

## **Syllabus: FAS 4202C/5203C, Biology of Fishes Fall 2019**

**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 from 8:00-12:00 and 15:00-17:00, or by appointment

**Teaching Assistant:** Mr. Justin Lewis

**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	MCCB 3096
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 among different groups.
- 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 19	Intro to Biology of Fishes	1	No Lab
2	Aug 26	Intro to the Diversity of Fishes External anatomy, skeleton, musculature	1, 3	Lab 1: Fish external anatomy
3	Sep 2	<b>No Classes Monday Sept 2<sup>nd</sup></b> Swimming modes and types	5	Lab 2: Myology and osteology
4	Sep 9	Respiration and circulation Thermoregulation, buoyancy, & osmoregulation	8a, 7	Lab 3: Swimming and locomotion
5	Sep 16	Sensory systems I and II	6	Lab 4: Internal anatomy
6	Sep 23	Jaw evolution and feeding Reproduction and life history	8b, 9, 10	Lab 5: Reproductive biology
7	Sep 30	<b>Exam I:</b> Monday, September 30 <sup>th</sup> Systematic procedures, Fish diversity	2	Lab 6: Development and life stages
8	Oct 7	Fish Diversity Primitive fishes	11, 13	<b>Lab Practical I (Covers Labs I – V)</b>
9	Oct 14	Chondrichthyes Teleosts I	12, 14	Lab 7: Feeding
10	Oct 21	Teleosts II Zoogeography	15, 16	Lab 8: Fish age and growth
11	Oct 28	Special habitats and adaptations <b>Exam II:</b> Thursday, October 31	18	Lab 9: Estimating mortality
12	Nov 4	Fish as predators and prey Feeding ecology and trophic position	19, 20	Lab 10: Mark-recapture
13	Nov 11	<b>No Classes Monday Nov 11<sup>th</sup></b> Communities and ecosystems	25	<b>Lab Practical II</b>
14	Nov 18	Population dynamics Fisheries	10	<b>Graduate student paper due</b>
15	Nov 25	Conservation & Invasive fishes <b>No Classes Thurs Nov 28<sup>th</sup></b>	26	
16	Dec 2	Wrap up and review		
17	Dec 9	<b>Exam III:</b> Weds, Dec 11 <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 also must bring a dissecting kit to lab each week, including scalpel, forceps, sharp and blunt probes, and scissors; larger knives will be provided as needed. 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) and practical (20% each; 40% total) scores. For graduate students, practical scores will each count 15% 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 18. 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.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/).

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