

**TEMPORARY SYLLABUS:** Please note that this syllabus is being posted well before class begins to help you prepare. However, this syllabus is subject to changes. The final syllabus will be posted in the week preceding the official start of class.

**Course Number:** OCB 4711

**Course Title:** Fisheries Science (3 credit hours) (Spring 2019)

**Instructor:** Yuying Zhang,  
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Email: yuying.zhang2@fiu.edu  
Phone: (305) 919-4105.

**Class Time:** Online lectures &  
MMC: W 15:00 - 16:15  
BBC: Th 11:00 - 12:15

**Office Hours:** T 11:00 - 13:45 & Th 12:30 - 13:45

**Class Location:** MMC TBD  
BBC TBD

**Prerequisites:** BSC 1010 + BSC 1011

**Course Justification:**

Currently no Fishery Science course has been offered by Florida International University, although we have a course of Fish Biology. The difference is that the Fishery Science course relates to the conservation, exploitation and management of fisheries resources. Currently, the number of individuals with post-baccalaureate degrees in fishery science-related subjects is in shortage, and this course could help upper-division undergraduate students lay solid foundation in the fisheries discipline.

**Course Description:**

This course provides a background on the development of fisheries science, and examines the theories and techniques of biology, ecology, oceanography, mathematics, statistics, economics and sociology. Components include fish and shellfish basic population dynamics, early life-history recruitment, migration, growth, mortality, fishery dependent/independent surveys, alternative abundance measurement techniques, habitat considerations, and introductory fisheries modeling and management.

**Course Goals:**

- Students will gain an understanding of the fundamentals of fisheries science.
- Students will demonstrate their ability to use essential mathematical and statistical skills that will be needed for their future fisheries research.
- Students will improve analytical skills by using Excel.
- Students will develop a passion for fisheries sciences.

- Student will be provided an opportunity to work constructively with members of a group.

### **Learning Objectives:**

At the end of this class, students will be able to:

- understand the status of world's fisheries,
- explain fisheries terminologies,
- fit quantitative models using least square method,
- compare and contrast collection of dependent vs. independent data,
- develop and apply length-weight relations,
- compute and interpret size structure indices,
- estimate stock abundance from mark-recapture data,
- estimate mortality from catch-at-age data,
- estimate growth from length-at-age data,
- fit stock spawning biomass-recruitment curves,
- develop basic biological reference points,
- evaluate status of a fishery, and
- understand fisheries management process.

### **Course Outline /Major Topics**

- Week 1) Introduction: The history of fisheries science. Overview of fisheries in the world, USA, and FL, major fisheries species of commercial and recreational importance...  
Take-home material: glossary of fisheries terms (will be tested in the midterm test).
- Week 2) Basic marine population dynamics: selectivity, catchability, vulnerability, fishing mortality, bycatch, at-sea discarding practice, consequence, and management implications...
- Week 3) Fishing gear and technology: introductions to different fishing gears including gillnet, trap, trawl... and gear structure and fishing efficiency, gear interactions with targeted and non-targeted fish species, fishing techniques, gear technology and management implications.
- Week 4) Fishery dependent surveys (homework assigned)
- Week 5) Fishery independent surveys and tagging studies.
- Week 6) Alternative abundance measurement techniques, acoustic surveys, direct counts, tagging.
- Week 7) Life History/Migration (midterm exam)
- Week 8) Mortality (natural/fishing) (final project assigned)
- Week 9) Growth
- Week 10) Fishery modeling: introduction, assumptions, the logistic model... (homework due)
- Week 11) Fishery modeling: stock-recruitment relationships
- Week 12) Tools and principles in fisheries management:
- Week 13) Habitat considerations. Impacts of fisheries on ecosystems (if time allows)
- Week 14) (report due and final project presentation)

**Course Grading:**

1. Midterm (25 points) and final project (totally 40 points: 20 points for report, and 20 points for a 10-minute presentation).
2. Homework (35 points).

Requirements for your final report: pages: 2 or more pages, line spacing: 1.5 lines, font: 12 pt, margins: 1 inch.

All the homework needs to be submitted **via email** with two attached files: one in WORD and the other in EXCEL. Please write your first name, last name, course number and homework number in your message's subject line so that it is not confused with other assignments and filed in the wrong folder! If it is a late homework with an approved extension, please add the word "extension" in the subject line.

**Textbooks:**

Fisheries Biology, Assessment and Management by M. King published by the Wiley-Blackwell 2007 (2nd edition) (recommended but not required).

Over the semester, reading materials and lecture notes will be sent to students before class.

*Late homework/Extension/Make-up exam or quiz:*

*No points are awarded for late homework without arrangement or communication before the due date. If you cannot finish the work by deadline, please contact the instructor (you can call or email) and make an arrangement for an extension before the deadline. (The extension should be no more than one week.) When you apply for an extension, please provide a valid university-approved excuse. You should also specify when your homework will be submitted, and this becomes your new deadline. Please note that the instructor will not notify you when work is late, since deadlines are clearly posted for you in course materials.*

*Students who simply do not show up for the exam will not be allowed to take a makeup exam and will receive a score of 0. If there is any reason that a student cannot have his/her exam/quiz, please also provide a valid university-approved excuse.*

*Examples of university-approved excuses include: medical emergencies (with Medical Doctors' note), death of members of immediate family, car accidents (with a police report) and natural events such as hurricanes, floods, or fires that causes the closure of Biscayne Bay Campus.*

*Sexual Harassment Policy:*

*The Faculty Senate voted to require each professor to include a statement about this in the syllabus. FIU's sexual harassment policy is available online:*

[http://www.fiu.edu/hr/eop/Forms/Policies/Sexual\\_harassment.pdf](http://www.fiu.edu/hr/eop/Forms/Policies/Sexual_harassment.pdf)

*Cheating or plagiarism will not be tolerated! As a student of Florida International University, you should be honest in your academic endeavors. You should not represent someone else's work as your own. You should not cheat, neither aid in another's*

*cheating. Students caught cheating during an examination or plagiarizing will be subject to the Academic Misconduct procedures and penalties.*

*Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and to honestly demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.*

<i>B+: 87.00-89.99%</i>	<i>A: 93.00%-100.00%</i>	<i>A-: 90.00-92.99%</i>
<i>C+:77.00-79.99%</i>	<i>B: 83.00-86.99%</i>	<i>B-: 80.00-82.99%</i>
<i>D: 63.00-66.99%</i>	<i>C: 70.00-76.99%</i>	<i>D+:67.00-69.99%</i>
	<i>D-:60.00-62.99%</i>	<i>F: &lt;60%</i>