



MSCI 471

Biology of Marine Mammals

Lecture TTH 12:15-1:30, BRTN 114

Instructor: Rob Young
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Office Hours: M 2:30-5:00, TH 8:00-12:00 and by appointment

Webpage: Moodle course management system

Text: *Marine Mammals: Evolutionary Biology, 3rd ed.* by A. Berta and J.L. Sumich

Pre-requisites: MSCI 302 or BIOL 370

Catalog Description:

A comprehensive survey of the biology and ecology of marine mammals, including the cetaceans, pinnipeds, sirenians, sea otters, and polar bears. Major topics include evolution and classification, anatomy and physiology, sensory biology, communication, feeding, ecology and energetics, social and reproductive behavior, and life history.

Course Objectives:

Upon completion of this course, you should have a thorough understanding of the biology and ecology of marine mammals, including the various groups, their evolution and classification, anatomy and physiology, sensory biology, communication, feeding, ecology and energetics, social and reproductive behavior, and life history. You should be able to interpret and discuss current research in marine mammalogy, and you should be able to make informed decisions about the many social and political issues regarding marine mammals.

Student Learning Outcomes:

Upon the completion of this lecture and laboratory, students should be able to:

1. Identify the major taxonomic groups of marine mammals and their diagnostic characteristics, from the family level and above, and identify selected species of importance.
2. Describe the evolutionary pathways for the major groups of marine mammals and correlate them with the paleo-oceanic and climatic conditions that would support such pathways.
3. Compare the structure and function of the major anatomical and physiological systems between major groups of marine mammals and between marine and terrestrial mammals, with specific attention to adaptations for living in seawater (musculoskeletal system, locomotion, thermoregulation, osmoregulation, diving, sensory biology).
4. Compare and interpret various vocalizations and signaling by marine mammals within the context of theories of animal communication and cognition.
5. Divide marine mammals into major categories of diet and feeding categories, and describe and quantify the ecological role of marine mammals with specific examples of impacts on community structure and bioenergetics. Students should be able to complete basic bioenergetic calculations to quantify the importance of marine mammals within their communities.
6. Compare and interpret patterns of social structure and reproductive behavior for major groups of marine mammals, within the context of major theories of animal social behavior and reproductive strategies.
7. Analyze and discuss specific marine mammal research projects from current literature.
8. Manipulate and interpret data and formulate research conclusions as they relate to scientific questions and current political and social issues in the marine mammal field.

Grading Policy:

Your grade is based on 4 tests during the semester, including the final exam, a marine mammal field identification quiz, and homework exercises. The point breakdown is as follows:

4 Lecture Tests, including final exam (20 % each, except the lowest grade which is worth only 5%)	65 %
Marine mammal identification quiz	10 %
Homework and participation.	25 %

- Tests can be on topics covered in the book and in lecture. Many topics will be discussed in lecture that are not in your book, so attendance is essential to a good grade in this course. Lecture tests may include any of several formats, including multiple choice, matching, short answer, and essay. The final exam may be cumulative and is weighted the same as the other 3 tests.
- “*Final Responsibility for satisfying degree requirements, as outlined in the university catalog, rests with the student.*” - *University Catalog.*

Honors Section (for Honors students only taking this course as an honors section):

The honors component will be incorporated into the overall course grade as 10% of the total grade (the remainder will be calculated as specified on the normal syllabus and will be pro-rated to be a proportion of 90% of the final grade). The honors student will meet with me on a weekly basis to discuss marine mammals topics related to the course material. He/she will have weekly assignments to research and summarize pertinent literature on a variety of topics determined by us each week. He/she will be required to hand in outline summaries for each topic.

The grade for the honors assignments (which, again, are 10% of the total grade) will be determined based on:

- 25% attendance at weekly meetings
- 75% quality of research efforts and summaries

Grading scale: A (≥90), B+ (86.00-89.99), B (80.00-85.99), C+ (76.00-79.99), etc..., F (<60)

Attendance Policy:

As per the University Catalogue, unexcused absences in excess of 25% of the regularly scheduled classes may result in an F for the course. Excused absences are defined in the catalog. I may excuse additional types of absences, but only if you clear it with me *ahead of time*. If you miss a class it is **your** responsibility to inform me in a timely manner (within 24 hours), find out what you missed, and make up the material if it is an excused absence. There are no make-up opportunities for missed tests, labs, or assignments that do not have an excused absence.

Academic Integrity and Plagiarism Statement

Violations of the Student Code of Conduct (including but not limited to academic dishonesty – cheating & plagiarism) will not be tolerated and will result in a minimum of a zero for an assignment and potentially removal from the course with an F. Poor grades earned due to cheating or plagiarism cannot be removed through the Repeat Forgiveness Policy. For information on the Code of Student Conduct, please see your Student Handbook or <http://www.coastal.edu/conduct/index.html>.

Coastal Carolina University is an academic community that expects the highest standards of honesty, integrity and personal responsibility. Members of this community are accountable for their actions and reporting the inappropriate action of others and are committed to creating an atmosphere of mutual respect and trust.

Instructional Modality and Student Locality:

As of the start of the semester, all classes are online/remote until September 8, when face-to-face instruction will commence. I plan to deliver face-to-face instruction to students who choose to physically attend classes and to make the course accessible to all students, I will simultaneously (synchronously) live-stream the class or lab to those students who choose to attend remotely. All classes will be recorded and posted on Moodle.

It is very possible that this plan may vary during the semester, either due to changes in the COVID-19 procedures of the university or a hurricane-related closure or required quarantine or isolation by a student or myself. Therefore, I ask that all of you be ready to make adjustments when necessary to maintain the continuity of the course to the greatest degree possible.

If your personal or health circumstances change and you would like to change the way you attend the class (from streaming to in-person or vice versa), you may do so. However, you must provide me with 48-hours' notice of this change via email, excepting documented emergencies, so that I can track accurately your attendance and course participation. You should also change your in-person vs. virtual preference in WebAdvisor.

Closing of the University for Inclement Weather: In the event of hazardous weather, faculty, staff, and students are requested to listen to local radio and television stations or visit the Coastal Carolina University website for official University closing announcements. Announcements about hazardous weather are also posted on the University's homepage.

COVID-19 Health and Safety:

Face coverings are required indoors at all times and outdoors when physical distancing is not possible. CCU requires all students to wear face masks or cloth face coverings in classrooms, laboratories, and other instructional spaces. Compliance with the face-covering protocol is expected. If you do not comply with a classroom rule, you may be asked to leave class and/or reported to the Dean of Students Office. If you forget your mask, or if your mask breaks on your way to class, there are disposable masks available for your use.

Individuals whose unique and individual circumstances require an exception to the face covering requirement, as indicated by a medical professional, may request an exception in accordance with campus ADA policies. Contact the Office of Accessibility and Disability Services at 843-349-2503 or disability@coastal.edu. Appropriate accommodations relating to class modality and social distancing will be evaluated and implemented based on the student's needs. A portion of the grade for this course is directly tied to your participation in this class. Successful participation is defined as consistently adhering to expectations and requirements in this syllabus. I expect you to wear a mask that covers your mouth and nose.

We know from existing data that wearing a mask in public can help prevent the spread of SARS-CoV-2, which causes COVID-19, in the community (Lyu & Wehby, 2020; CDC, 2020; Johns Hopkins Medicine, 2020 – citations available upon request). In accordance with the Office of the Commissioner of Higher Education and guidance from the Centers for Disease Control and Prevention (CDC), CCU has determined that everyone will be required to wear a face mask in university buildings, including classrooms. This requirement includes wearing a mask appropriately (i.e., covering both your mouth and nose).

Our classroom has a Sanitation Station that is stocked with cleaners and sanitizers. When you enter the classroom, please use the spray and/or wipes to clean your workspace. The Sanitation Station also includes hand sanitizer and disposable masks in case you forget your own face covering. These disposable masks are finite in supply, so please take one only when necessary!

Code of Conduct with Netiquette

Since some or potentially all students in this course may be attending remotely, students must follow the Online Code of Conduct. Online Code of Conduct Students are expected to treat one another with respect and basic common courtesies in our online classroom. All students should expect a safe environment learning environment. This is environment should be free of derogatory, offensive, harassing or inappropriate remarks or materials including but not limited to race, ethnicity, gender, sexual orientation, religion, and age. Flaming and spamming will not be tolerated. Comments of this nature will not be tolerated and will result in appropriate action by the instruction. In this course, we will employ the following guidelines:

- Fully participate in our learning community. Honor the background and experiences others bring to the discussion.
- Respectfully agree or disagree your classmates.
- Respect your classmates' privacy.
- Share what you know with your classmates. Be helpful.
- Avoid typing in all capital letters as it can be seen as yelling.
- Avoid the overuse of textspeak (ROFL, LOL, IMHO, etc.) and slang.
- Read and review your posts for clarity and accuracy. Run spellcheck.
- Use language appropriate to an academic environment (grammar and punctuation).
- Be sure to appropriately cite the work of others.
- Be brief and to the point in your posts (within the assignment guidelines).

Student Services

Academic Support:

- Link to [Learning Assistance Center](#)
- Link to [Kimbel Library Website](#)
- Link to [Counseling Services](#)
- Link to [online orientation](#)

Technology Support

- Link to [Technical Support from Student Computing Services](#)
- Link to [A list of on-campus HelpDesks and the Help Request Form](#)

Other Student Services

- Link to [Bookstore](#)
- Link to [Chant 411](#)
- Link to [Office of the Registrar](#)
- Link to [Financial Aid and Scholarships](#)
- Link to [Student Activities and Leadership](#)
- Link to [Dean of Students Office](#)

Disabilities Statement:

Coastal Carolina University is committed to equitable access and inclusion of individuals with disabilities in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Individuals seeking reasonable accommodations should contact Accessibility & Disability Services (843-349-2503 or <https://www.coastal.edu/disabilityservices/>). The Americans with Disabilities Act indicates "title II and title III entities must permit service animals to accompany people with disabilities in all areas where members of the public are allowed to go." As such, service animals are permitted in lab settings at Coastal Carolina University. Emotional support animals are not permitted in lab settings unless it is approved as a classroom accommodation. Students with service animals are strongly encouraged, but not required, to inform lab instructors of the use of a service animal. This communication provides both the student and the instructor with an opportunity to discuss and plan for the safety of the service animal as well as any other safety concerns. Students and instructors should contact Accessibility & Disability Services (843-349-2503 or <https://www.coastal.edu/disabilityservices/>) regarding any potential accommodations or for support and assistance.

<p>A syllabus is a general guide to the course. It is not a contract or agreement. The instructor reserves the right to unilaterally change anything contained in the syllabus, including but not limited to, assignments, tests, or grading.</p>

Tentative Lecture Schedule:

Date	Topic	Readings
January 15	Introduction, History, What is a marine mammal?	1
17	Who are they? Where did they come from? Where are they now? Evolution, systematics, and biogeography	2-6
22	Evolution, systematics, and biogeography	2-6
24	Evolution, systematics, and biogeography	2-6
29	Evolution, systematics, and biogeography	2-6
31	Adaptations to the marine environment: Locomotion/musculoskeletal system	8
February 5	Locomotion/musculoskeletal system	8
7	TEST 1	
12	Thermoregulation	9
14	Thermoregulation/Osmoregulation	7
19	Diving/breath holding	7
21	Field ID Quiz (lab swap with lecture: vision)	7
26	Sensory abilities: Hearing and echolocation	10
28	Sensory abilities: Hearing and echolocation	10
March 5	Sensory abilities: chemoreception, tactile, biomagnetic	7
7	TEST 2	
11-15	Spring Break	
19	Communication, cognition, and learning	11
21	Communication, cognition, and learning	11
26	Feeding and ecology: Feeding Structures and Digestion, prey and prey capture	12
28	Ecology/migrations	12
April 2	Ecology/migrations	
4	Biotoxicology, marine mammal conservation	15
9	TEST 3	
11	The facts of life: Population Structure, Life History, and Reproduction	12-14
16	Population Structure, Life History, Reproduction	12-14
18	Population Structure, Life History, Reproduction	12-14
23	Population Structure, Life History, and Reproduction	12-14
25	Population Structure, Life History, and Reproduction	12-14
3	Population Structure, Life History, and Reproduction	12-14
Thu, May 9	FINAL EXAM 1:30 pm	