

Sensory Biology & Behavior of Fishes

Course: BSC 6936-019 (3 credits)

Instructor: Dr. Stephen Kajiura

Office: Sanson 215; hours: Tue 1:30 - 4:30 pm

Semester: Fall 2011

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Prerequisites:

Permission of the instructor

Course Description:

An in-depth examination of fish sensory systems and how they are utilized in behavior.

Lecture schedule:

Tue 6:00 - 9:00 pm

IS4 113

Aug 23 – Dec 06, 2011

See attached schedule for details

Required Text:

von der Emde, G, J Mogdans & BG Kapoor (eds). 2004, *The Senses of Fish, Adaptations for the Reception of Natural Stimuli*. Kluwer Academic Publishers Inc., 377 pp.

Content:

This graduate course is designed to have a significant student teaching component. Class discussions will focus on contemporary issues in fish sensory biology through presentations and discussions of assigned readings. The course is comprised of the following assignments:

I. Each week we will cover a different chapter from the required text. For each session, two students will present an overview of the topic including a summary of the chapter and examples of exceptions from outside sources. For example, a presentation on vision will cover not only the basics of the fish visual system, but also address some unusual adaptations such as four-eyed fish (*Anableps anableps*) etc. The students will also lead a class discussion on the assigned readings, chosen in conjunction with the instructor. Remember, it is the duty of discussion leaders to only answer technical questions about the papers and to keep the discussion moving along. It is the responsibility of each student in the class to critically review each paper and raise their questions to the group. For example, has the author formally stated a hypothesis or question? Is the methodology correct or appropriate? Are the data adequate and have the appropriate statistical analyses been performed? Do the data justify the author's conclusions? *A significant portion of your grade will be based upon your class participation in these discussions for the duration of the course.*

II. A choice of either a term paper or an independent research project. A final paper on a topic of the student's choosing is due in class on December 06. The paper will not exceed 6 pages single spaced (plus references and figures) and will address a topic in sensory biology or behavior agreed upon with the instructor by September 27. Students are required to choose a topic outside the realm of their graduate research. The paper can either be in the form of a

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review or represent results of original research. Each student will present a brief (10min) summary of their topic during the symposium on Dec 06. Plagiarism will not be tolerated and will result in immediate failure.

Grading:

Presentation & discussion leadership	40
Participation	20
Term paper / research project	30
Symposium presentation	<u>10</u>
Total	100

Labs:

Each student is strongly encouraged to attend lab sessions throughout the semester that address various topics including vision, olfaction, electroreception, and electrocommunication. Count on spending approximately 1 hour on each lab. More information will be provided as experiment dates are finalized.

Field trip:

A required field trip to the Keys Marine Laboratory will take place on September 16-18. The field trip will include snorkeling in reef, seagrass, and mangrove habitats to observe fish behavior, long line fishing, and gill net fishing. Students will actively participate in various demonstrations and experiments. Evening lectures and discussions will complement each day's activities. A lab fee of \$130 per person will be assessed to cover transportation, accommodations and boat use at the Keys Marine Laboratory. Students are responsible for their own meals.

Students with disabilities:

In compliance with the Americans with Disabilities Act (ADA) students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in SU 133, x73880, and follow all OSD procedures.

Honor code:

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see http://www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf.

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Lecture schedule:

Date	Topic (chapter)	Presenters	
23-Aug	Introduction		
30-Aug	no class		
06-Sep	1. Vision	Davis, Penny R.	Baez, Jennifer J.
13-Sep	3. Olfaction	Weeks, Rebecca M. Augliere-Wheat, Bethany N.	Pate, Jessica H. Barbarite, Gabrielle M.
20-Sep	4. Taste		
27-Sep	7. Hearing	Resnick, Bethany R.	Bedore, Christine N.
04-Oct	11. Lateral line	Snow, Tiffany M.	Warraich, Tatiana N.
11-Oct	13. Teleost electroreception	Young, Jeremy	Martin, Heath A.
18-Oct	14. Elasmobranch electroreception	Bennice, Chelsea	Smith, Kieran T.
25-Oct	Shoaling	Lieuwen, Bethany J.	Harris, Lindsay L.
01-Nov	Foraging	Pate, Jessica H.	Warraich, Tatiana N.
08-Nov	Mating	Harris, Lindsay L.	Bedore, Christine N.
15-Nov	Defense	Tellman, Shari L.	West, Lorin
22-Nov	Communication	McCutcheon, Sara M. Augliere-Wheat, Bethany N.	Weeks, Rebecca M. Barbarite, Gabrielle M.
29-Nov	Migration		
06-Dec	Student symposium		

Potential term paper topics:

blind cave fishes
magnetoreception
salmon imprinting
sensory adaptations to the deep sea
chromatophores as environmental sensors
visualizing polarized light
schreckstoff
Mauthner cells
parental care
diel behavior
jamming avoidance response