MSC ENVIRONMENTAL SCIENCES COURSE ENVIRONMENTAL MANAGEMENT AND COASTAL ECOLOGY

IDENTITY CARD

- Domain: Sciences, Technologies and Health
- Full time course
- Continuing Education
- Master of Engineering

- 120 ECTS credits
- 4 semesters
- Course partly taught in English
- La Rochelle

- 1 month to access the first job according to a study conducted 18 months after graduation

REGISTRATION


CONTACT

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OBJECTIVES

Presentation

Do you have a background as a biologist and a sensitivity to international issues? The Master's degree in Environmental Sciences teaches you to understand complex research or social issues related to the integrated management of natural and coastal areas in particular.

It allows you to acquire specific knowledge and skills oriented towards the sustainable management of human ecosystems through the Environmental Management and Coastal Ecology (GEEL) programme.

You will also develop useful interpersonal skills in the professional world, including the ability to listen to specialists in related or complementary disciplines.

Benoit Simon-Bouhet (M1)
Vincent Le Fouest (M2)
At the end of this course, you will know

- Achieve, in English, level B2 of the Common European Framework of Reference for Languages, both in comprehension and in written and oral expression, in order to allow spontaneous interactions in English.
  - Write a summary of scientific or general documents in English.
  - Present scientific results orally in English using visual aids and answer questions about the presentation.
  - Understand and analyze a scientific or general audio document in English.
  - Express your point of view and develop arguments in English, both written and oral.

- Be able to present and synthesize scientific or technical results, both orally and in writing, using standard formats in the fields of ecology, geosciences, geography or management sciences.
  - Present scientific results orally on a free topic, respecting the imposed form and structure instructions.
  - Synthesize, in writing, a corpus of scientific documents on a given topic.
  - Produce a structured report in the required format (for example, DOCOB or IMRED).
  - Know how to distinguish plagiarism from document citation.
  - Synthesize complex information (from statistical and spatial analyses) into an intelligible figure (graph, map, etc.).

- Conduct environmental projects independently, within multidisciplinary working groups.
  - Identify and know how to use the resources available to carry out the project.
  - Adapt your working method to the project, the group (division of tasks in the group) and scheduling constraints.
  - Self-assess your progress and learning acquisition.
  - Establish concerted communication.
  - Adapt your behaviour to the situation (respect for the interlocutor, respect for schedules).
  - Capitalize and enhance your skills and develop your CV.

- Develop a holistic and multidisciplinary vision of environmental issues.
  - Identify the main concepts of environmental and coastal law and apply, in a simple legal configuration, the main rules of the public maritime domain and the "Littoral" law.
  - Identify the appropriate spatial framework for a given analysis (e.g. watershed approach, litto-sea litto, etc.).
  - Mobilize the social sciences and humanities knowledge necessary to address a given coastal or maritime issue.
  - Integrate the concept of socio-ecosystem for integrated coastal zone management.

- Mobilize interdisciplinary knowledge in life sciences, physics and geosciences to understand the ecology and mobility of marine species in their natural environment.
  - Identify the main ecological and physiological features of marine mammals and birds, fish and marine turtles.
  - Understand the influence of oceanic and atmospheric circulation on species movements at different spatial and temporal scales.

- Establish proposals for the monitoring and management of mobile marine species taking into account the particularity of their environment, the extent of their home range and the anthropogenic pressures they are undergoing.
  - Mobilize relevant national and international laws and conventions for the conservation of mobile marine species.
  - Prioritize the impact of human activities on mobile marine species.
  - Conceptualize monitoring protocols adapted to the species and areas studied.
  - Identify the most relevant indicators for monitoring mobile marine populations.

- Plan and organize the acquisition of observational or experimental data.
  - Design a sampling plan in a coastal, subtidal, intertidal or terrestrial environment to answer a specific scientific question.
  - Implement sampling taking into account logistical constraints (human, technical, cost, time available, etc.) and the precision targeted.
  - Construct a sampling plan to obtain cultural and socio-economic data necessary for environmental management (surveys, interviews, etc.).
  - Design surveys and conduct interviews to obtain socio-economic, geographical and cultural data.

- Process, analyze and interpret data collected to answer environmental questions (biological, ecological, social and human science data).
  - Format acquired data for statistical analysis.
  - Master the R software to perform statistical analyses, graphical representations or numerical simulations.
  - Realiser l'analyse de données uni- bi- ou multivariées, issues d'observations et de mesures sur le terrain et au laboratoire ou issues d'enquêtes pour répondre à une problématique scientifique précise.
  - Analyze qualitative and quantitative data from surveys, interviews and behavioural observation in environmental studies.
  - Analyze spatialized data within a geographic information system.
  - Conceptualize, formalize and produce mathematical models of how ecological systems work.

- Apprehend the management of environmental projects.
  - Propose expertise related to the management of a natural habitat and/or animal and plant species.
  - Identify potential sources of funding for environmental or research projects.
  - Write a response to a call for tenders in the field of research or environmental management.
MSc Environmental Sciences course Environmental Management and Coastal Ecology

Mobilize ecological knowledge and tools to identify environmental and conservation issues
- Assess the toxicity of pollutants at different scales of integration: populations, communities, ecosystems
- Understand the ecological functioning of various ecosystems to propose appropriate management measures
- Understanding the genetic basis of environmental adaptation
- Identify existing molecular tools and their applications in conservation biology
- Understand and explain the mechanisms underlying the adaptation of living organisms to environmental variations in space and time and understand their ecological significance, particularly in a conservation context.
- Be familiar with biodiversity management tools

Master the knowledge and tools of geosciences, geophysics and social sciences for the understanding of ecosystem functioning and the impact of human activities
- Mobilize knowledge in geosciences, geophysics and social sciences and humanities to identify sources and understand the behaviour of pollutants in the environment
- Analyze coastal environmental changes and their influencing factors, both global and local
- Be familiar with methods for assessing environmental change and associated uncertainties

Integrate ecological and conservation concepts, management sciences and socio-economic approaches to implement environmental management strategies
- Assess ecotoxicological risk
- Integrate the link between the adaptive potential of species and the consequences of global change
- Master concepts and methods in conservation ecology, physiology or genetics to identify species and spaces vulnerable to human activities
- Identify resource exploitation pressures and their consequences on biodiversity loss.
- Integrate scientific knowledge related to the management of an aquatic ecosystem, existing legislation and executive governance to analyse the ecological status of a water resource.
- Propose expertise related to the management of a natural habitat and/or animal and plant species
- Integrate scientific knowledge related to the management of an aquatic ecosystem, existing legislation and executive governance to analyse the ecological status of a water resource.
- Identify actors, vulnerability and risks in order to develop strategies for sustainable ecosystem management
- Know the tools and master knowledge in all disciplines of biology (from the molecular scale to the ecosystem) to understand the interactions between the environment and organisms.
- Describe the potential impacts of an environmental study and list ways to limit or remedy them.

ADMISSION

Your profile
You have a Bac+3, Bac+4 or equivalent (minimum 180 ECTS).

How to apply?
In the 1st year of the Master’s degree, the selection of candidates is made on the basis of their application documents.
How to apply to the 1st year of the Master’s
How to apply to the 2nd year of the Master’s

PROGRAMME

- Mandatory ■ Course option

Semester 1

 Acquisition and data processing •
- Data analysis
- Sampling strategy

 Physical environment •
- Coastal sediment dynamics
- From climate change impacts to adaptation pathways
- Geographic information systems

 Sampling in marine environment •
- Coastal sampling
- Practical research Internship in Chizé
- Underwater biology and ecology
- Upgrading in marine biology

- **Ecology and Management of Mobile Marine Species 1**
  - Ecology of top predators
  - Impact of human activities
  - Law of the sea and biodiversity

- **Geomatics**
  - Introduction to Geographic Information
  - Methods, data processing and cartographic representations

- **Governance and consultation**
  - Designing participatory approaches
  - Gouvernance du développement durable
  - Retour d'expériences en développement durable : étude d'un cas

- **The environment in a computer**
  - The environment in a computer: examples & projects

- **Semester 2**

  - **Conservation biology**
    - Conservation ecology
    - Adaptation and conservation
    - Conservation physiology

  - **Ecology**
    - Coastal and trophic dynamics
    - Ecotoxicology
    - Numerical analysis

  - **Internship**
    - Internship (from 6 to 8 weeks)

  - **Ecology and Management of Mobile Marine Species 2**
    - Management of protected species
    - Monitoring tools (1)
    - Pelagic habitats

  - **From data to information**
    - Data mining
    - Image analysis

  - **Governance and consultation 2**
    - Préparer, animer, rendre compte d'un évènement participatif
    - Simulation and participatory scenarios
    - Team and conflict management

  - **Image processing, spatial analysis and web services**
    - Remote sensing and spatial imaging
    - Web services et programmation
Tranverse unit 2
- Global changes: environmental and societal issues
- Modern language 1 English

Semester 3

Environmental management (1)
- Integrated management of wetlands
- Water quality management

Environmental management (2)
- Biodiversity management
- Socio-economics of the environment

Professional and environmental project
- Environmental project management
- Preparation of the professional project
- Simulation of the environment

Ecology and Management of Mobile Marine Species 3
- Management of fisheries resources
- Monitoring tools (2)
- Sensory systems and orientation

Advanced processing and realization of a geomatics project
- Advanced remote sensing
- Data modelling and analysis
- Geomatics project

Geolocalized web programming
- Geographic information
- Web programming

Governance and consultation 3
- Feedback: Environmental management and Sustainable Development programs
- Projet Management

Langue vivante étrangère 1
- Modern language 1 English

Transverse unit 3
- Global changes: environmental and societal issues
- The construction of a socio-economic system: the emergence of innovation ecosystems

Semester 4

Transverse unit
- Internship (26 weeks)

International
From the beginning of the 2019 academic year, students of the Environmental Sciences course Environmental Management and Coastal Ecology MSc may apply for a double degree with the University of Costa Rica.

AFTERWARDS