



Last Revision: 9 Oct 2015

I. COURSE NUMBER AND TITLE:

Marine Fisheries Science

Course Number: CRNs OCMB 6365 – 34753, CZMT 6365 – 34737, MEVS 6365 - 34738

Days: Thursdays

Time: 6:30 pm – 9:30 pm

Building & Room: Forman 120 & Modular Teaching Lab

II. INSTRUCTOR:

David W. Kerstetter, Ph.D.

Phone: 954-262-3664

Email: kerstett@nova.edu

Office: 125 Modular Building, Ocean Sciences Center

Office Hours: [open and variable; see note below]

III. COURSE DESCRIPTION:

This course will explain the main theories and methods used in marine fisheries science, as well as providing a basic understanding of management in the United States (including the federal fisheries management council and international regional fisheries management organization processes). Ultimately, the student will better understand the historical development of the structure and goals for U.S. domestic fisheries policies. In addition, this new course adds many of the laboratory exercises and guest lectures formerly in the *Intermediate Marine Fisheries Science* course, including fishing gear modifications, fish specimen preparation, and basic population modeling.

IV. LEARNING OUTCOMES:

Upon completion of the 12-week course, students will be able to: 1) describe the basic techniques and principles behind age/growth/reproduction assessment methods for fishes, 2) describe the basic techniques and principles behind dietary assessment methods for fishes; 3) integrate the issues of fisheries bycatch, bycatch mortality/reduction, and gear technology modifications; 4) recognize the supply chain for fisheries products from capture to retail market; and 5) distinguish between fisheries science and policy regarding the successful management of marine fisheries.

V. REQUIRED TEXTS AND MATERIALS:

No textbook is required; required and recommended resources (mostly peer-review journal articles), citations, and websites will be provided. However, many of the lecture materials are from Jennings, S., M.J. Kaiser, and J.D. Reynolds (2001) *Marine Fisheries Ecology* by Blackwell Science, Ltd.: Malden, Mass. – note that this text is now available as an eBook through NSU.

In addition, the following books may be very useful as references to you should you remain in fisheries science (and will also be held on reserve for this class in the library):

- Murphy, B.R. and D.W. Willis, eds. 1996. *Fisheries Techniques*, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Schreck, C.B. and P.B. Moyle, eds. 1990. *Methods for Fish Biology*. American Fisheries Society, Bethesda, Maryland.
- Helfman, G.S., B.B. Collette, and D.E. Facey. 1997. *The Diversity of Fishes*. Blackwell Science, Malden, Massachusetts.

VI. COURSE REQUIREMENTS AND POLICIES:

PREREQUISITES

None are required.

INSTRUCTIONAL APPROACH

I maintain an open-door policy with my office in the Modular Building to make myself available for questions, tutoring, or counseling outside of class time. I can also be available at other times with advance notice, but given my travel and research schedule, I encourage students wishing to talk with me to contact me in advance to make sure I will be at the Oceanographic Center at that time. I use a motivational, challenging, and enthusiastic teaching approach, and I encourage you to communicate with me as frequently as you prefer or require. **Please note that pursuant to Nova Southeastern University policy, I will only respond to email coming from your NSU email account.** I cannot respond to email sent from a hotmail, msn, yahoo, etc. email account.

I encourage questions during lecture, and will stop lecturing until you are satisfied that your question has been answered. If a conflict should arise, please come and speak with me as soon as possible. I am willing to negotiate a mutually agreeable resolution to any problems.

ATTENDANCE

Attendance will be taken during every lecture. This is primarily a tool that allows me to learn your names rapidly. However, I will notice those who do not attend regularly, and I reserve the right to penalize those who do not attend by not granting favors or “arguing for points” after exams. Although I will do my best to email lectures to class participants ahead of the class, if you miss a lecture, YOU are responsible for the material.

ACADEMIC HONESTY

In order to ensure the highest standards of academic honesty and ethical behavior, the NSU policies on cheating and plagiarism will be strictly enforced. See the NSU Student Handbook for more information at <http://www.nova.edu/cwis/studentaffairs/forms/ustudenthandbook.pdf>. I am empowered by the policy to penalize a student suspected of academic dishonesty, plagiarism, or otherwise misrepresenting work. If this situation arises, I will report that student to the Oceanographic Center Director of Academic Programs. Nova Southeastern University has contracted with **turnitin.com** to provide plagiarism detection services, and I will submit any suspicious documents to this service.

VII. COURSE SCHEDULE AND TOPIC OUTLINE:

Class 1: Fisheries Science Basics – Why are we here?

- Lecture:
 - Introduction to Course
 - Fisheries History, Basic Terminologies, and Trade-offs
 - Evolution and Diversity
- Lab: Morphometrics (including clearing/staining and articulated skeleton prep)

Class 2: Fisheries Techniques I

- Lecture:
 - Population Assessment via Molecular Genetics
 - Age Determination
 - Reproductive Assessment/Gonad Histology
- Lab: [time reserved for individual and team projects]

Class 3: Fisheries Techniques II

- Lecture:
 - Predator-Prey Dynamics
 - Gut-Content and Stable Isotope-based Diet Analyses
 - Introduction to Ecopath/Ecosim Modeling
- Lab: Gut-content analyses

Class 4: Fisheries Techniques III

- Lecture:
 - Distribution and Migration via Tagging and Marking
 - Commercial Fisheries Surveys
 - Recreational Creel Surveys
- Lab: [time reserved for individual and team projects]

Class 5: Harvesting Basics

- Lecture:
 - General Harvesting Theory
 - Types (and examples) of Major Fisheries: Recreational, Commercial, and Industrial... including Artisanal
 - Harvesting Methods (Gear Types) and Gear Selectivity
- Lab: Gear selectivity with fish traps

Class 6: Fisheries Applications

- Fish Product Handling, Sales, and Marketing
- Commercial and Recreational Fisheries Industries

Class 7: Introduction to Stock Assessments

- Mortality Assessment and Age/Growth Parameters
- Stock Assessment I –Methodology Basics
- Stock Assessment II – Single-species vs. Ecosystem

Class 8: Fisheries Management Background

- Lecture: (guest Brad Gentner; Genter and Associates LLC)

- Fisheries Economics
- Fisheries Anthropology/Sociology
- Socio-Economic Assessment Techniques for Commercial and Recreational Fisheries
- Lab: [built into guest lecture]

Class 9: Fisheries Management

- Lecture:
 - Assessment Techniques for Policy Analysis (e.g., B-C Analysis)
 - Harvest Control Strategies and Management Tactics
 - State, Federal, and International Management
 - Management of “ETP” Species: Marine Mammals, Sea Turtles, and Seabirds (and some marine fishes)
- Lab: [time reserved for individual and team projects]

Class 10: Aquaculture and Future Fisheries Production

- Lecture: (guest Nicole Kirchhoff, PhD; Live Advantage Bait, LLC)
 - Aquaculture/Mariculture
 - Marine Enhancement Programs
- Lab: optional visit to Live Advantage Bait, LLC

Class 11: Developments in Fisheries Management and Policy

- Lecture:
 - Marine Ecosystem Management
 - Fisheries Oceanography and Global Climate Change
- Lab: [time reserved for individual and team projects]

Class 12: Class Presentations

VIII. GRADING CRITERIA:

Final Grade Breakdown:

- Project and project presentation (25% and 10%):
 - This project will consist of a written assessment of a species that is the basis for a commercial and/or recreational marine fishery. All fishery choices must be approved in advance by the instructor no later than the sixth class period! Note: In lieu of a species, the student may work with the instructor on an independent project, but the rest of the requirements remain the same. The instructor will announce a list of potential projects at the first lecture.
 - Working together with another student, students will complete a 8-10 page report (excluding references, figures, and/or tables) including at the minimum the following four sections: 1) the description of the fishery, including harvesting methods, participation, and landings, 2) the life history and ecology, including reproductive strategy description, 3) the vital statistics (growth, Z, F, and M), and 4) the status of the stock(s) and the current management regime.
 - A 10-minute PowerPoint presentation of the project in front of the class is required at the end of the semester.
- Written examinations (25% and 25%): There will also be two written take-home exams, using a combination of definitions, diagram labeling, and short-answer essay questions.

- Take-home exercises (10%): A couple of population assessment simulation exercises beyond the ones we do in class, just for fun. No programming experience will be necessary.
- Participation (5%): There is no substitute for class discussion – if you have a question, ask!
- Extra credit (up to 5%): Spend at least three hours with a fishery, whether commercial or recreational – job- or thesis-related work doesn't count! – and write a three-page summary, as well as taking photos. Examples of this extra credit will be posted on the WebCT page.

Thus, there are a total of **TBD** points available for this course. A standard grading scale will be used, with 90-100% earning an A, 80-89% earning a B, 70-79% earning a C, 60-69% earning a D, and below 60% earning an F in the course. Should class performance deviate significantly from this scale, adjustments (“curving”) may be required; as per my policy, any such adjustments will be clearly explained to the class prior to the determination of the final grades for the course.

IX: WHAT YOU CAN EXPECT OF ME (AND WHAT I EXPECT OF YOU)

You can expect that the course will be organized, and that I will be responsive to online postings and emailed requests for assistance. You can expect that I will be clear, fair, and equitable about my expectations and the criteria I use in assigning grades. I will treat everyone in the class with consideration and respect.

In turn, I expect you to keep up with the course lectures and submit expected coursework in a timely manner. If you have problems with the course material, I expect that you will contact me so that I can assist you. Finally, I fully recognize that family emergencies and other exigencies do occasionally happen that may prevent you from completing your course tasks as scheduled. However, I expect you to notify me as soon as possible if such a situation exists so that I can make alternative arrangements with you for the course material as necessary – do not wait for the end of the term to explain a poor grade due to a problem that occurred in the start of the course.

X: UNIVERSITY-WIDE POLICY STATEMENTS

A. Academic Misconduct: Academic misconduct appears in a variety of forms (including plagiarism). It is a violation of NSU academic policy and may be punished in a variety of ways, from failing the assignment and/or the entire course to academic probation, suspension or expulsion. If you have questions about what constitutes academic misconduct before handing in an assignment, see your instructor or the NSU Student Handbook at <http://www.nova.edu/cwis/studentaffairs/forms/ustudenthandbook.pdf>.

B. ADA Policy: Nova Southeastern University provides accommodations for students with documented disabilities. If you have a disability for which you believe you require accommodation, please contact Academic Services (<http://www.nova.edu/disabilityservices/>, 954-262-7189).

C. Last Day to Withdraw: It is your responsibility to formally withdraw from this course by completing the appropriate forms before the fourth week of the quarter in order to receive a partial refund (<http://www.nova.edu/ocean/coursepolicy.html>). A request for tuition refund must be made in writing at the time of withdrawal. Refunds will be made solely at the option of the University and will be based on the legitimacy of the reason for withdrawal. However, I will NOT backdate course withdrawal paperwork so that you can avoid earning a lower grade than you would like. Please contact Missy Dore (missy@nova.edu) if you have any questions regarding withdrawing from the course.

D. Email Policy: All email communications between students and faculty must be conducted via NSU email accounts (<http://www.nova.edu/common-lib/policies/emailcomm.policy.html>). This requirement will assist NSU in communicating more effectively and protecting your privacy. Emails sent to faculty from non-NSU accounts will be returned to the sender with instructions to resend the communication from your NSU account. To set up an NSU email account or to get help with an existing account, go to https://www.nova.edu/sbin/account_request. Also, the computer help desk is available to assist you with questions regarding your NSU email account. It can be reached at 954-262-HELP (4357).

E. Student Course Evaluations: Student comment and feedback evaluating each course is an important tool to evaluate collegiate program effectiveness. Participation in this process is a responsibility of each student, as it not only provides the University administration with a means to measure the success of the program, but it also provides the instructor with suggestions about how to improve the course for successive offerings.