CENTER FOR ENVIRONMENTAL STUDIES

MARITIME STUDIES

Chair: Associate Professor Nicolas Howe

Associate Director: Lecturer Sarah Gardner

Professor: H. Art. Associate Professor: N. Howe. Assistant Professors: P. Kohler, L. Martin. Class of 1946 Visiting Distinguished Professor of Environmental Studies: D. Cassuto. Visiting Assistant Professors: S. Auer, A. Merleaux. Lecturers: S. Gardner, J. Racela. Gaius Charles Bolin Fellow: Brittany Meché. Research Associates: R. Bolton, L. Venolia.

On leave fall/spring: N. Howe

Environmental Studies Advisory Committee: Professors: H. Art. Associate Professors: M. Cook, S. Jacobson, J. Manigault-Bryant. Assistant Professors: R. Bassar, P. Kohler, L. Martin. Lecturer: S. Gardner.

Maritime Studies Advisory Committee: Professors: H. Art, R. Cox, C. Ting. Associate Professor: L. Gilbert. Assistant Professor: J. Constantine. Associate Dean: J. Gerry.

Mystic Executive Director: T. Van Winkle.

MEMBERS OF THE CENTER FOR ENVIRONMENTAL STUDIES

Alex Apotsos, Visiting Lecturer in Geosciences

Henry W. Art, Professor of Biology and Environmental Studies

Sonya Auer, Visiting Assistant Professor of Biology

Lois M. Banta, Professor of Biology

Ron D. Bassar, Assistant Professor of Biology

Ben Benedict, Lecturer in Art

Mary K. Bercaw-Edwards, Associate Professor for Literature of The Sea, Williams-Mystic Maritime Studies Program

Julie C. Blackwood, Assistant Professor of Mathematics

Roger E. Bolton, Professor of Economics, Emeritus

Cory E. Campbell, instructional Technology Specialist

Phoebe A. Cohen, Associate Professor of Geosciences

Anthony J. Carrasquillo, Assistant Professor of Chemistry

David Cassuto, Class of 1946 Visiting Distinguished Professor of Environmental Studies

Jose E.A. Constantine, Assistant Professor of Geosciences

Mea S. Cook, Associate Professor of Geosciences

David P. Dethier, Professor of Geosciences*

Joan Edwards, Professor of Biology

Laura Ephraim, Associate Professor of Political Science

Michael Evans, Assistant Director of The Zilkha Center for Environmental initiatives

Jessica M. Fisher, Assistant Professor of English

Antonia Foias, Professor of Anthropology and Sociology

Jennifer L. French, Professor of Spanish

Sarah S. Gardner, Lecturer in Environmental Studies

Matthew Gibson, Assistant Professor of Economics

Lisa Gilbert, Associate Professor of Geosciences and Marine Sciences

Casey Gregory, Assistant Professor of Economics

Catherine Hall, Lecturer, Williams-Mystic Maritime Studies Program

Jacqueline Hidalgo, Associate Professor of Latina/O Studies and Religion

Nicolas Howe, Associate Professor of Environmental Studies

Sarah Jacobson, Associate Professor of Economics

Amy Johns, Director of The Zilkha Center for Environmental initiatives

Andrew Jones, Manager, Hopkins Memorial Forest

Paul Karabinos, Professor of Geosciences

Pia Kohler, Assistant Professor of Environmental Studies

Elizabeth Kolbert, Class of 1946 Visiting Distinguished Professor of Environmental Studies

Joel Lee, Assistant Professor of Anthropology

Scott Lewis, Assistant Professor of Physical Education and Director of Outing Club

Dr. Alicia Maggard, Post-Doc, Williams-Mystic Maritime Studies Program

James Manigault-Bryant, Associate Professor of Africana Studies

Luana Maroja, Associate Professor of Biology

Laura Martin, Assistant Professor of Environmental Studies

Karen R. Merrill, Professor of History

Manuel Morales, Professor of Biology and Director of Research Hopkins Forest

James Nolan, Professor of Sociology

Julie Pedroni, Lecturer in Philosophy

Timothy Pusack, Assistant Professor of Marine Ecology, Williams-Mystic Maritime Studies Program

Jay Racela, , Lecturer, CES and Morley Sciences Laboratories

David P. Richardson, Professor of Chemistry

Merida Rúa, Associate Professor of Latina/O Studies and American Studies

Kenneth Savitsky, Professor of Psychology

David C. Smith, Senior Lecturer in Biology

David L. Smith, Professor of English

John W. Thoman, Jr., Professor of Chemistry

Chad M. Topaz, Professor of Mathematics

Claire Ting, Professor of Biology

Tom Van Winkle, Executive Director of The Williams-Mystic Maritime Studies Program

ENVIRONMENTAL STUDIES

Environmental issues call upon citizens, organizations, and governments to grasp complex scientific concepts, address conflicting human values, and make difficult economic, political and ethical choices. A proper understanding of environmental issues is therefore an interdisciplinary exercise. The concentration in Maritime Studies is designed to help students to:

- Effectively address complex environmental issues by integrating perspectives from the natural sciences, the social sciences, and the arts and humanities;
- Understand ecological principles and the nature of living systems;

- Apply scientific methods to collect environmental data and evaluate environmental quality;
- Understand the political and economic factors that inform, enable, and constrain environmental policy;
- Understand the social, cultural, and historical factors that shape environmental thought, history, and behavior;
- Develop significant understanding of one or more of the essential methodological approaches required in addressing environmental challenges;
- Apply their learning in a practical setting.

The program is administered by the Center for Environmental Studies (CES), located in the Class of 1966 Environmental Center. Founded in 1967, CES was one of the first environmental studies programs at a liberal arts college. In addition to the academic program described below, CES is the focus of a varied set of activities in which students lead and participate, often with other members of the Williams community. CES offers extensive resources including databases, funding for student-organizations, and student initiated activities, and generous support for summer research and internships. The Class of 1966 Center, a Living Building and the Program's home, includes a classroom, living room, study rooms, kitchen, as well as student gardens. The CES manages the Hopkins Memorial Forest, a 2600-acre natural area northwest of campus, in which there are field-study sites and a laboratory, and where passive-recreation opportunities may be found in all seasons. CES also operates the Environmental Analysis Laboratory in Morley Science Center. The Maritime Studies concentration builds on the course offerings of the Williams-Mystic Maritime Studies Program at Mystic Seaport.

ADVISING

Concentrators (or first-years and sophomores interested in the concentration offered by CES) are encouraged to talk at any time with the Chair or Associate Director of Environmental Studies, or any other members of CES or Maritime Studies for advice. All incoming concentrators will choose a faculty advisor in the spring of their sophomore year.

Advisors for 2019-20: Henry Art, Sarah Gardner, Pia Kohler, Laura Martin, Mea Cook, James Manigault-Bryant.

CONCENTRATION IN MARITIME STUDIES

The Maritime Studies concentration provides students with an opportunity to explore how humans interact with the environment, including the maritime environment. Understanding the oceans and our interactions with them is of increasing importance in this era of climate change, sea-level rise, fisheries crises, and the internationalization of the high seas. We encourage students to investigate our WaterWorld from the perspectives of the humanities, social sciences, and physical sciences. Maritime Studies is an interdisciplinary, cross-divisional program that includes the literature, history, policy issues, and science of the ocean. Candidates for the concentration in Maritime Studies must complete a minimum of seven courses: the interdisciplinary introductory course (GEOS 104 Oceanography), four intermediate core courses (at Williams-Mystic), an elective, and the senior seminar.

Students who have completed other study-away programs that emphasize maritime studies should consult with the CES chair about the possibility of completing the Maritime Studies concentration.

Required Courses (7 courses)

Introductory Course

MAST/ENVI/GEOS 104 Oceanography

Students who take MAST 211/GEOS 210 Oceanographic Processes at Williams-Mystic can substitute an extra elective in lieu of GEOS 104.

Capstone Course

ENVI/MAST 412 Senior Seminar: Perspectives on Environmental Studies

Core Courses (taken as part of Williams-Mystic program at Mystic Seaport):

MAST/ENGL 231 Literature of the Sea

MAST 311/BIOL 231 Marine Ecology OR MAST 211/GEOS 210 Oceanographic Processes

MAST/ENVI 351/ PSCI 319 Marine Policy

MAST/HIST 352 America and the Sea, 1600-Present

Elective Courses

Elective courses are listed based on either a clear maritime statement in the course description or broad practical/theoretical applicability to maritime studies. Concentrators will take a minimum of one course from the list below. If concentrators find other courses in the catalog that they believe meet the requirements for a MAST elective, they may bring them to the attention of the Chair or Associate Director.

AFR 248 / HIST 248 SEM The Caribbean: From Slavery to Independence

Taught by: Shanti Singham
Catalog details

BIOL 414(F) SEM Life at Extremes: Molecular Mechanisms

Taught by: Claire Ting
Catalog details

ECON 213 / ENVI 213 LEC Introduction to Environmental and Natural Resource Economics

Taught by: Sarah Jacobson
Catalog details

ECON 215 / GBST 315(S) LEC Globalization

Taught by: Will Olney
Catalog details

ECON 477 / ENVI 376 SEM Economics of Environmental Behavior

Taught by: Sarah Jacobson
Catalog details

ENVI 307 / PSCI 317(F) LEC Environmental Law

Taught by: David Cassuto
Catalog details

ENVI 387 / ECON 522(F) LEC Economics of Climate Change

Taught by: Matthew Gibson
Catalog details

ENVI 460(S) SEM Communicating Climate Change

Taught by: Nicolas Howe
Catalog details

GEOS 212 / BIOL 211(S) LEC Paleobiology

Taught by: Phoebe Cohen
Catalog details

GEOS 215 / ENVI 215 LEC Climate Changes

Taught by: Mea Cook
Catalog details

GEOS 302(S) SEM Sedimentology

Taught by: Rónadh Cox
Catalog details

HIST 321 / ASIA 321 / LEAD 321 SEM History of U.S.-Japan Relations, 1853-Present

Taught by: Eiko Maruko Siniawer
Catalog details

HIST 391 / ASIA 391 / GBST 391 SEM When India was the World: Trade, Travel and History in the Indian Ocean

Taught by: Aparna Kapadia
Catalog details

MAST 268 / ENVI 268 SEM Debating Ocean Biodiversity at the Intersection of Science and Policy

Taught by: Catherine Robinson Hall
Catalog details

PSCI 223 LEC International Law

Taught by: Cheryl Shanks
Catalog details

PSCI 229 SEM Global Political Economy

Taught by: Darel Paul
Catalog details

PSCI 323 SEM Law and Politics of the Sea

Taught by: Cheryl Shanks
Catalog details

INDEPENDENT STUDY AND WINTER STUDY

In addition to courses fulfilling the Maritime Studies concentration requirements, the following courses are offered:

MAST 397, 398 Independent Study: Maritime Studies

MAST 493-W31-494 Senior Thesis: Maritime Studies

Winter study courses play an important role in the program, offering opportunities to learn about aspects of environmental studies with which students would like to become more familiar. We encourage students to bear in mind their interests in the environment and maritime studies when reviewing each year's Winter Study offerings.

HONORS IN MARITIME STUDIES

Candidates for honors in Maritime Studies will complete a thesis in their senior year. The project will involve original research (archive, museum, field, or laboratory) followed by on-campus analysis and write-up of results. The thesis may either be a one-semester plus winter study project, or a full year (two semesters plus winter study). In either case, data collection during the summer before the senior year may be necessary. In some cases, the thesis project may be a continuation and expansion of the student's Williams-Mystic research project. Honors will be awarded if the thesis shows a high degree of scholarship, originality, and intellectual insight.

MAST 104 (F) Oceanography

Cross-listings: MAST 104 GEOS 104 ENVI 104

Secondary Cross-listing

In this wide-ranging and integrated introduction to the oceans we will examine formation and history of the ocean basins; composition and origin of seawater; currents, tides, and waves; ocean-atmosphere interactions; oceans and climate; deep-marine environments; coastal processes; productivity in the oceans; marine resources; and human impacts. We will discuss current research, and address issues of colonialism and racism in oceanographic science. This course is in the Oceans and Climates group for the Geosciences major.

Class Format: 3 50-minute lecture/discussion meetings each week; 2-hour lab every second week. 3 mini-symposia (during scheduled class time). All-day field trip to the Atlantic coast of New England.

Requirements/Evaluation: 6 graded lab exercises, mini-symposium participation, a 4-page term paper, and final exam.

Prerequisites: none

Enrollment Limit: 60

Enrollment Preferences: first year and second year students, Geosciences majors, Maritime Studies concentrators

Expected Class Size: 60

Grading: yes pass/fail option, no fifth course option

Distributions: (D3)

This course is cross-listed and the prefixes carry the following divisional credit:

MAST 104 (D3) GEOS 104 (D3) ENVI 104 (D3)

Attributes: ENVI Natural World Electives EXPE Experiential Education Courses GEOS Group A Electives - Climate + Oceans

Fall 2021

LEC Section: 01 MWF 9:00 am - 9:50 am Rónadh Cox

LAB Section: 02 M 1:00 pm - 3:00 pm Rónadh Cox

LAB Section: 03 W 1:00 pm - 3:00 pm Rónadh Cox

MAST 211 (F)(S) Oceanographic Processes

Cross-listings: MAST 211 GEOS 210

Primary Cross-listing

This course examines ocean and coastal environmental science issues including carbon dioxide and the ocean's role in climate, El Niño and other ocean-atmosphere oscillations that influence our weather, coastal erosion and other hazards, coastal pollution, and fisheries. The focus is on controlling processes with regional comparisons. Blue water oceanography is conducted in the Atlantic and comparative coastal oceanography includes trips to southern New England shores, and the West and Gulf coasts of the US as part of the Williams-Mystic program. This course is in the Oceans and Climate group for the Geosciences major.

Class Format: including coastal and near-shore field trips, 11 days offshore, and a laboratory or field research project

Requirements/Evaluation: two tests, a research project, and a presentation

Prerequisites: none

Enrollment Limit: 24

Enrollment Preferences: none

Expected Class Size: 10

Grading: yes pass/fail option, yes fifth course option

Unit Notes: offered only at Mystic Seaport

Distributions: (D3)

This course is cross-listed and the prefixes carry the following divisional credit:

MAST 211 (D3) GEOS 210 (D3)

Attributes: ENVI Natural World Electives EVST Living Systems Courses EXPE Experiential Education Courses GEOS Group A Electives - Climate + Oceans

Fall 2021

LEC Section: 01 TR 9:30 am - 10:45 am Rachel Scudder

LAB Section: 02 T 1:00 pm - 4:30 pm Rachel Scudder

Spring 2022

LEC Section: 01 TR 9:30 am - 10:45 am Rachel Scudder

LAB Section: 02 T 1:00 pm - 4:30 pm Rachel Scudder

MAST 231 (F)(S) Literature of the Sea (DPE)

Cross-listings: MAST 231 ENGL 231

Primary Cross-listing

The ocean, and human relationships with it, have been central features of literatures and cultures around the world for more than a thousand years. But since literary study is typically based around authors' homelands, careful examination of the oceanic experience is often pushed to the periphery--an "empty space" to be crossed between nations, a "vast darkness" antithetical to human life, or a mirror for land-borne concerns. Increasingly, however, scholars and readers are centering the sea and stories about it as a means stepping outside human frameworks of space and time, situating the complex emotions and narratives inspired by the ocean into a complex network of geologic history and teeming other-than-human life. This course examines a wide range of texts and perspectives on the ocean and human relationships with it. Doing so will help us consider how literature both plays into and subverts dominant viewpoints of the ocean. Through texts that consider 19th-century whaling, the Middle Passage, the postcolonial Caribbean, and islands throughout the Pacific Ocean, we will explore a range of questions, including: What can we learn from examining efforts to write about the ocean? How do ocean stories help individuals understand themselves, their communities, and their place in global environments? What can the range of cultural and literary perspectives on our "single, global ocean" reveal about the ways different people are both connected with and profoundly distant from each other? Most importantly, we will practice, as a classroom community, different strategies for carefully reading texts while connecting them to cultural traditions, surrounding environments, and personal experiences.

Class Format: weekly roundtable discussions, including coastal and near-shore field trips and multiple field seminars.

Requirements/Evaluation: regular papers, class participation, journal-writing, and a final assignment

Prerequisites: N/A

Enrollment Limit: 25

Enrollment Preferences: Williams-Mystic Students only

Expected Class Size: 20

Grading: no pass/fail option, no fifth course option

Unit Notes: offered only at Mystic Seaport

Distributions: (D1) (DPE)

This course is cross-listed and the prefixes carry the following divisional credit:

MAST 231 (D1) ENGL 231 (D1)

Difference, Power, and Equity Notes: This course focuses on the range of cultural perspectives about the sea, as well as the ways those perspectives can unsettle and challenge dominant narratives about the sea and its role in colonial expansion. Furthermore, this course centers voices that are typically overlooked in the genre of "Sea Literature," paying particular attention to Indigenous and African-American narratives about the ocean.

Attributes: AMST Arts in Context Electives ENVI Humanities, Arts + Social Science Electives

Fall 2021

SEM Section: 01 MW 9:30 am - 10:45 am Ned G. Schaumberg

Spring 2022

SEM Section: 01 MW 9:30 am - 10:45 am Ned G. Schaumberg

MAST 263 (S) The Global Ocean: An Interdisciplinary Introduction

Cross-listings: MAST 263 ENVI 263

Primary Cross-listing

Though it covers most of the planet, the ocean's importance to everyday life is easy to overlook. Its roles as a cultural symbol, resource, highway, and climate regulator make it essential to life around the world. This interdisciplinary course, team-taught by the faculty of the Williams-Mystic Program, will examine key issues in each of the world's oceans while introducing students to the ways these issues connect multiple disciplines and transcend physical, political, and imaginary ocean boundaries. By drawing on the expertise of the five professors -- from humanities, social sciences, and sciences -- this course facilitates the critical study of the ocean from an interdisciplinary perspective and helps them consider their own role in the shifting relationship between humanity and the ocean. This seminar-style course will meet twice a week online, with students assessed by their participation, response papers, and final project, while helping them apply interdisciplinary skills to pressing sustainability issues connecting the environment and society.

Class Format: Remote, including Zoom seminar meetings twice a week

Requirements/Evaluation: Five 2-page papers, participation, and a 6-8 page final paper

Prerequisites: none, open to all students

Enrollment Limit: 20

Enrollment Preferences: 1. first years, 2. sophomores, 3. MAST concentrators

Expected Class Size: 15

Grading: yes pass/fail option, yes fifth course option

Distributions: (D2)

This course is cross-listed and the prefixes carry the following divisional credit:

MAST 263 (D2) ENVI 263 (D2)

Attributes: ENVI Humanities, Arts + Social Science Electives

Not offered current academic year

MAST 265 (F) Coral Reefs: Ecology, Threats, & Conservation

Cross-listings: ENVI 265 BIOL 165 MAST 265

Primary Cross-listing

Coral reefs are a fascinating ecosystem found throughout the world's tropical oceans. Corals can thrive in nutrient-poor oceans because of the mutualistic relationship with algal symbionts. And as a foundational species, corals provide a habitat for numerous species, possibly the highest diversity found on the planet. However, these complex and beautiful ecosystems are declining worldwide from a variety of local and global threats. In this course, we will explore coral reef ecology through an in-depth examination of the biotic and abiotic factors contributing to the ecosystem's functioning. We will also investigate the causes and consequences of threats to coral reefs, such as ocean warming, ocean acidification, and resource extraction. Finally, we will identify the many efforts worldwide to conserve coral reefs and promote their resilience. In this seminar course, offered remotely, you will demonstrate your proficiency through knowledge assessments, short writing reflections, a virtual coral fragmentation experiment, and a creative advocacy project. This course aims to deepen your awareness of the complex species interactions on coral reefs and the physical factors affecting coral survival while fostering hope through current conservation efforts.

Class Format: Remote, including Zoom seminar meetings twice a week

Requirements/Evaluation: Four 1-paragraph discussion board post, One 20-question knowledge assessment (quiz), Three 2-page writing reflections, One lab results and discussion write-up 2-3 pages figures included, and a creative (medium is student choice) advocacy project.

Prerequisites: none, open to all students

Enrollment Limit: 20

Enrollment Preferences: 1. First-Year, 2. Sophomores

Expected Class Size: 16

Grading: yes pass/fail option, yes fifth course option

Unit Notes: Does not count for Biology major credit.

Distributions: (D3)

This course is cross-listed and the prefixes carry the following divisional credit:

ENVI 265 (D3) BIOL 165 (D3) MAST 265 (D2)

Attributes: ENVI Natural World Electives

Not offered current academic year

MAST 266 (S) Reading Water (WS)

Cross-listings: ENVI 266 MAST 266

Primary Cross-listing

Water has such profound and far-reaching influence on individuals, societies, and the planet that it simultaneously risks going overlooked and appearing clichéd. Human beings are made of it and need it to live, yet will die if immersed in it. It is venerated by cultures around the world, yet most people either cannot access clean water, or don't know where their clean water is piped in from. It covers the earth's surface, and has shaped it over eons, yet scientists are still not sure how it came to be here in the first place. This wide-ranging influence also presents challenges for traditional academic structures; thinking about water demands crossing times, spaces, and disciplines. This course will explore the wide-ranging and diverse ways water impacts individuals, cultures, and the environments they call home by drawing on a range of content: hydrology, literature, political theory, storytelling, geography, and more. To do this, we will also develop and examine methods of critically reading as "non-experts"--reading scientific articles as rhetorical objects and reading for scientific principles in literature, for instance--to explore what interdisciplinary thinking opens up (and inhibits), and thus how to effectively engage with and create interdisciplinary work. The goal here is not to define water's cultural or scientific importance, or to determine which disciplines "best" combine to explain water, or to come up with humanities-based solutions to "the water crisis." Rather, these texts, and the water that flows through them will help us explore the opportunities and limits of human perceptions of the other-than-human world. It will help us consider the extent to which those perceptions both shape, and are shaped by, a seemingly simple molecule. And it will help us imagine epistemologies and ontologies that account for the ways water simultaneously flows through us, around us, and through the deep geological history of the planet. Course Texts: Tristan Gooley -- *How to Read Water* (selections) Vandana Shiva -- *Water Wars* (selections) Luna Leopold -- *Water, Rivers, and Creeks* (selections) Richard White -- *The Organic Machine* Linda Hogan -- *Solar Storms* Marc Reisner -- *Cadillac Desert* Jesmyn Ward -- *Salvage the Bones* John McPhee -- "Atchafalaya" Emmi Itäranta -- *Memory of Water* Brenda Hillman -- "The Hydrology of California"

Class Format: This class will be remote, meeting synchronously. The class will be primarily discussion-based, and will ask students to lead and structure discussions. Students will have questions, reflections, and insights prepared before class, and use those to drive our in-class activities.

Requirements/Evaluation: 100pg of reading a week, give or take. Approx 20-25 pages of written work throughout the semester.

Prerequisites: None

Enrollment Limit: 20

Enrollment Preferences: Preference to majors, and then to sophomores and juniors, respectively.

Expected Class Size: 20

Grading: yes pass/fail option, no fifth course option

Distributions: (D1) (WS)

This course is cross-listed and the prefixes carry the following divisional credit:

ENVI 266 (D1) MAST 266 (D1)

Writing Skills Notes: Students will write four papers of increasing complexity that will require workshopping and drafts. Each of these papers will receive forward-looking writing feedback from me. The first paper centers on paragraph-level stylistic choices, the second on argument/evidence connections, the third on genre, and the final paper synthesizes these writing skills. In addition, students' final grades will allow for revision of earlier papers to encourage and assess growth of writing skills.

Not offered current academic year

MAST 268 (S) Debating Ocean Biodiversity at the Intersection of Science and Policy

Cross-listings: ENVI 268 MAST 268

Primary Cross-listing

Biodiversity in the ocean is facing an onslaught of challenges, both directly and indirectly. It is likely that we are undergoing a sixth mass extinction event, where diversity of life on earth is stunningly at risk. Fortunately, however, we are also finding innovative ways to solve issues and attempt to stave off these dramatic changes to our ecosystems. These solutions potentially have both positive and negative effects. Difficult tradeoffs must be weighed and decisions must be made as people wrestle with known knowns, known unknowns, and unknown unknowns. In this class, we will explore five issues that relate to biodiversity in the ocean. You will have the opportunity to investigate one side of an issue, to collect supporting information, and to advocate for your position all while learning about current biodiversity issues in the ocean. You will be challenged to weigh conflicting evidence to find a positive outcome. Throughout the class you will practice critical thinking, evaluation, and synthesizing skills as you work with multiple viewpoints. Class time will include lecture, in-class group work, and student-led debates of timely, controversial issues. You will be assessed on summaries of information, reflections on topics, and a final project on an issue of your choice relating to ocean biodiversity.

Class Format: Remote, including Zoom seminar meetings twice a week

Requirements/Evaluation: Five 2-page papers, participation, and a 6-8 page final paper

Prerequisites: none, open to all students

Enrollment Limit: 20

Enrollment Preferences: 1. first years, 2. sophomores, 3. MAST concentrators

Expected Class Size: 15

Grading: yes pass/fail option, yes fifth course option

Distributions: (D2)

This course is cross-listed and the prefixes carry the following divisional credit:

ENVI 268 (D2) MAST 268 (D2)

Attributes: ENVI Humanities, Arts + Social Science Electives MAST Interdepartmental Electives

Not offered current academic year

MAST 311 (F)(S) Marine Ecology

Cross-listings: MAST 311 BIOL 231

Primary Cross-listing

We have explored only a fraction of the ocean, with about 10% of marine species classified and 20% of the ocean mapped. Many discoveries remain to be made, and marine ecology is one technique to uncover new insights. The field of marine ecology, rooted in the theory of evolution, describes the mechanisms and processes that drive the diversity, abundance, and distribution of marine organisms. The goal is to document natural patterns and make predictions about how species will respond to environmental changes by investigating the relationship between the abiotic environment and biotic interactions. This course will take a deep dive into the unique challenges to life in the ocean. You will compare and contrast different marine ecosystems, such as coral reefs, kelp forests, and the deep sea. You will also practice a marine ecologist's skillset as you design, carry out, and analyze your own research project, which will improve your scientific writing, data analysis, and communication skills. Importantly, you will connect your research and course topics to larger marine conservation issues and broader societal impacts.

Class Format: including coastal and near-shore field trips, 10 days offshore, and a laboratory or field research project

Requirements/Evaluation: two tests, a research project, and a presentation

Prerequisites: BIOL 101 or GEOS/MAST 104, or permission of instructor

Enrollment Limit: 16

Enrollment Preferences: none

Expected Class Size: 12

Grading: yes pass/fail option, yes fifth course option

Unit Notes: This course is only offered through the Williams-Mystic Maritime Studies Program located in Mystic, CT. satisfies the distribution requirement for the Biology major.

Distributions: (D3)

This course is cross-listed and the prefixes carry the following divisional credit:

MAST 311 (D3) BIOL 231 (D3)

Attributes: ENVI Natural World Electives EVST Living Systems Courses EXPE Experiential Education Courses

Fall 2021

LEC Section: 01 TR 11:00 am - 12:15 pm Tim J. Pusack

LAB Section: 02 R 1:30 pm - 5:00 pm Tim J. Pusack

Spring 2022

LEC Section: 01 TR 11:00 am - 12:15 pm Tim J. Pusack

LAB Section: 02 R 1:30 pm - 5:00 pm Tim J. Pusack

MAST 324 (S) Corals and Sea Level

Cross-listings: GEOS 324 MAST 324 ENVI 324

Secondary Cross-listing

In coastal communities, increasing flood damage from storm surges and chronic inundation by seawater are already happening as a result of sea level rise. How do we know what contributes to the observed change in sea level in the last century? What does the geological record teach us about what controls the natural variation in sea level on short and long timescales? How can we use this information to separate anthropogenic effects from natural change in modern systems? And how does this inform us on what to expect through the 21st century and beyond? In this course, we will examine how sea level is reconstructed using geological archives and how coral-based sea level data led to breakthroughs in our understanding of the long-term evolution of the ocean and climate, the controls in the timing of ice age cycles, the singularity of modern climate change, and how high the future seas will rise. During Spring Break, the class will travel to Barbados, a renowned locality for Quaternary sea level reconstruction, to observe modern and ancient reefs, and collect samples that will be the basis of individual or group projects in the second half of the semester. Participation in the Spring Break trip is not required for successful completion of the course, but course enrollment is necessary to attend the trip. This course is in the Oceans and Climate group for the Geosciences major.

Requirements/Evaluation: short papers, labs, participation in discussion, and a research project

Prerequisites: GEOS 104 or GEOS 210 or GEOS 215 or MAST 311 or permission of instructor

Enrollment Limit: 10

Enrollment Preferences: Geoscience majors, students who commit to the Spring Break trip

Expected Class Size: 10

Grading: no pass/fail option, no fifth course option

Distributions: (D3)

This course is cross-listed and the prefixes carry the following divisional credit:

GEOS 324 (D3) MAST 324 (D3) ENVI 324 (D3)

Attributes: ENVI Natural World Electives EXPE Experiential Education Courses GEOS Group A Electives - Climate + Oceans

Not offered current academic year

MAST 351 (F)(S) Marine Policy (DPE) (WS)

Cross-listings: MAST 351 ENVI 351 PSCI 319

Primary Cross-listing

Coastal communities are home to nearly 40% of the U.S. population, but occupy only a small percentage of our country's total land area. Intense population density, critical transportation infrastructure, significant economic productivity, and rich cultural and historic value mark our coastal regions as nationally significant. But, coastal and ocean-based climate-induced impacts such as sea level rise, ocean warming and acidification pose extraordinary challenges to our coastal communities, and are not borne equally by all communities. This seminar considers our relationship with our ocean and coastal environments and the foundational role our oceans and coasts play in our Nation's environmental and economic sustainability as well as ocean and coastal climate resiliency. Through the lens of coastal and ocean governance and policy-making, we critically examine conflict of use issues relative to climate change, climate justice, coastal zone management, fisheries, ocean and coastal pollution and marine biodiversity.

Class Format: This class is taught only at Williams-Mystic in Mystic, Connecticut and includes coastal and near-shore interdisciplinary field seminars,

and 10 days offshore.

Requirements/Evaluation: Weekly Readings; Class Participation; Small and large group strategy exercises (written and oral); Written Research Project: issues paper and draft research paper; Final Research Project: multiple formats available

Prerequisites: none

Enrollment Limit: 23

Enrollment Preferences: must be enrolled at Williams-Mystic in Mystic, Connecticut

Expected Class Size: 22

Grading: no pass/fail option, no fifth course option

Unit Notes: must be enrolled at Williams-Mystic in Mystic, Connecticut

Distributions: (D2) (DPE) (WS)

This course is cross-listed and the prefixes carry the following divisional credit:

MAST 351 (D2) ENVI 351 (D2) PSCI 319 (D2)

Writing Skills Notes: Each student will write one 3-5 page research issues paper and one 8-10 page draft research paper as well as a final project with written components equaling 5-8 pages. Each submission receives written feedback from the professor, including research guidance, input on grammar, structure, language, analysis. Students also receive verbal feedback in individual conferences to discuss research paper organization, analysis, structure and grammar as well as final project input.

Difference, Power, and Equity Notes: Coastal and ocean policy issues relating to climate change, coastal zone management, fisheries, ocean pollution and marine biodiversity impact environmental and climate justice. Students examine coastal governance while considering the disproportionate burdens on underrepresented populations in U.S. coastal communities caused by climate change and coastal policies. Students analyze multi-disciplinary evidence and work to strengthen their integrative, analytical, writing, and advocacy skills.

Attributes: ENVI Environmental Policy EXPE Experiential Education Courses POEC Comparative POEC/Public Policy Courses

Fall 2021

SEM Section: 01 F 9:00 am - 12:00 pm Catherine Robinson Hall

Spring 2022

SEM Section: 01 F 9:00 am - 12:00 pm Catherine Robinson Hall

MAST 352 (F)(S) American Maritime History (DPE) (WS)

Cross-listings: HIST 352 MAST 352

Primary Cross-listing

This course explores themes in American maritime history from the colonial era to the 21st century. We will consider the dynamic relationship between the sea and American life, and the broad influence that each has had on the other. This relationship led to interactions with the water as a highway for the transportation of not just people and goods, but powerful new forces and ideas. The water creates a unique space for the formation of new communities and identities, while also acting as an important, and often exploited, resource. We will sample from different fields of inquiry including labor, environmental, cultural, and political history to gain a deeper understanding of diverse people's complex interactions with the oceans and seas.

Class Format: Seminars, discussions, and field seminars

Requirements/Evaluation: Participation in class discussions, activities, and presentations, regular papers, and a final independent research project

Prerequisites: None

Enrollment Limit: 27

Enrollment Preferences: If course over-enrolls, preference will be given to sophomores and juniors

Expected Class Size: 22

Grading: no pass/fail option, no fifth course option

Unit Notes: Offered only at Mystic Seaport

Distributions: (D2) (DPE) (WS)

This course is cross-listed and the prefixes carry the following divisional credit:

HIST 352 (D2) MAST 352 (D2)

Writing Skills Notes: Students must complete regular writing assignments including a final 10- to 15-page paper. Additionally, students will participate in several in-class writing workshops and peer critiques. Students will receive from the instructor timely comments on their writing skills, with suggestions for improvement.

Difference, Power, and Equity Notes: Maritime activity has long provided opportunities for some while creating tremendous hardships for others. From the slave trade and the encounters between native and European mariners to the power wielded by multi-national shipping conglomerates, this course investigates contests over power, empire, and capitalism as they played out on the maritime stage.

Attributes: AMST Space and Place Electives ENVI Humanities, Arts + Social Science Electives EXPE Experiential Education Courses HIST Group F Electives - U.S. + Canada HIST Group P Electives - Premodern

Fall 2021

SEM Section: 01 MW 11:00 am - 12:15 pm Sofia E. Zepeda

Spring 2022

SEM Section: 01 MW 11:00 am - 12:15 pm Sofia E. Zepeda

MAST 397 (F) Independent Study: Maritime Studies

Maritime Studies independent study.

Grading: yes pass/fail option, yes fifth course option

Distributions: No divisional credit

Fall 2021

IND Section: 01 TBA Nicolas C. Howe

MAST 398 (S) Independent Study: Maritime Studies

Maritime Studies independent study.

Grading: yes pass/fail option, yes fifth course option

Distributions: No divisional credit

Spring 2022

IND Section: 01 TBA Nicolas C. Howe

MAST 402 (S) Senior Seminar: Perspectives on Environmental Studies (WS)

Cross-listings: MAST 402 ENVI 412

Secondary Cross-listing

The Environmental Studies and Maritime Studies programs provide students with an opportunity to explore the myriad ways that humans interact with diverse environments at scales ranging from local to global. The capstone course for Environmental Studies and Maritime Studies, this seminar brings together students who have specialized in the humanities, social studies and the sciences to exchange ideas across these disciplines. Over the course of the seminar, students will develop a sustained independent research project on a topic of their choice, and they will have opportunities throughout the semester to meet with guest speakers to discuss environmental work outside the academy.

Requirements/Evaluation: active participation, discussion leading, several smaller assignments and multi-step capstone project

Prerequisites: declared major/concentration in Environmental Studies or Maritime Studies, ideally to be taken in final semester at Williams

Enrollment Limit: 14

Enrollment Preferences: Environmental Studies majors and concentrators, Maritime Studies concentrators

Expected Class Size: 10

Grading: no pass/fail option, no fifth course option

Unit Notes: required course for students wishing to complete the Maritime Studies concentration

Distributions: No divisional credit (WS)

This course is cross-listed and the prefixes carry the following divisional credit:

MAST 402 No divisional credit ENVI 412 No divisional credit

Writing Skills Notes: This course is focused on building up cross-disciplinary writing and communication skills. There will be a multi-step capstone project that emphasizes writing, and there will be opportunities to revise and resubmit work.

Attributes: ENVI Core Courses EVST Core Courses EVST Senior Practicum

Not offered current academic year

MAST 404 (F) Coastal Processes and Geomorphology (QFR)

Cross-listings: ENVI 404 MAST 404 GEOS 404

Secondary Cross-listing

Can people live safely along the coast? Recent events like SuperStorm Sandy and the Tohoku Tsunami have shown us how the ocean can rise up suddenly and wreak havoc on our lives and coastal infrastructure. Only educated geoscientists can evaluate the risks and define informed strategies to prevent future coastal catastrophes. Currently almost half the global population lives within 100 km of the coast, with a large percent of those living in densely populated cities (e.g., New York, New Orleans, Los Angeles, Shanghai, Hong Kong, Cape Town, Sydney, Mumbai). Despite the growing risks and challenges associated with climate change and rising sea levels, the coastal population continues to grow rapidly. To help ensure these growing populations can live safely along the coast requires a detailed understanding of the processes that shape the coastal zone. These processes act across a variety of scales, from deep-time geologic processes that dictate coastal shape and structure, to decadal-scale processes that determine shoreline position and evolution, to weekly and daily processes such as storms and tides. This course will provide an in-depth look at the forces--wind, waves, storms, and people--that shape the coastal zone, as well as the geologic formations--sandy beaches, rocky cliffs, barrier islands, deltas, and coral reefs--that are acted upon and resist these forces. Coastal dynamics are strongly affected by human interventions, such as seawalls, dredged channels, and sand dune removal, as well as by sea level rise and changes in storm frequency and magnitude associated with climate change. Finally, the course will provide students with a perspective on how the U.S. seeks to manage its coastal zone, focusing on sea level rise and coastal development. This class will include a quantitative lab that will use MATLAB software to model and evaluate various coastal processes. Students will gain a basic understanding of MATLAB functionality, and will be asked to independently apply what they have learned to various data sets provided by the instructor.

Class Format: lecture two times a week with a lab one time per week

Requirements/Evaluation: lab reports, tests, and an independent research project

Prerequisites: Either GEOS 104 or GEOS 210; or permission of instructor

Enrollment Limit: 12

Enrollment Preferences: senior Geosciences majors, then juniors

Expected Class Size: 10

Grading: yes pass/fail option, yes fifth course option

Unit Notes: As a 400-level seminar, this capstone course is intended to build on and extend knowledge and skills students have developed during previous courses in the major

Distributions: (D3) (QFR)

This course is cross-listed and the prefixes carry the following divisional credit:

ENVI 404 (D3) MAST 404 (D3) GEOS 404 (D3)

Quantative/Formal Reasoning Notes: This course will involve the use of MATLAB software to quantitatively analyze coastal process and geomorphological data.

Attributes: ENVI Natural World Electives

Fall 2021

LEC Section: 01 MW 8:30 am - 9:45 am Alex A. Apotsos

LAB Section: 02 F 8:30 am - 9:45 am Alex A. Apotsos

MAST 493 (F) Senior Thesis: Maritime Studies

Maritime Studies senior thesis.

Grading: no pass/fail option, no fifth course option

Distributions: No divisional credit

Fall 2021

HON Section: 01 TBA Nicolas C. Howe

MAST 494 (S) Senior Thesis: Maritime Studies

Maritime Studies senior thesis.

Grading: no pass/fail option, no fifth course option

Distributions: No divisional credit

Spring 2022

HON Section: 01 TBA Nicolas C. Howe

Winter Study ----------

MAST 31 (W) Sen Thesis: Maritime Studies

Maritime Studies senior thesis.

Class Format: independent study

Grading: pass/fail only

Winter 2022

HON Section: 01 TBA Nicolas C. Howe

MAST 99 (W) Independent Study: Maritime Studies

Open to upperclass students. Students interested in doing an independent project (99) during Winter Study must make prior arrangements with a faculty sponsor. The student and professor then complete the independent study proposal form available online. The deadline is typically in late September. Proposals are reviewed by the pertinent department and the Winter Study Committee. Students will be notified if their proposal is approved prior to the Winter Study registration period.

Class Format: independent study

Grading: pass/fail only

Winter 2022

IND Section: 01 TBA Nicolas C. Howe