Any late assignment(s) must be turned in by 30 April 2025 11:59 pm EDT to receive any credit.									