NSU NOVA SOUTHEASTERN UNIVERSITY **Oceanographic Center**	**Course Syllabus (2015)**

Last Date Revised: 2/25/15

I. COURSE NUMBER AND TITLE: Coral Reef Ecology

Course/section Number(s):
(the following are the codes for each major and core-use as needed)
OCMB-52157 Marine Biology electives
MEVS-52159 Marine Environmental Sciences electives

Days: **Tuesdays 6:30-9:30PM from May 12- June 30, 2015**
Mandatory Florida Keys fieldtrip June 22-26, 2015
Building & Room: **Forman 120**

II. INSTRUCTOR:

Instructor Name: Nicole Fogarty
Phone: 954.262.3630 Email: nicole.fogarty@nova.edu
Office: COE 405
Office Hours: By appointment

III. COURSE DESCRIPTION:

The decline of coral reefs worldwide is a pressing concern for scientists and managers. Thus, it is important to understand the complex ecological relationships of coral reefs in order to determine how this diverse ecosystem will respond to current and future threats. This course will introduce students to the general biology, geology, and ecology of scleractinian corals and coral-associated organisms and examine the importance of seagrass and mangrove communities. Material will be presented from a global perspective, with focus on the South Florida and Caribbean marine environment. Following the presentation of material by the professor, active classroom discussion is required.

IV. COURSE LEARNING OUTCOMES*:

At the conclusion of this course the student will be able to:

- Identify the main contributors to coral research
- Analyze and critique literature from professional publications*
- Understand fundamental ecological concepts as they apply to coral reefs
- Describe the biogeographical patterns of coral distribution, diversity and abundance

- Describe patterns of coral zonation on reefs
- Understand the biology (symbiosis, reproduction, recruitment, etc.) of scleractinian corals
- Identify important coral species and common invertebrate, vertebrate, and algal taxa inhabiting coral reefs in South Florida
- Understand how coral reef, seagrass, and mangroves ecosystems are interconnected
- Describe trophic interactions on coral reefs
- Explain the effects of natural and anthropogenic impacts to coral reef and coral communities.*
- Describe the scientific research and social science necessary for informed coral reef management decisions*

*These are directly related to the Program Learning Outcomes for Marine Biology, Coastal Zone Management and Marine Environmental Science.

V. REQUIRED TEXTS AND MATERIALS:

Much of what you will read will come from the primary literature; however, there will also be assigned book chapters for background reading.

Recommended: Paul Humann's reef set- Coral (3rd edition recommended), Fish, and Reef creatures.

Additionally, the following books will be on reserve or chapters posted to blackboard:

- Veron's *Corals in Space and Time, The Biogeography and Evolution of the Scleractinia.* 2000
- Birkeland's *Life and Death of Coral Reefs.* 1997
- Riegl and Dodge's *Coral reefs of the USA.* 2008
- Sheppard's *The Biology of Coral Reefs*. 2009 Only three students can access it at a time, the first time you access, download all assigned chapters.
- Dubinsky: *Coral reefs: an ecosystem in transition.*2011

VI. COURSE SCHEDULE AND TOPIC OUTLINE:

Pre class assignment

Read background reading for lecture 1. These readings will be emailed to you at least 1 week prior to the start of the course.

Class Format

Most classes will consist of three components: organism quiz (~30 min), lecture (~60 min), and paper discussions (~90 min). I will present information on a topic, then the following week the students will read and present two papers on the topic. Students are expected to read the background material, discussion papers, and be prepared to explain discuss each paper.

date	topic	Quiz/ Due	Discussion
5/12/15	Reef Formation, zonation, biogeography, types, coral reef trophic system, mangroves and seagrass	No quiz	Discussion papers
5/19/15	Diversity and Distribution of Reef Organisms, Coral origins, evolution and speciation	Algae, seagrass, and mangrove quiz	Discussion papers
5/26/15	Coral Reproduction, Larval Ecology, Connectivity, Mesophotic	Fish quiz	Discussion papers
6/2/15	Symbiosis, bioerosion, coral growth, competition, threats to coral reefs	Coral and gorgonian quiz	Discussion papers
6/9/15	Local Reefs; MPA's; management, restoration	Other invertebrate quiz	Discussion papers
6/16/15	Debate topic to be determined	Organism ID final	debate
6/22-6/26/15	Fieldtrip to Mote Marine Lab		
6/30/15	Last class: Final Exam	Final Exam	
7/3/2015	NO Class	fieldtrip write-up due	

Note: This is a tentative schedule that may be changed. Students will be provided a minimum one week advance notice of any change when possible.

VII. GRADING CRITERIA

Course Evaluation

Discussion leading 10%
Paper discussion participation 15%
Debate 10%
Organism ID Quizzes 20% (each worth 5%)
Organism ID Final 10%
Fieldtrip Write Up 15%
Final 20%

Lectures

I will post the powerpoint lectures prior to class.

Readings and participation

Readings are assigned most weeks and must be read on the date shown on the class schedule. Students will read two papers (one from each "group"). Full participation points will be granted to those that demonstrate a strong understanding of the paper, have thought about the topic broadly, have participated in the summary and discussion, and have provided the appropriate level of detail when asked. During class, those students who have read the paper will meet to discuss and review the paper before presenting it to the rest of the class. All students should be prepared to be called on to summarize parts of the paper. The group will answer any questions from those who have not read the paper, and then the discussion leader will take over to facilitate a discussion among the entire class.

Discussion leaders
Discussion leaders will be in charge of creating 2-3 discussion questions that will prompt a fruitful discussion, not "did you like the paper." The questions should incorporate knowledge gained from lectures and previous readings and should address the broader implications and ways of improving the study.

Organism ID
In order to fully understand coral reefs, you need to know the main players in the system. The organisms you are expected to learn will barely scratch the surface of the macro-fauna and flora associated with Florida and Caribbean reefs, but at least it is a start. You will have to know the scientific name for all organisms (for some- only the genus name) except fish. You will have 4 quizzes, prior to the final. For the organism ID final, you will have to write the name; however, I will supply a list of the potential scientific names to avoid spelling errors. The powerpoint practice slides will be posted on blackboard; however, the exact same photo will not be used on the quizzes/final. Use the Humann books for proper identification of diagnostic features.

Debate
We will split into two groups to debate a topic. We can choose the topic as a class, but possible topics include: 1) top-down vs. bottom-up controls, 2) efficacy of marine reserves, 3) use of artificial reefs, 4) efficacy of coral restoration projects, 5) how to manage coral reefs, 6) dispersal and coral reef connectivity, 7) the potential of adaptation to global climate change.

Fieldtrip
This includes 4 night stay at Mote Marine Laboratory, 3 all-day boat trip, classroom fees for evening lectures, transportation to and from Mote, and lodging in Mote's apartments. Food is not included. All students must be good swimmers and comfortable snorkeling (no SCUBA diving will occur). You must bring your own snorkel gear: mask, snorkel, fins, booties, and wetsuit (optional). You must bring shoes that you can wade in, such as dive booties or Teva type shoes, NOT flip flops. This fieldtrip will be intense and students will be busy snorkeling, kayaking, wading, collecting data, and listening to visiting speakers from 7am to 9pm.

Fieldtrip Write-up
During the fieldtrip, we will collect some basic data from all of the sites that we visit. You will record the organisms you see, their relative abundance, and additional observations (i.e., the health of the ecosystem, the health of organisms, damage from disturbance, etc.). The weekend and week following the fieldtrip, you will write a scientific paper, which will be a maximum of 4 page single spaced excluding figures and literature cited. You will use all the data collected by the class. You can work in groups to analyze the data, but the paper must be in your own words. It will need to include an abstract, introduction, methods (brief- 1 paragraph), results, and discussion. The paper is due electronically AFTER our last meeting on **July 3, 2015.** If you are unclear how to write this paper, see Angelika Hoffmann's book *Scientific Writing and Communication*: papers, proposals and presentations, which I use in my professional development course. If you don't want to purchase it for $~35, you can "rent" it through Amazon.com for the semester or use it on reserve in the library.

Final
The comprehensive final exam will take place on the last day of class, **June 30, 2015**. It will be a mix of multiple choice questions, short answer, fill in the blank, and essay.

VII. COURSE REQUIREMENTS AND POLICIES:

ATTENDANCE

FYI: Section 3.8.4 from the Oceanographic Center Catalog:

As a requirement for accreditation, regular attendance is necessary. Each professor has the responsibility to enforce class attendance. To fulfill this requirement, students must have logged in, accessed, and/or interacted with the majority of online course requirements (e.g. assignment submissions, asynchronous discussion) by the first week of the session or they may be withdrawn from the course by the instructor through the Program Office. For this reason, if students anticipate or encounter any reason why they may be unable to engage with their online coursework for an extended period during a term, they must communicate this to their instructor and the Program Office as soon as possible. Students do have the option of requesting an Incomplete; if this is granted by their instructor, they then have 3-months from the end of the term date to submit the required course work as decided with the instructor. An incomplete grade agreement form must be completed and filed with the distance education office. An instructor reserves the right to request original written documentation to substantiate any such absences. A falsified excuse is cause for disciplinary action. An Incomplete course graded I must be completed in one semester or the grade is changed to F. All students are referred to the section 3.5.2. of the Oceanographic Center catalog (http://nova.edu/ocean/forms/nsuoc-2014-2015-catalog.pdf) for details on course withdrawals and refunds.

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 and I will do so and report that student to the Dean of the OC. Nova Southeastern University has contracted with **turnitin.com** to provide plagiarism detection services, and I will submit any suspicious documents to this service.

The use of cell phones, or any other electronic devices not specifically allowed by me, during an exam is not permitted. The use of such devices for any reason will be assumed to be for the purposes of cheating and will result in your dismissal from class and administrative action up to permanent expulsion from all NSUOC programs. If you need the phone for emergency notifications, or the like, leave the phone with me or the proctor at the start of class. You will be immediately notified if there is an incoming call.

EXPECTATIONS

You can expect that I will arrive on time for lectures and be well prepared. You can expect that I will be clear about my expectations and the criteria I use in assigning grades and that I will be fair and equitable. I will treat everyone in the class with consideration and respect.

I expect you to come to class, arrive on time, and be prepared for lecture and lab. I expect you to turn off your cell phones, pagers, and hand-held electronic devices as a gesture of reciprocal respect. If you bring a computer to class, I expect you to use it to take notes and record classroom information. I expect you to stay awake, take notes, participate in discussions and ask questions. I expect you to turn in your assignments on time and in good condition.

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: Due to the compressed nature of this course you will be able to obtain a full refund of your tuition up to **May 15, 2015**. There will be no refund after that date. None of the lab fee is refundable; however you will own the airline ticket (if applicable) that was purchased for you. It is your responsibility to formally withdraw by completing the appropriate forms to obtain a 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. Should you fail to appropriately withdraw from this course, and then earn a grade below your expectations, I will do what I can to see that the grade is reported on your transcript. I will NOT backdate paperwork so that you can avoid earning a grade lower than you like.

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 college class is an important tool to evaluate program effectiveness. Participation in this process is a responsibility of each student.

F. Grading System
From the Oceanographic Center Catalog Section 3.9.1

Percentage	Final Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
Below 63	F

The following system is used to grade academic performance:

GRADE	DESCRIPTION
A	Excellent
B	Satisfactory
C	Marginal Pass
D	Poor
F	Failure
W	Withdrawal: Given after the third class week or termination by the instructor for non-completion of the course by the student.
I	Incomplete: Given when most (80 percent), but not all, work has been completed.
Au	Audit
P	Pass

Professors may use + or – in grading. **However, the grading scale ranges from A to D-, no A+ or F+ are awarded**. A grade of incomplete (I) must be requested from the instructor, have the Associate Dean's approval, and be accompanied by a **completed contract specifying outstanding course requirements and completion dates**. Completion of the course graded incomplete must occur within one semester (or 3 months) of the end of the course and the incomplete be changed to a different grade. If the course is not completed in 3 months, or the student has not withdrawn and received a W, the incomplete will automatically be converted to a grade of F. Under unusual circumstances students may request a time-extension to complete the course. Such requests must be submitted to, and approved by, the Associate Dean of Academic Programs prior to the end of the 3-month time limit. **There are no exceptions to this rule. Securing the completed and signed incomplete contract forms is the responsibility of the student.**