SYLLABUS

FAS 6932: Biology of Fisheries and Aquaculture Invertebrates

Summer C, 2015

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Course Description

This course will introduce the student to the biology of the non-vertebrate marine and aquatic animals that humans harvest or culture. Invertebrate animals (e.g. mollusks, crustaceans, echinoderms) comprise most of the described animal species. Many are important fisheries and some are increasingly important in aquaculture. Invertebrates are anatomically and biologically more diverse than finfish, and this diversity must be understood in order to study their fishery management or aquaculture.

This course will examine the biology of marine and freshwater invertebrates that are important as fisheries or in aquaculture. Topics will include taxonomy, morphology, distribution and habitat, nutrition, significant ecological interactions, and life cycles. Non-food fisheries, such as commercial sponges and pearl oysters, will also be included. The course will be organized by taxonomic groupings, or phyla. Topics have been chosen for their biological relevance to fisheries and aquaculture, but procedural topics (fishery or culture methods, management, models, etc.) and pathology, which are covered at least partially by other courses, will not be emphasized here.

Reading Materials and Resources

There is no required textbook. The following texts are suggestions only. I know of no textbooks that focus on the biology of fishery invertebrates in general, although there are many that cover a specific fishery group. The inclusion of lab manuals here does not imply we will have a lab section; they are simply for your reference. Additional texts or manuscripts for specific topics will be noted during the course.

- Brusca, R.C. and G.J. Brusca. 2003. Invertebrates. 2nd Ed. Sinauer Associates. Sunderland, MA, USA. 936 pp. ISBN-10: 0878930973. $114.71 from the publisher as of 4-16-13.
- Nybakken, J.W. 1996. Diversity of the Invertebrates: A Laboratory Manual. Gulf of Mexico Version. McGraw Hill, Boston, MA, USA. 320 pp. ISBN-10: 0697151239. *Price unavailable from publisher.*
- Pechenik, J.A. 2010. Biology of the Invertebrates. 6th Ed. McGraw Hill, Boston, MA, USA. 606 pp. ISBN-10: 0073028266. $189.67 from the publisher as of 4-16-13.

- Ruppert, E.E., R.S. Fox, and R.D. Barnes. 2003. Invertebrate Zoology. 7th Ed. Brooks-Cole, Belmont, CA, USA. 989 pp. ISBN-10: 0030259827. $229.99 from the publisher as of 4-16-13.
- Wallace, R.L. and W.K. Taylor. 2002. Invertebrate Zoology Lab Manual. 6th Ed. Benjamin Cummings, San Francisco, CA. 356 pp. ISBN10: 0130429376. $103.80 from the publisher as of 4-16-13.

Wikipedia is a useful and mostly reliable source of information for some common species of invertebrates, but it should never be used as a reference. You may use Wikipedia to find original references, but Google Scholar (http://scholar.google.com/) and PubMed (http://www.ncbi.nlm.nih.gov/pubmed) are examples of more comprehensive tools for finding resources. The only Internet resources you should cite directly in a report or paper are online versions of published research papers or review articles in reputable journals, and WoRMS (see below).

Taxonomy is a rapidly advancing field and even online resources such as Wikipedia may not represent the latest revisions. The most reliable taxonomic resource for marine invertebrates is probably the World Registry of Marine Species (WoRMS, http://www.marinespecies.org/). Unfortunately, there is no comparable resource for most freshwater invertebrates.

Quizzes and Exams

Quizzes and exams are administered online in Canvas.

Quizzes - Each week (starting with the second) that there is not a larger exam, there will be a timed quiz with five multiple-choice questions taken just from the prior week's material. You can use your notes or any other resources to answer the questions but there will be only five minutes allowed for the entire quiz. You may take the quiz any time in the week following the material covered. There is no make-up if you miss the deadline.

Exams - There will be two exams: a midterm exam following Week 6, and a final exam at the end of the course. The midterm will cover the material from the prior six weeks, and the final exam will be comprehensive. As with the quizzes, you may use any materials to answer the questions, but the exams will be timed and there will be no make-up without prior arrangement. The questions will mostly be short-answer, although the instructor reserves the right to include other formats.

Reports. Two species reports will be required, on due halfway through the course, and one at the end. Each will be on a single species or, possibly, several closely related species that comprise a single fishery. For the first report, the student will be assigned a species by the instructor; for the second report, the student may choose a species, but it must be approved by the instructor. The

topic chosen does not have to be a fishery or aquaculture species, but should somehow be closely tied to fisheries and aquaculture. The reports must be succinct but well-referenced. More information on reports will be provided separately.

Grading

The course grade will be based on points scored, broken down as follows:

Quizzes - 9 x 5 points	45 points
Midterm Exam	40 points
Final Exam	55 points
Report 1	20 points
Report 2	40 points
Total	200 points

Grades are based on a percentage of the above points; there is no curve.

93% (233 points) and above = A
90% = A-
88% = B+
83% = B
80% = B-, etc.

Online Interactions

The lecture material, in the form of narrated Power Point modules, will be prepared in advance and will not be live. You may go through the lectures (modules) at your leisure. Unless specifically requested on an individual basis, interactions between students and instructor will be via email (pkbaker@ufl.edu), or during office hours via Skype. Office hours will be negotiated at the beginning of the course based on the availability of students.

Proposed Schedule of Topics (underlined). Each week will be divided into an estimated 9-12 short recorded lectures ("modules"), one to several modules per topic. The schedule listed below is an approximate guideline and actual times will be modified as needed, but all of the topics listed below will be covered in that approximate order. Quizzes will be available for three days (Monday through Wednesday) and will cover the prior week's material. Exams will also be available for three days (Monday through Wednesday) and will cover the prior five weeks, except for the final exam, which is cumulative for the entire course. Reports are due by 6:00 pm EDT on the Friday of the week listed.

Week 1:	May 11-15 – Course Introduction and Sponges	(no quiz)
Week 2:	May 18-22 – Cnidarians: Corals and Jellyfish	**Quiz 1**
Week 3:	May 25-29 – Rotifers, Annelids, and Peanut Worms	**Quiz 2**
Week 4:	June 1-5 – Mollusks: Introduction and Gastropods	**Quiz 3**
Week 5:	June 8-12 – Mollusks: Bivalves	**Quiz 4**
Week 6:	June 15-19 - Mollusks: Bivalves	**Quiz 5** **Report 1**
	June 22-26 NO CLASSES	
Week 7:	June 29-July 3 – Mollusca- Cephalopods	**Midterm Exam**
Week 8:	July 6-10 – Arthropods – Introduction	**Quiz 6**
Week 9:	July 13-17 – Crustaceans: Shrimp and Prawns	**Quiz 7**
Week 10:	July 20-24 – Crustaceans: Lobsters and Crayfish	**Quiz 8**
Week 11:	July 27-31 – Crustaceans: Crabs and Echinoderms	**Quiz 9**
Week 12:	August 3-7 – Echinoderms and Chordates	**Final Exam** **Report 2**

From the University of Florida

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/honorcodes/honorcode.php.

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.