

ENEC 448: Coastal and Estuarine Ecology [Fall 2025]  
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**Lectures:** Tuesday and Thursday from 8:30 am through 9:45 am (exceptions noted below)

**Field Excursions:** Mondays (intermittent), or as scheduled given tides and weather

**Office Hours:** Friday 9am - 12pm (or by appointment, or drop-by any time),  
 IMS Coker 157, Cell: 251 510 4368

**Readings:** Will be from journal articles, provided reading resources, or guidance to library resources

**Course Schedule:**

Lecture	Fieldtrip	Date	Topic
1		T, Aug 21	Orientation: Marine Ecologists as Detectives
2		TH, Aug 21	Introduction to Marine Life Diversity [NOTE: lecture at 10:00am]
3		T, Aug 26	Community Regulation - Lessons From Rocky Shores [NOTE: lecture at 10:00am]
	1	W, Aug 27	Shark Survey Trip
4		TH, Aug 28	Reproductive and Larval Ecology [NOTE: lecture at 10:00am]
5		T, Sept 2	Primacy of Pre- or Post-Settlement Processes?
6		TH, Sept 4	Top-Down Versus Bottom-Up Control ( <i>paper discussion</i> )
7		T, Sept 9	Positive Interactions in Ecological Communities
8		TH, Sept 11	Marine Food Webs - Structure and Dynamics
9		T, Sept 16	Seascape Ecology
10		TH, Sept 18	Marine Biogeography (Macroecology)
	2	M, Sept 22	Floating Docks, Seawalls, and Larval Ingress Sampling (1-5pm)
11		T, Sept 23	Biodiversity: Drivers/Functions ( <i>paper discussion</i> ) [NOTE: lecture at 10:00am]
12		TH, Sept 25	Community Ecology of Seagrass Meadows
		T, Sept 30	Mid-Term Review [Covers Lectures 1-11; NOTE: begin at 8:00am]
		TH, Oct 2	MID-TERM EXAM [Covers Lectures 1-11; NOTE: begin at 8:00am]
	3	M, Oct 6	Rachel Carson / Middle Marsh (seagrass, oyster, mudflat, marsh)
		T, Oct 7	<b>WELL-BEING DAY</b>
13		TH, Oct 9	Natural History, Restoration Ecology, and Climate Response of Shellfish Reefs [NOTE: lecture at 2:45pm - following EMES471 Midterm]
14		T, Oct 14	Salt Marshes (and Mangroves) - Old and New Paradigms
		TH, Oct 16	<b>FALL BREAK</b>
		T, Oct 21	<b>NO CLASS (JF IN CHAPEL HILL)</b>
15		TH, Oct 23	Beaches and Mudflats
16		T, Oct 28	Deep-Sea Ecology (Depth and Lat Gradients)
17		TH, Oct 30	Marine Historical Ecology
	4	M, Nov 3	Beach and Back-Barrier Systems (beach, dune, marsh, oyster, mudflat)
18		T, Nov 4	Natural Climate Cycles and the Response of Coastal Ecosystems
19		TH, Nov 6	Marine Fisheries
20		T, Nov 11	<b>RA Guest Lecture [Chelsea Black]</b>
21		TH, Nov 13	<b>RA Guest Lecture [Chelsea Black]</b>
22		T, Nov 18	Ecological Stability, Resilience, and Alternative Stable States ( <i>paper discussion</i> )
23		TH, Nov 20	Press and Pulse Disturbance
		T, Nov 25	<b>No CLASS (EMES471 FINAL)</b>
		T, Nov 27	<b>No CLASS (THANKSGIVING)</b>
		M, Dec 1	Final Review [NOTE: time TBD]
		T, Dec 2	FINAL EXAM [Focus on Lectures 12-23]

**Course Description:** This course will provide a foundational introduction to key patterns and underlying concepts in coastal and estuarine community ecology. Leveraging the local environment, the class will primarily focus on the structure and community dynamics of important temperate coastal marine habitats such as salt marshes, oyster reefs, seagrass meadows, and beaches (although the ecological concepts are meant to be transferrable across diverse systems).

**Learning Outcomes (general appreciation and understanding of):**

1. The major life forms in coastal marine systems, as well as the structural and functional characteristics that differentiate these life forms.
2. The nature of interactions among individuals and across species.
3. The environmental (abiotic and biotic) factors and processes that control the abundance and distributions of marine organisms in space and time over a variety of scales.
4. Methodological approaches for evaluating the biomass, distribution, growth, and mortality of marine organisms (including strengths and weaknesses).
5. Patterns and drivers of change in the coastal ocean.

**Strategy of the Class:** Subject matter will be presented in the form of a series of formal lectures, heavily augmented with paper discussions, field excursions, and a field journal (ID book). Field excursions are designed to coincide and dovetail with material presented or discussed in the classroom. Field excursions are also designed to sharpen critical thinking (students can judge how these experiences reinforce or complicate ‘theory’ as presented in lectures), as well as to provide hands-on experience with techniques discussed in lectures. As such, we will often use local systems as case studies of ecological patterns and processes, but will also routinely draw on coastal systems around the globe to make key points.

Students are encouraged to participate in lectures (via question/comments), as well as planned discussions and during fieldtrips (thus the sizable weight of participation in the overall course grade, per below).

The mid-term and final exams will demand essay answers which provide students an opportunity to synthesize information and explain patterns/processes as introduced during the semester.

**University Attendance Policy:** No right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities
2. Disability/religious observance/pregnancy, as required by law and approved by Accessibility Resources and Service and/or the Equal Opportunity and Compliance Office (EOC)
3. Significant health condition and/or personal/family emergency as approved by the Office of the Dean of Students, Gender Violence Service Coordinators, and/or the Equal Opportunity and Compliance Office (EOC).

**Class Attendance Policy:** The instructor may work with students to meet attendance needs that do not fall within University Approved Absences. For situations when an absence is not University approved (e.g., a job interview or club activity), instructors determine their

own approach to missed classes and make-up assessment and assignments.

**Course Grading:**

Midterm Exam: 30%

Final Exam: 35%

Discussion Paper Summaries: 15%

ID Book: 10%

Class and Fieldtrip Participation: 10%

- *Attendance and punctuality*
- *Preparation for class:* Completing all of the assignments and readings before class.
- *Participation:* Asking questions that move the class discussion forward, putting effort into every activity, and speaking up when you are confused.

Grading will be based upon a curve that ensures letter grades are compatible with decades of performance of previous students in this same class.

**Honor Code:** *“It shall be the responsibility of every student at The University of North Carolina at Chapel Hill to obey and support the enforcement of the Honor Code, which prohibits lying, cheating, or stealing when these actions involve academic processes or University, student or academic personnel acting in an official capacity.”*, adapted from “How to Have Honor Prevail in Your Classroom”, a handout prepared by Margaret Barrett, Judicial Programs Officer, UNC-CH. All classwork, exams, and contributions are expected to adhere to the Honor Code.

**Syllabus Changes:** The instructor reserves the right to make changes to the syllabus, including project due dates and test dates. These changes will be announced as early as possible.

**AI in the Classroom:** We will follow UNC’s general guidance for integrating generative AI into students’ experience in this course. This guidance, which details how AI usage can expand students’ learning outcomes and fit within UNC’s academic honor code can be found at: <https://provost.unc.edu/student-generative-ai-usage-guidance/>

**Acceptable Use Policy:** By enrolling as a student in this course, you agree to abide by the UNC-CH policies related to the acceptable use of IT systems and services. You may be asked to participate in online discussions or other online activities that may include personal information about you or other students in the course. The rights and protection of other participants are protected under the UNC-CH Information Technology Acceptable Use Policy, which covers topics related to using digital resources, such as privacy, confidentiality, and intellectual property. Consult the University website “Safe Computing at UNC” for information about the data security policies, updates, and tips on keeping your identity, information, and devices safe.

**Accessibility Resources and Services:** UNC-CH facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability or pregnancy complications resulting in barriers to fully accessing University courses, programs and activities. Accommodations are determined through the Office of Accessibility Resources and Service (ARS) for individuals with documented

qualifying disabilities in accordance with applicable state and federal laws. See the ARS Website for contact information: <https://ars.unc.edu> or email [ars@unc.edu](mailto:ars@unc.edu).

**Counseling and Psychological Services (CAPS):** CAPS is strongly committed to addressing the mental health needs of a diverse student body through timely access to consultation and connection to clinically appropriate services, whether for short or long-term needs. Go to their website: <https://caps.unc.edu/> or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more.

**Title IX Resources:** Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made online to the EOC at <https://eoc.unc.edu/report-an-incident/>. Please contact the University's Title IX Coordinator (Elizabeth Hall, [titleixcoordinator@unc.edu](mailto:titleixcoordinator@unc.edu)), Report and Response Coordinators in the Equal Opportunity and Compliance Office ([reportandresponse@unc.edu](mailto:reportandresponse@unc.edu)), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators ([gvsoc@unc.edu](mailto:gvsoc@unc.edu); confidential) to discuss your specific needs. Additional resources are available at [safe.unc.edu](http://safe.unc.edu).

**Policy on Non-Discrimination:** The University is committed to providing an inclusive and welcoming environment for all members of our community and to ensuring that educational and employment decisions are based on individuals' abilities and qualifications. Consistent with this principle and applicable laws, the University's Policy Statement on Non-Discrimination offers access to its educational programs and activities as well as employment terms and conditions without respect to race, color, gender, national origin, age, religion, creed, genetic information, disability, veteran's status, sexual orientation, gender identity or gender expression. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied. If you are experiencing harassment or discrimination, you can seek assistance and file a report through the Report and Response Coordinators (see contact info at [safe.unc.edu](http://safe.unc.edu)) or the Equal Opportunity and Compliance Office, or online to the EOC at <https://eoc.unc.edu/report-an-incident/>.

**Undergraduate Testing Center:** The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit <http://testingcenter.web.unc.edu/>.

**Learning Center:** The UNC-CH Learning Center is a great resource both for students who are struggling in their courses and for those who want to be proactive and develop sound study practices to prevent falling behind. They offer individual consultations, peer tutoring, academic coaching, test prep programming, study skills workshops, and peer study groups. If you think you might benefit from their services, please visit them in Student and Academic Services Building - North or visit their website to set up an appointment: <http://learningcenter.unc.edu>.

**Writing Center:** The UNC-CH Writing Center is located in the Student and Academic Services Building and offers personalized writing consultations as well as a variety of other resources. This could be a wonderful resource to help with your writing assignments in this course (and any assignments in your other courses). You do not need a complete draft of your assignment to visit; they can help you at any stage! You can chat with someone in the writing center or set up as appointment on their website: <http://writingcenter.unc.edu>.

**Grade Appeal Process:** If you feel you have been awarded an incorrect grade, please discuss with me. If we cannot resolve the issue, you may talk to our departmental director of undergraduate studies or appeal the grade through a formal university process based on arithmetic/clerical error, arbitrariness, discrimination, harassment, or personal malice. To learn more, go to the [Academic Advising Program](#) website.

**Discussion Paper Summaries:** Please write a summary of each assigned discussion paper (N = 3 during semester). Begin each summary by stating the primary question being addressed, and the main-thrust conclusion(s) the author(s) reach(es). Then, summarize the general approach by which the author(s) tested their hypothesis(es) (if clearly articulated?), noting the strengths and weaknesses of the experimental design and methods. It is also valuable if you note areas in which you were left unclear/confused by the paper (among other factors, this may highlight things you are being introduced to for the first time, or it may highlight imperfections or difficulties in the writing). If you found aspects of the paper extremely well done, please convey that information too. Conclude your summary by expressing your point of view on the value of the paper, and in particular, which key research questions do you think remain unresolved or which exciting directions a future study might build on from where this paper concluded.

Please use the paper template uploaded to Sakai which will have header space for your name, affirmation of adherence to the UNC-CH Honor Code, and the date your paper was submitted. The text should be single spaced, 12-pt Times New Roman, no more than one page in length (including header), and bound on all sides by one-inch margins. Grammar, spelling, punctuation, paragraph structure and flow will be factored into your grade – be succinct and clear. Use tools available to you to avoid spelling and grammar mistakes.

Submit each of your summaries as a PDF via an email attachment sent to [jfodrie@unc.edu](mailto:jfodrie@unc.edu) by midnight on the calendar day before each paper discussion in class (discussion papers will be distributed 2 weeks before assignments are due):

Summary #1: due September 3<sup>rd</sup> (Mon)  
 Summary #2: due September 22<sup>nd</sup> (Mon)  
 Summary #3: due November 17<sup>th</sup> (Mon)

Each paper summary will be graded on a 0-5 points scale (totaling 15 points across the entire semester).

**Field ID Book:** To increase your (and likely, your instructor's) literacy regarding the ecological communities that we will be exploring, and also develop critical skills for becoming a natural

historian, each student will create a species ID log book following observations made during the semester (including during [BUT NOT LIMITED TO] field trips associated with this course).

This ID log book should be created in iNATURALIST (will be explained during course orientation). Each species log should include the following components (via iNATURALIST platform): (1) a photo taken by the student – either in the field or in the lab. For very small organisms, access to a microscope camera can be provided; (2) location and date of image/specimen collection; (3) species name (in some cases, identification to Genus or Family may be acceptable); (4) Phylum, Class, and Order to which species belongs; (5) key morphological traits used to identify individual (within Order); (6) Functional/ecological ‘fun fact’ about taxa.

The ID log book can be worked on through December 4<sup>th</sup>. ID log books will be graded on 0-10 scale:

Complete ID Records	Min Phyla	Score
<5	1	1
6-10	1	2
11-15	2	3
16-20	2	4
21-25	3	5
26-30	3	6
31-35	4	7
36-40	4	8
41-45	5	9
>46	5	10