

Biology 213 / 213D – Marine Biodiversity, Ecology, and Conservation Biology

Fall 2020 – College of Charleston

Lecture (MW 2-3:15; RITA 152)

Discussion (MW 9-12; RITA 273)

Instructor: Dr. Erik Sotka

Email: SotkaE@cofc.edu

Office hours and location: 1230-130pm Monday and Wednesday, RITA 226/228 or online

Phone: 843-953-9191

Communication: The best way to get a hold of me is through my email. I will respond to you within 24 hours during the weekdays, and on or before Monday if you email after 5pm Friday.

Course Description: *An intermediate-level foundation course intended for marine biology majors. Students will explore synthetic marine biological concepts, including population genetics, population dynamics, community and ecosystem ecology, phylogenetics, biodiversity, and conservation. In a weekly, three-hour discussion section, students will analyze scientific literature, formulate research questions, work with biological data, and write for a scientific audience*

My expectations: My goal is to facilitate your discovery of the fantastic world of marine biology, teach some basic principles that will help with future biological courses, and prepare you for the power and peril of emerging biological technologies. It's essential that you maintain an active presence in the class.

Prerequisites: Biology 111, Biology 111L, Biology 112 and Biology 112L. Students must be declared marine biology majors or receive permission of instructor.

Required materials: OAKS, including Gradebook, will be used for this course throughout the semester to provide the syllabus and class materials and grades for each assignment, which will be regularly posted.

Textbook – open access. These are available online, but in case your internet is down, please download to your computer / tablet the following:

- Biology: <https://openstax.org/details/books/biology-2e>
- Ocean Sciences: <https://reefimages.com/oceansci.php>

Online materials. These will be posted on OAKS as the semester goes along.

Attendance policy – COVID-specific ***This is a hybrid learning course with both face-to-face and online components.*** Due to social distancing requirements, this class will include a variety of online and technology enhanced components to reinforce continuity of learning for all enrolled students. Before the drop/add deadline, students should decide whether the course plan on the syllabus matches their own circumstances.

- o If you are enrolled in the Monday Discussion section, please come to the Monday Discussion in person (9 am -12 pm) and stay for the Monday lecture in person (2-3:15pm).
- o If you are enrolled in the Wednesday Discussion section, please come to the Wednesday Discussion in person (9 am -12 pm) and stay for the Wednesday lecture in person (2-3:15pm).
- o All Lectures will be available live-streamed. Everyone is expected to watch the live-stream if you are not in class.

Attendance Policy - general Miss lecture? Get notes and handouts from another student (note, exam questions come from lecture as well as the text). If you have any conflicts with the scheduled exams, you must see me ahead of time, well before the exam date.

Grading

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- Daily Quiz: After each lecture, there will be a short (4 questions) quiz on the material. These are available on OAKS. These are open book / open notes. You can take these as many times as you would like. I'll keep the highest score.
- Discussion sessions: Attendance to discussion sections is a **required** component of this course, and is **mandatory**. The discussion sections are a *critical* component of this course. During discussion is where we will build many of the tools of how scientists do science. Particularly we will spend time working on data analysis, presentation and scientific writing. Students will work both independently and in groups (as scientists do in their daily lives). In the discussion sections, we will investigate several research projects. We will develop skills for examining, visualizing and analyzing data. We will examine the primarily literature extensively and investigate published data. There are two major projects for the semester.
 - **Interactions between an introduced seaweed, native decorator worm, and epifaunal invertebrates**. We pursue statistical analysis of the relationship between worm, seaweed and epifaunal densities. During a field trip, we will see these animals in person.
 - **Behavioral and population ecology of marine species**. During a field trip to an aquarium (including the SC Aquarium), we will observe and generate data for any marine invertebrate or vertebrate you choose. These data form the basis of a final paper and oral presentation.
- Point distribution (700 points)

Midterm exams (2)	200
Discussion participation and assignments**	300
Lecture quizzes (20)	60
Final exam – ½ of exam is 3 rd midterm	140

**The relative scores of participation and assignments are TBD.
- Tentative Grading Scale: A: 93-100, A-: 90-92; B+: 87-89, B: 83-86, B-: 80-82, C+: 77-79, C: 73-76, C-; 70-72, D+: 67-69; D: 63-66, D-: 60-62, F: <59. At the end of the term, I have the option of lowering this scale, if I feel it is justified. **Do not count on this**. Always assume that the grade you earn based on this scale is the grade you will receive.
- Assignments and late policy: Assignments will be turned in on time to be considered for full credit. A loss of **5%** will be deducted per school day for **any** late assignment. Zero points will be recorded for an assignment if it is not turned in before the assignment is passed back, discussed in class or key posted. Suitable means to turn in assignment via OAKS or email directly to the instructor (SotkaE@cofc.edu).

Final exam: Friday December 11 2020, 3:30-5:30pm (ONLINE)

Computers: Unless you are told otherwise, **all assignments should be completed on a computer**.

Class Courtesies:

- Be on time
- Turn off (or put in silent mode) cell phones and other devices that beep
- Do not talk on the phone or text message, IM, use Facebook or conduct web searches not associated with assignments during discussion or lecture.
- Do study and study together! I highly recommend forming study groups with classmates
- Ask questions
- Be courteous to your colleagues.
- **Bring your enthusiasm – it is contagious.**

BIOL 213 Instructional Objectives: This course is intended to foster an understanding of the diverse ways organisms interact with the environment, the fundamental principles of ecology, evolution, and conservation biology, and to learn about the three domains of biodiversity on Earth. More specifically as a student in this course you will

BIOL 213 Syllabus - Sotka

- review the theory of evolution, as posed by Charles Darwin.
- explore the modern synthetic view of evolution which integrates genetics, molecular biology and many other areas of biology into an explanation of how evolution occurs.
- explore mechanisms (or processes) of evolution including
 - how populations evolve at the genetic level (evolutionary genetics).
 - how new species arise (speciation)
 - how biologists are revealing the way life diversified on earth and what the current “tree of life” looks like (systematics & phylogeny)
- explore the evidence in support of evolutionary theory and processes.
- explore the features of the diverse species that inhabit the planet to discover
 - the anatomical, physiological and behavioral associations between related groups of organisms
 - the contributions of the diverse groups of living organisms to ecological systems and human welfare
 - an astonishing variety of lifestyles, traits, and solutions to the challenges of life
- explore how populations of organisms change in abundance and distribution (population ecology)
- explore ecological interactions between species within communities (community ecology)
- explore processes and changes that occur at the level of ecosystems.
- apply evolutionary and ecological concepts and theories to issues related to the conservation of biodiversity on earth (conservation biology).

BIOL 213 Student Learning Outcomes

At the end of this course, students are expected to be able to:

- describe the processes by which populations of organisms change in size
- explain the forces that lead to evolutionary change in populations and diversification among species
- interpret phylogenetic trees to comprehend the evolutionary relationships they depict
- discuss how interactions with the physical environment and with other organisms influence populations and communities
- build a foundation of knowledge about life’s diversity and its interrelatedness
- apply ecological and evolutionary principles to the conservation of biodiversity
- apply the following skills used by professional biologists: use primary literature, generate scientific questions and pose testable hypotheses, analyze data to evaluate hypotheses, use quantitative models to describe biological processes, and communicate these to a scientific audience.
- describe the physical environment of coasts, estuaries and open oceans, how it differs from terrestrial and freshwater biomes, and its various roles in sculpting the biology, ecology and evolution of organisms.

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Honor code

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students can find the complete Honor Code and all related processes in the Student Handbook at: <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>.

Disability / Access statement

Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged.

Recording of Classes (via ZOOM)

Class sessions will sometimes be recorded via both voice and video recording. By attending and remaining in this class, the student consents to being recorded. Recorded class sessions are for instructional use only and may not be shared with anyone who is not enrolled in the class

Inclement Weather, Pandemic or Substantial Interruption of Instruction

If in-person classes are suspended, faculty will announce to their students a detailed plan for a change in modality to ensure the continuity of learning. All students must have access to a computer equipped with a web camera, microphone, and Internet access. Resources are available to provide students with these essential tools.