

 <p data-bbox="430 325 950 430">NOVA SOUTHEASTERN UNIVERSITY Oceanographic Center</p>	<p data-bbox="1096 199 1323 262">Course Syllabus (Fall 2016)</p>
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Last Date Revised: 6/7/2016

I. COURSE NUMBER AND TITLE: Marine Biodiversity

Course/section Number(s):

- OCMB-6315-OD1 Marine Biology electives
- MEVS-5107-OD1 Marine Environmental Sciences electives
- CZMT-0685-OD1 Coastal Zone Management electives
- BCOR-5560-OD1 Biological Sciences Cores

Days: **Wednesday 6:30-9:30 PM**
 Building & Room: **Forman 100**

II. INSTRUCTOR:

Dr. Wayne Law
 Email: wlaw@nova.edu
 Office Hours: By appointment.

III. COURSE DESCRIPTION:

Globally, biodiversity is being dramatically altered by human activities. While many species remain undiscovered, and ecological roles of existing species poorly understood, the magnitude of the changes is difficult to evaluate. This course will discuss multiple aspects of biodiversity including: the definition of biodiversity, threats to biodiversity, the role of biodiversity, and methods to study biodiversity, with an emphasis on marine conservation issues. Management approaches such as marine protected areas, no take areas, and special management areas will be studied.

IV. COURSE LEARNING OUTCOMES*:

At the conclusion of this course the student will be:

1. Describe patterns in the distribution of biodiversity, the ways of measuring biodiversity and the different ways that biodiversity is measured.
2. Conceptualize and understand the major paradigms used to explain biodiversity and biogeography pattern(s), and how emerging studies are calling into question (or

clarifying/redefining) long-held traditions and beliefs of what biodiversity is, how it is measure/managed

3. Understand the power of hypothetico-deductive methods, and its application in pattern-process vs. process-pattern models of biodiversity
4. Understand and identify threats to biodiversity and what mechanisms are emerging to identify and manage biodiversity loss
5. Develop a detailed understanding of global, basin, regional, and local threats to environments and the research and management actions needed to address loss of diversity
6. Understand major legislative and legal actions of governments and institutions that have been enacted to deal with threats to biodiversity.
7. Measure the success/failure of current action strategies, such as Marine Protected Areas, by applying lessons learned and incorporation of emerging methods and data sources

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

V. REQUIRED TEXTS AND MATERIALS:

1. *Hooked: Pirates, Poaching, And the Perfect Fish* (Hardcover)
G. Bruce Knecht. ISBN: 1594861102 (also available in paperback and ebook): http://www.amazon.com/Pirates-Poaching-Perfect-Bruce-Knecht/dp/1594866945/ref=pd_bxgy_b_img_a

(Must have text by 3rd class meeting)

Additional Assigned Readings will be posted on course website.

VI. COURSE SCHEDULE AND TOPIC OUTLINE:

*Each topic section will cover approximately 2-4 weeks. As part of the course you will be expected and required to provide active input and discussion on topics, themes, and research articles.

*Class periods will be a mix of class lecture, discussion, and activity. You must be prepared to provide a summary or discussion of an assigned topic at any class meeting, possibly more than once depending on the topic at hand.

I. WHAT IS BIODIVERSITY AND HOW DO WE MEASURE IT?

WEEK 1 (August 22 - 28)

- a. Definition and overview of Biodiversity

WEEK 2 (August 29 – Sept. 4)

- b. Genetic diversity; how is it defined/measured?
 - a. genes, populations
- c. Species diversity; how is it defined/measured?

- a. alpha diversity
 - b. beta diversity
- Activity – Species Measurements

WEEK 3 (Sept. 5- 11)

- d. Ecological diversity; niche concept
 - e. Functional diversity, guilds
 - f. Phylogenetic diversity, evolutionary radiation; plesiomorphic/apomorphic
 - g. Levels and patterns of diversity
- Activity – Food Webs

II. PATTERNS IN BIODIVERSITY

WEEK 4 (Sept. 12 - 18)

- a. Spatial and temporal patterns of genetic diversity
 - b. Spatial patterns in taxonomic diversity
- Activity – Species per area

WEEK 5 (Sept 19 - 25)

- c. Temporal changes in biodiversity
 - d. Spatial and temporal patterns in functional diversity
- Activity – Species Measures in R

Midterm Exam - WEEK 6 (Sept 26. – Oct. 2)

III. CONSERVATION AND MANAGEMENT OF BIODIVERSITY

WEEK 7 (Oct. 3 - 9)

- a. How extinctions change biodiversity
 - i. Two kinds of extinctions; natural, induced
 - ii. The implications of extinction
 - iii. Earth's past mass extinction events
 - iv. The current mass extinction event
 - v. Generalizations we can draw from past extinction events in the post-modern setting
- Activity - Extinction

WEEK 8 (Oct. 10 - 16)

- b. Who “owns” Biodiversity?
 - c. The “Tragedy of the Commons” a background and history
- Activity – Tragedy of Commons exercise

WEEK 9 (Oct. 17 - 23)

- d. Threats to diversity
 - i. Habitat loss
 - ii. Introduced/invasive species
 - iii. Pollutions (climate change)

1. The greenhouse effect
 2. UV radiation and our diminishing ozone layer
 - iv. Population
 - v. Overharvesting
 - e. The concept of sustainable use
 - f. Biodiversity Management
- Activity - Population modelling

WEEK 10 (Oct. 24 – 30)

- g. Protected Areas
- Activity – Protected area criteria

POWER POINT PRESENTATIONS WEEK 11 (Oct. 31 – Nov. 6)

FINAL EXAM WEEK 12 (Nov. 7 – Nov. 13)

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

POINT BREAKDOWN FOR GRADE EVALUATION

Overall class participation (including attendance, oral arguments & presentations)	100 pts
Exam 1	100 pts
Final exam	200 pts
Oral Power Point Presentation	100 pts
TOTAL POINTS	500 Pts.

CLASS PARTICIPATION:

During the class and online we will be exploring aspects of biodiversity and covering the assigned text for the course. It is useful to reflect on opposing points of view from both personal and scientific vantage points. Most of the class will come with biases on what biodiversity is, how it needs to be protected and conserved, and the general theme of “all management is good management”. In the real world of research, conservation, and education, outlying opinions and statements are used to sharpen and clarify positions and concepts. We will as a matter of course explore “both sides of the coin” to arrive at an understanding of relevant topics. In many instances this may deeply challenge your beliefs of what biodiversity is, how it is measured and assessed, and the validity of the scientific underpinnings [or lack thereof] for many programs in the populace view. You will be challenged and will be expected to use both assigned readings and your own topical research to inform your discussions and class interactions and hopefully lead to a more complete understanding of the complexities of measuring, assessing, and protecting marine biodiversity in these changing times. Each week, students will be selected to lead discussions on the assigned readings.

EXAMS:

Exams will be multiple choice and open ended requiring the synthesis of topics covered in class. There will **be no make up exams**. If you miss an exam and have an acceptable excuse you will be assigned a topic on which you will submit a 10-page, single spaced paper (less references) addressing topics covered for the exam period. The instructor will assign topics. The exams will be given in the computer lab.

GRADING CRITERIA FOR EXAMS:

Four content areas, each worth 25 points each and scored individually.

1. Relevancy of your discussion to the question[s]
2. Use of supporting information in addition to class handouts, e.g., additional journal articles
3. Scientific accuracy, e.g., correct use of terminology and use of theoretical concepts, lack of subjective statements and opinions.
4. Composition and organization e.g., use of language and general presentation and organization of paper.

Excellent, top 5%	25 points
Very good, top 15%	20 points
Good, top 25%	15 points
Average, mid range, 50%	10 points
Poor, lower than 50%	5 points

Your grade will be the sum of these scores

There is no “correct” answer for the short answer questions posed on exams, how you frame and support your choices and discussion will determine your score, not a particular choice or approach.

Oral Powerpoint Presentations (20-30 min):

In groups of 2-3 people (if there are the 10 people enrolled in the class, two groups of three people and two groups of two people), decide on a topic of your choice that pertains to a threat to biodiversity. Identify the threat, and how it affects biodiversity, design a way to study the threat and potential solutions. Your groups powerpoint will be given to the class, and peer reviewed. You will be graded on your presentation (each person should upload the group presentation to Blackboard), as well as your effort in peer reviewing your classmates.

OVERALL GRADE DETERMINATION:

Grades will be curved and the following grade scale used:

93-100	= A
85-92.1.1	= B
74 -84	= C
73 -70	= D
< 70	= F

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 **August 28 by midnight**. There will be no refund after that date. None of the lab fee is refundable; however you will own the airline ticket 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

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.**