

# **Syllabus: FAS 4202C/5203C, 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

**Office Hours:** Mondays in MCC-B G109 at 8:00-12:00 and 15:00-17:00, or by appointment

**Teaching Assistant:** Mr. Derek Chamberlin; derek.chamberlin@ufl.edu

**Credits:** 4 hours

## **Class Meeting Days and Times:**

Activity	Day	Time	Location
Lecture	Monday	12:50 - 14:45	MCCB 3096
Lecture	Thursday	11:45 - 12:35	NZH 0112
Lab I	Thursday	12:50 – 14:45	MCCB 3108
Lab II	Thursday	15:00 – 16:55	MCCB 3108

**Prerequisites:** BSC 2011/2011L or consent of instructor

**Course Description:** This 4-hour dual-listed undergraduate/graduate course is a survey of the diversity of fishes, including their anatomy, diversity, taxonomy, biogeography, 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. Weekly lab sessions will reinforce material covered in lecture. Three lecture exams will be given during the semester as well as two lab practicals. Students taking the course for graduate credit 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;
- detail the various organ systems of fishes and their functions;
- reproduce the phylogenetic tree of fishes and describe evolutionary trends;
- detail novel morphological designs and when the first appeared in fishes;
- describe the various aspects of the ecology of fishes, including the diversity in 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 UF email filters, thus may not be answered. Any email you send within the Canvas app will convey

your UF information.

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

**Course Requirements:** Students are required to read assigned text readings, attend lectures and take notes, participate in laboratory sessions and keep a laboratory notebook, and take lecture exams and laboratory practicals. Graduate students will also be required to write a review paper on a fish family of ecological or economic importance to Florida.

**Lecture, Reading, and Laboratory Schedule:**

Week	Date	Lectures	Helfman Chapters	Laboratory Exercise
1	Aug 24	Intro to Biology of Fishes	1	No Lab
2	Aug 29	Intro to the Diversity of Fishes External anatomy, skeleton, musculature	1, 3	No Lab
3	Sep 5	<b>No Class Monday Sept 5<sup>th</sup></b> Swimming modes and types	5	Lab 1: Fish external anatomy
4	Sep 12	Respiration and circulation Thermoregulation, buoyancy, & osmoregulation	7, 8a.	Lab 2: Myology and osteology
5	Sep 19	Sensory systems I and II	6	Lab 3: Swimming and locomotion
6	Sep 26	Jaw evolution and feeding Reproduction and life history	8b, 9	Lab 4: Fish internal anatomy
7	Oct 3	<b>Exam I:</b> Monday, October 3 <sup>th</sup> Fish life history	10	Lab 5: Reproductive biology
8	Oct 10	Systematic procedures, Fish diversity Primitive fishes	2, 11, 13a	<b>Lab Practical I</b>
9	Oct 17	Chondrichthyes Osteichthyes I	12, 13b, 14	Lab 6: Development and life stages
10	Oct 24	Osteichthyes II	14, 15	Lab 7: Fish age and growth
11	Oct 31	Zoogeography Special habitats and adaptations	16, 18	Lab 8: Fish age validation
12	Nov 7	<b>Exam II:</b> Monday, November 7 <sup>th</sup>		Lab 9: Estimating mortality
13	Nov 14	Fish as predators and prey Feeding ecology and trophic position	19, 20	Lab 10: Feeding and trophic ecology
14	Nov 21	Population dynamics and fisheries <b>No Class Thurs Nov 24<sup>th</sup></b>	26	
15	Nov 28	Communities and ecosystems Conservation & Invasive fishes	25, 26	<b>Lab Practical II</b>
16	Dec 5	Wrap up and review		<b>Graduate student paper due Monday Dec 5<sup>th</sup></b>
17	Dec 12	<b>Exam III:</b> Thurs, Dec 15 <sup>th</sup> , 12:30-14:30		

**Lecture files:** Lecture files will be posted on the Canvas site at the beginning of a given week (midnight Saturday). In addition, weekly vocabulary and review questions will also be posted on the course's Canvas site. Students should read the Helfman chapters assigned for a given week, study vocabulary and review questions, download lecture files, and come to class and take notes.

**Laboratory files and requirements:**

Laboratory files, including background information and laboratory exercise descriptions, will also be posted each week and should be downloaded and brought to class either as printed or digital files. Students must be present and participate in each laboratory exercise. Students must keep a laboratory notebook that will be collected and graded for completeness at each practical. Notebook grades will constitute 20% of your practical score.

**Grading:** Undergraduate course grades will be based on exam (20% each; 60% total), practical (10% each; 20% total), and lab notebook (10% each; 20% total) scores. For graduate students, exams will count 20% each, practical scores will each count 10% each, lab notebooks will count 5% each, and the paper assignment will count 10% toward your course grade. 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

**Graduate Student Paper Assignment:** The graduate student paper assignment will constitute 10% of the course grade, thus lowering the course grade percentages for each practical to 15%. The paper will be due Monday, November 25. Each graduate student will pick a family of significance to Florida and write an 8-10 page (double spaced, 12-pt font, 1" margins) paper on the family's evolution, taxonomy, morphology, ecology, and conservation.

**Attendance and Make-Up Work Requirements:** Course policies for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <http://gradcatalog.ufl.edu/index.php>.

**Academic Honesty:** 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 the 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 to 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>.

**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.

**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/](http://www.disability.ufl.edu/).

**Campus Helping Resources:** Students experiencing crises or personal problems that interfere with their general wellbeing 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 listed below 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/](http://www.counseling.ufl.edu/cwc/). Available are Counseling Services, Groups and Workshops, Outreach and Consultation, a Self-Help Library, and Wellness Coaching.

--U Matter We Care, [www.umatter.ufl.edu/](http://www.umatter.ufl.edu/)

--Career Resource Center, First Floor JWRU, 392-1601, [www.career.ufl.edu/](http://www.career.ufl.edu/)

**Student Complaints:** The process for lodging student complaints can be found by following the link [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

**Recording of Lectures and Labs:** 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 Dr. Patterson.

Each 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 of recorded lectures 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.

Policies regarding student in-class recordings are detailed at <http://aa.ufl.edu/policies/in-class-recording/>.

**Covid Considerations:** In response to COVID-19, the following practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

If you are not vaccinated, get vaccinated. Vaccines are readily available at no cost and have been demonstrated to be safe and effective against the COVID-19 virus. Visit this link for details on where to get your shot, including options that do not require an appointment: <https://coronavirus.uflhealth.org/vaccinations/vaccine-availability/>. Students who receive the first dose of the vaccine somewhere off-campus and/or outside of Gainesville can still receive their second dose on campus.

Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators. Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class. Hand sanitizing stations will be located in every classroom.

If you sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email [covid@shcc.ufl.edu](mailto:covid@shcc.ufl.edu)) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information. Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

If you are withheld from campus by the Department of Health through Screen, Test & Protect you

are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.

Continue to regularly visit <https://coronavirus.UFHealth.org> for up-to-date information about COVID-19 and vaccination.