

2016

# M.A. in Marine and Coastal Studies Program Overview

Nova Southeastern University

Follow this and additional works at: [https://nsuworks.nova.edu/cnso\\_coursecatalogs](https://nsuworks.nova.edu/cnso_coursecatalogs)

---

## NSUWorks Citation

Nova Southeastern University, "M.A. in Marine and Coastal Studies Program Overview" (2016). *Halmos College of Natural Sciences and Oceanography Course Catalogs*. 10.  
[https://nsuworks.nova.edu/cnso\\_coursecatalogs/10](https://nsuworks.nova.edu/cnso_coursecatalogs/10)

This Program Overview is brought to you for free and open access by the NSU Course Catalogs and Course Descriptions at NSUWorks. It has been accepted for inclusion in Halmos College of Natural Sciences and Oceanography Course Catalogs by an authorized administrator of NSUWorks. For more information, please contact [nsuworks@nova.edu](mailto:nsuworks@nova.edu).

# M.A. in Marine and Coastal Studies 2016

## Overview

This Masters of Art degree program is intended for college graduates and working professionals to pursue further study in marine-related and social sciences. The program is tailored for those who have not undertaken formal academic studies in the physical or biological sciences. The MA program thus provides broadened and scholarly perspectives on marine and coastal processes and related societal impacts, applicable to students without an academic natural science background.

The degree is relevant to those pursuing careers in a broad range of sectors, including (but not limited to) administration, teaching, government and policy, urban planning, communication and media, tourism, and business. Perspectives from emerging fields of study including environmental history, environmental communication, and environmental psychology are incorporated through individual course offerings.

The Master of Arts in Marine and Coastal Studies is offered on-line. Students may also elect to take applicable on-site and field courses. Students are able to complete the degree in as little as 18 months. The Program consists of 12 three-credit graduate courses equaling 36 credit hours. (There are 15 hours of core/required courses and 21 hours of electives). Students write a proctored or on-site final comprehensive examination, and present a final portfolio of rigorous scaffolded work compiled.

## Learning Outcomes

- Expected program outcomes are:
- Students will achieve and maintain a high cumulative grade point average (GPA = 3.0) from course grades earned throughout the program.
- The combination of courses comprising the degree ensures that students acquire and demonstrate:
  - Effective communication skills;
  - The ability to explain, assess and predict current and anticipated societal, technological, and ecological impacts related to the marine and coastal environment;
  - The ability to identify and analyze national and international marine and coastal issues and approaches to their solutions.

## Credit Requirements

The program can be completed in 18 months with the student taking 2-3 courses per semester. The maximum time limit for completion of the M.A. program is five years for full-time students, nine years for part-time students. There is no minimum time limitation for completion of the M.A.

To complete the M.A. in Marine and Coastal Studies students must successfully complete the 5 core courses and 7 electives, presenting a final portfolio prior to graduation consisting of rigorous integrated papers scaffolded over their completed term of study. Each core course will require a final term paper which will be graded as 20% of the course final grade. After grading, these term papers will be rewritten until the course instructor finds them acceptable to be incorporated into the student's portfolio.

## Final Portfolio

The final portfolio, written in the scientific style of writing, is composed of the 5 approved core term papers and a summative essay integrating and showing the synthesis of knowledge and skills gained through completion of the core papers will be presented to the Associate Dean of Academic Programs upon completion of all coursework. The Associate Dean of Academic Programs will insure the summative essay is rewritten until acceptable.

## **Core Courses**

### [Anthropogenic Impacts on Marine Environments I \(Historic\)](#)

**Course Numbers:** MAMC-4000

#### **Description**

Humankind has always tended to settle around the coastal zone, and the world's oceans have long been a source of transport and natural resources, from fisheries to minerals. This course will focus upon the historical patterns and influences associated with anthropogenic activities in the marine and coastal environment.

#### **Learning Outcomes**

1. Students will be able to relate and explain historical aspects of human society and technology, and their impact upon the marine and coastal environment, especially within the Western hemisphere.
2. Students will examine and critique the historical development, sociology and economics of coastal communities.

### [Anthropogenic Impacts on Marine Environments II \(Future\)](#)

**Course Numbers:** MAMC-4050

#### **Description**

This course will follow on from an examination of historical anthropogenic influences upon the marine and coastal environment to look at present day and future trajectories associated with human development and impacts within the marine and coastal zone, together with policies and forecasting towards ameliorating and mitigating some of these, where appropriate.

#### **Learning Outcomes**

1. Students will be able to predict future pathways and evaluate consequences of anthropogenic inputs upon marine and coastal systems.
2. Students will examine current and future recreational activity, trade, and infrastructure development.

### [Effective Environmental Communication](#)

**Course Numbers:** MAMC-4100

### **Description**

Professionals in a wide range of disciplines need to be able to effectively and credibly communicate science and environmental issues in terms that can be clearly understood. This course will cover the spectrum of media available for communicating environmental and science information together with writing and speaking skills for media and other communication channels.

### **Learning Outcomes**

Students will be able to:

1. recognize the importance of effective communication in various situations.
2. recognize that communication is a multi-faceted process.
3. recognize that communication involves problem solving and decision making.
4. recognize that speech is an important tool for thinking, learning, and communication.
5. demonstrate that they can speak clearly and confidently in a variety of situations.
6. recognize listening as an active, constructive process.
7. recognize writing as a constructive, meaningful process.
8. acquire the behaviors of effective writers.
9. show that they can write confidently in a variety of formats.
10. criticize interpret visual information.
11. demonstrate that they can enhance spoken and written presentations with appropriate visual, audio, multimedia, and other aids.

### [Introduction to Marine and Coastal Processes: Essential Principles and Fundamental Concepts](#)

**Course Numbers:** MAMC-4200

### **Description**

An introduction to marine and coastal processes for non-scientists, including the physical and chemical processes, ocean mixing and circulation, together with marine ecosystems and interactions, within a global context.

### **Learning Outcomes**

1. Students will be able to identify and describe the general physical and chemical processes that have an impact upon marine and coastal areas and associated ecosystems.

### [Marine and Coastal Flora and Fauna](#)

**Course Numbers:** MAMC-4300

### **Description**

An introductory overview of the diverse biology and ecology of marine and coastal life.

## **Learning Outcomes**

1. Students will acquire an introduction to marine and coastal biodiversity.
2. Students will be able to survey the major threats to marine and coastal biodiversity.

## [Archaeological Oceanography: Reefs and Wrecks](#)

### **Course Numbers: MAMC-4955 and CZMT-0955**

#### **Description**

Archaeological Oceanography: Reefs and Wrecks will examine human interest in the tension of natural and cultural treasures. Students explore the dynamics of ocean systems, human systems, natural and artificial reefs. Legal, ethical and preservation considerations will be examined. Mapping, navigation through time and tools and technology through time will be featured as well as present day conservation of artifacts, archives and the nature of evidence. A self-selected student project will be a requirement. For the Oceanography major, the student project will focus on ocean science and/or engineering. For the Coastal Zone Management major, Certificate Program or Education Degree student, the focus for the student project can be from a broad range of relevant topics.

#### Learning Outcomes

1. To become knowledgeable about and appreciate both natural and cultural treasures and the interplay between them.
2. To understand the complexity of the tensions (legal, ethical, environmental and preservation considerations) and prepare to undertake appropriate actions based on the short-term and long-term.
3. To become wise about the history of mapping, navigation, ship design and the tools and technologies of exploration and the nature of evidence.

## [Coastal Policy](#)

### **Course Numbers: CZMT-0612**

#### **Description**

Students will have the opportunity to develop their overall and general knowledge of coastal policy issues, problems, the politics of coastal policy, and some of the proposed solutions to coastal issues.

#### **Learning Outcomes**

1. Students who complete this course will have an overview of the major elements of coastal behavior (i.e. how do coast lines "live" and what is the dynamic of the coast), understand the impact of scientific research on coastal policy, be knowledgeable about selected US case studies of coastal environments and the challenges they pose, and have a basic grasp of US Ocean/Coastal policy, laws, and major initiatives.

2. Students will be guided to examining, in a short research project, a detailed topic on coastal policy of special professional or academic interest to them. This will normally be a review of the literature and recommendations for future research. They will become familiar with literature review and graduate student writing techniques and expectations.

3. This class encourages students to gain experience in discussing, in a serious and respectful way, selected topics related to coastal policy and they will learn how to effectively share their personal and professional experiences and opinions on these subjects.

### [Coastal Zone Interpretation](#)

**Course Numbers:** MAMC-4667 and CZMT-0667

#### **Description**

This is a web-based course that offers an exploration of communication and experiential learning theories and their application to the interpretation of coastal zone environments. This course provides the student with learning opportunities that will require them to, "go outside, sniff around," explore the coastal zone and thereby be engaged in hands-on interpretive experiences. These will include: the design and writing of an interpretive guide for a coastal or underwater trail, design and writing of interpretive signage for a coastal site and the planning, research and presentation of an interpretive program. Students will investigate the wide range of media available, including video, interactive web sites, written media, and verbal communications as they implement their interpretive activities. These experiential learning opportunities will form the basis for reflective observation, self-evaluation, and participant feedback. In addition to gaining a solid understanding of interpretive theory, students will also develop their own interpretive concepts and theories appropriate to their particular location and needs. As the course progresses the students' on-going knowledge of coastal zone interpretation will be applied specifically to the in-course interpretive program that they will be planning, researching and presenting.

#### **Learning Outcomes**

Upon completion of the course, students will:

1. be familiar with communication and experiential learning theories
2. understand how these theories apply to nature interpretation and environmental education program design
3. have experience in developing theory-based interpretive learning materials

### [Environmental Remote Sensing and Geographic Information Systems](#)

**Course Numbers:** MAMC-4639, CZMT-0639, BMME-6000, MEVS-5023, and OCMB-6100

#### **Description:**

This course provides hands-on training with the latest techniques in geographic information systems and remote sensing. Course work includes lecture and hands on computer training. Areas covered (utilizing both ERDAS Imagine 8.3 and ESRI Arcview 3.0) include: GIS/remote sensing theory, image georeferencing and mosaicking, image enhancement and classification procedures, accuracy assessment procedures, importing GPS polygons, establishing database and multimedia hotlinks, importing tables, joining building queries, charting and map creation. Instruction will be centered on application of these techniques to actual environmental case studies.

### **Learning Outcomes:**

1. The students will be taught the fundamentals of GIS, its potential as well as its limitations. Remote sensing is presented as an integral part of the GIS hierarchy and introduced using both marine and terrestrial examples.
2. Through the course, the student will be installed with a broad and comprehensive understanding of remote Earth-observation, and will become familiar with the suite of sensors currently used for routine environmental monitoring.
3. Participants will be directed towards recent literature in a variety of current topics so as to ensure that by the end of the course, all students will be aware of the current status of remote sensing and GIS technology.
4. Not only will students be familiar with the many types of remote sensing imagery used for Earth observation, they will also have a grounding in the physics behind the imagery, so as to allow a critical evaluation of the technology as a real-world tool.

### [Environmental Science](#)

**Course Numbers:** MAMC 4915 and CZMT 0915

### **Course description**

This course is intended to give students an overview of the physical environment, its relationship within the biosphere, and the human impacts upon natural systems. Topics include environmental sustainability; air, water and land ecosystems; biological resources; global atmospheric changes; pollution and waste management; and energy conservation.

### **Learning objectives**

1. Relate human population size to natural resources and resource consumption
2. Explain the carbon, hydrologic, nitrogen, sulfur, and phosphorus cycles
3. Describe ecological succession, population ecology, and carrying capacity
4. Summarize the effects of air pollution on human health and natural systems
5. Describe causes and effects of global climate change
6. Discuss sustainable freshwater use and management practices
7. Summarize types of water pollution and methods for improving water quality
8. Identify human activities that contribute to marine pollution and impact marine ecosystems

9. Summarize soil and land resource conservation efforts
10. Discuss human causes of species endangerment and extinction
11. Describe the types of solid and hazardous wastes and how they are managed
12. Summarize the pros and cons associated with various energy sources
13. Write a report, develop a lesson plan or create an interpretive guide based on an Environmental Science topic
14. Apply concepts to improve scientific and environmental literacy
15. [Fundamental Concepts of Climate Change: Scientific Perspectives](#)
16. **Course Numbers:** MAMC 4400 MCCC 5300
17. **Course Description**
18. Climate change is increasingly at the forefront of scientific and policy considerations worldwide, but the basic dynamics of the atmosphere and climate processes are not generally understood. This course will be one of the core courses in the Graduate Certificate and Coastal Climate Change, and an elective within the MS in Coastal Zone Management degree program. It will introduce simple concepts and observations regarding weather and the marine and coastal environment, and build into more complex enquiries and investigations regarding the physical, chemical, biological and geographical aspects. Upon course completion, students will better comprehend the science behind marine and coastal climate change and be able to make use of this knowledge in their decision-making within their communities and work environment.
19. **Learning Objectives**
20. Students will learn
21. 1. how the climate system works,
22. 2. how climate has changed throughout Earth's history, and
23. 3. how this information is used to predict the response of climate to both natural and anthropogenic forcing in the future.
24. [Fundamental Concepts of Climate Change: Societal Perspectives](#)
25. **Course Numbers:** MAMC 4450 and MCCC 5350
26. **Course Description**
27. The social consequences of a changing climate are numerous and have the potential to significantly alter human-livelihood and even create community conflict and unrest. In this course, which is one of the two required (core) courses for the Graduate Certificate in Marine and Coastal Climate Change, students will explore climate change from a social perspective. Where appropriate, the course will be explored in the context of the marine and coastal environment.
28. **Pre-requisite:** MAMC-4400
29. **Learning Outcomes**
30. Students will learn:
31. 1. how climate change will impact society
32. 2. what measures can be taken to mitigate or adapt to climate change.
33. 3. who is responsible and who is most vulnerable.
34. 4. whether we should be actively trying to take control of the climate system in an effort to offset the effects of greenhouse gas emissions.
35. [International Integrated Coastal Zone Management](#)
36. **Course Numbers:** MAMC 4614 and CZMT 0614
37. **Description**
38. This web-based distance education course focuses on the international dimensions of integrated coastal zone management. Students will first examine the major "big picture" issues affecting the world's coastal areas and oceans, and will examine seven case studies that will help to bring alive the grave problems of mismanaging coastal and economic resources: the Black Sea, Newfoundland, the Louisiana Region of the Gulf of Mexico, Belize, the Marshall Islands, and Antarctica. The second part of the course will provide students with the opportunity to study major international conferences, treaties, and policy principles (including the Law of the Sea). In

the final third of the course, students will examine regional as well as selected country coastal-zone policies.

**39. Learning Outcomes:**

40. 1. Students will be familiar with important aspects of Integrated Coastal Zone Management
41. 2. Students will have basis for comparing globally separate policies
42. 3. Students will be able to assess the costs and benefits of different coastal zone management strategies around the world.
43. 4. Students will be trained in the writing of short, tightly focused research projects

[Marine Protected Areas: Science, Siting and Monitoring](#)

**Course Numbers:** MAMC-4945 and CZMT-0945

**Description**

The online course consists of several power point presentations with voice-over as well as discussion topics and class interactive hypothetical scenarios. Lectures will address the logic of Marine Protected Areas (MPA) and their advantages and disadvantage. The science of MPA will be presented as well an overview of traditional approaches to fisheries management. The importance of ecological principles when creating an MPA will be emphasized. An overview of sampling theory and need for empirical data to document the success or failure of MPA will be presented.

**Learning Outcomes**

Upon course completion, students will have gained an:

1. Understanding of the advantages and disadvantages of MPA as a fisheries management tool.
2. Understanding of the hypothesis testing relative to creation and monitoring of an MPA.
3. Understanding of various stakeholders and user groups of fisheries common use resources.

[Ocean and Coastal Law](#)

**Course Numbers:** MAMC 4603, CZMT-0603, and MCCC-5400

**Description**

A hodgepodge of laws and approaches apply to the oceans and coasts. Rights divide among private landowners, resource extractors, local governments, national governments, or international authorities. Today a great period of legal adjustment is in motion as many living systems collapse, bearing social and economic consequences. Much ocean and coastal law is already a story of failure followed by rethinking or reconstruction. This background law is now asked to rise to the task of enabling prevention of global climate change, and to the task of adaptation to its impacts which elude prevention. This course is about how law copes with emerging science and policy. It depicts examples of legal success and of disappointment to highlight the mechanisms and principles of law. From the examples, we understand

and can recollect how these laws are created, revised, processed into regulations and administered. Limits on agencies and courts to make interpretation, apply science in legal settings, and enforce are evaluated.

### **Learning Outcomes**

Upon course completion, students will

1. Become broadly familiar with the main ideas by which certain major ocean and coastal resources are addressed by law
2. Appreciate from a study of detail how interdisciplinary approaches of science, planning and law are accomplished today
3. Increase knowledge of the specific mechanism of law within an interest area specific to the student e.g. coastal planning, coral reef management
4. Improve personal ability to locate and understand legal regulatory activities about ocean and coastal resources
5. Engage in critical thought of the significance of key actions affecting national and international ocean policy

[Water World Revisited: Exploring Coastal Futurology](#)

**Course Numbers:** MAMC-4965 and CZMT-0965

### **Description**

This short course will feature readings, discussions, short digital video interviews and video case studies, and short lectures by the instructors. We will examine the context of futurology of coastal zones and oceans. Students will be assessed for participation in on-line discussions, short student video contributions to the class, and weekly written brainstorming notes on the weekly topics.

The major themes of the course are:

1. Climate change and the urgency for humans to restore climate balance.
2. The interaction of human activity and climate.
3. Futuristic oceanic and coastal zone settlement and manufacturing ideas.
4. Futuristic energy systems, climate, and the ethics of proposed human engineering of climate and habitat.

### **Learning Outcomes**

1. Identify the key concepts and issues of global climate change as they relate to coastal policy.

2. Assess many of the key futuristic solutions to climate change that have been proposed by scientists and others.
3. Discuss and evaluate the ethical problems of manipulating nature both as a by-product of human activity (as collateral damage) and as a deliberate strategy as suggested by coastal and ocean futurologists.
4. Evaluate and discuss the global governance issues associated with climate change policy and futuristic initiatives