

Fisheries Economics and Management

Organized by

Mediterranean Agronomic Institute of Zaragoza

Fisheries Economics and Management

Jointly organized by: **University of Barcelona (UB), CIHEAM-IAMZ and Spanish Ministry of Agriculture, Fisheries and Food (MAPA)**, with the collaboration of **Food and Agriculture Organization of the United Nations (FAO)**

Scientific coordinator: **Dr. Ramón Franquesa**

The programme is held every two years. Next edition starts in October 2010.
This Master is also an official Master of the Spanish University system.

Aims: Great changes have been taking place in the fishing sector in recent times, including: (i) growing demand and high fish prices that are stimulating the increase in fishing effort; (ii) global technological advances that are affecting the structure of the fleets and their fishing capacity; (iii) protection of the environment, which, as in other sectors, is becoming a priority; and (iv) growing importance of the international scope of fisheries. Therefore it is necessary to train young professionals and scientists with multidisciplinary background, so that from both the public and private sectors they can accommodate these changes and develop stable and sustainable fisheries systems.

Learning outcomes:

- To understand the basis and principles governing the behaviour of fisheries systems and their corresponding physical, biological, socioeconomic, legal and institutional subsystems, and to gain further insight into the sector's problems to be able to provide solutions that may answer its specific demands and take into account a sustainable and high-quality exploitation.
- To be able to integrate the diverse components conforming fisheries management, and to gain experience in the use of different techniques and methods leading to a more efficient management.
- To know how to design and assess management strategies in different environments and situations, according to exploited species and technical, environmental and socioeconomic factors, that from a framework of sustainability may increase benefits and competitiveness of fisheries communities and satisfy consumer needs.
- To assume the responsibility of planning and carrying out, under the supervision of a tutor, but in a manner that must be largely autonomous, a work of initiation to research or to professional practice in fisheries economics and management, whose results may be potentially publishable or applicable.
- To prove knowledge of the scientific and technical information underpinning the research or professional project conducted, command of the techniques and methodologies relevant to such research or project, and capacity to objectively evaluate the significance of results and conclusions.
- To know how to communicate the reasoning and conclusions of tutored works carried out in a group or autonomously, to develop skills in the preparation of informative and synthetic documents, and to acquire experience in the preparation and presentation of oral communications delivered and defended before an audience.

Part 1

Postgraduate specialization programme

The programme is organized in 12 Units (60 ECTS)

Unit 1
06-21 Oct. '08

THE MARINE ECOSYSTEM AND POPULATION DYNAMICS (5 ECTS)

Content:

Structure and characteristics of marine ecosystems
Fisheries ecology and biodiversity
Concepts in population dynamics. Estimation of parameters
Techniques and models for stock assessment

Learning outcomes:

- To be aware of the main problems linked to fisheries management and to know the economic nature of the use of marine live resources.
- To be able to characterize the different exploited marine ecosystems and to determine the impact of environmental variability on them.
- To understand the theoretical and applied basis of fisheries ecology and population dynamics, and to gain experience in the use of models and indicators for fisheries stock assessment that lead to an improvement of aid-to-decision making to increase the management efficacy.
- To be aware of the need to develop stock assessment approaches for multi-specific and multi-gear fisheries to better fit Mediterranean conditions.

Unit 2
22 Oct.-
05 Nov. '08

INTRODUCTION TO AQUACULTURE AND FISHERIES RESOURCES (5 ECTS)

Content:

The aquaculture enterprise: production and management systems
Aquaculture and coastal zone management
Typology and distribution of fishery resources
Fishing exploitation and the ecosystem approach

Learning outcomes:

- To identify the main taxonomic groups which can be exploited, and to be able to determine their abundance, distribution and reproduction patterns
- To characterize the different fisheries typologies and their impact on the ecosystem, being aware of the importance of implementing the ecosystem approach to fisheries management.
- To know the scientific and technical basis supporting aquaculture production, and to be familiar with the different production systems and applicable techniques, paying special attention to those aspects concerning the integration of aquaculture in global coastal management.
- To understand the basis of the technical and commercial management of an aquaculture firm that leads to profitability of production activities, risk management and market positioning.

Unit 3
06-12 Nov. and
10-12 Dec. '08

**BASIC ECONOMICS AND PRODUCTION FACTORS IN FISHERIES
(5 ECTS)**

Content:

Basic economics
The fishing enterprise
The fishing vessel and fishing technology

Learning outcomes:

- To know the basic and applied concepts of economics related to fisheries activity and the main production factor to be considered in an economic analysis.
- To know how to assess the exploitation capacity of the different fisheries practices, differentiating techniques, structural costs, investment incentives and measures of effort.
- To master the different vessel types and fishing gears, and to be familiar with the new fishing techniques that improve selectivity or reduce environmental impact, to contribute towards sustainable management objectives that can benefit the sector and the fisheries stocks.

Unit 4
02-19 Dec. '08
and 08-09 Jan. '09

FISH TRADE AND PROCESSING (5 ECTS)

Content:

The fish trade worldwide and its institutions
Fish marketing
Fish processing

Learning outcomes:

- To understand seafood markets, especially the European and Mediterranean markets, their main variation patterns and the regulation at international and national levels.
- To acquire knowledge on the product distribution chain, and to master marketing concepts, components and phases and their specific application to seafood products, being able to establish strategies that can optimize the resources of enterprises or fisheries communities to increase benefits and gain market advantages.
- To gain further insight into the strategies entailing an added value for the product, especially those related with the processing industry, its needs and trends, paying special attention to aspects related to product quality.
- To know how to analyse the fisheries economic context and its interaction with other economic sectors, as a complex and integrated network of enterprises and resources associated with seafood extraction/production, transport and processing, as well as marketing-derived value.
- To be able to assess the economic impact associated with the fishing industry as a combination of direct, indirect and induced effects, both at local and external levels.

Unit 5
12-21 Jan. '08

THEORY AND MODELS OF FISHERIES MANAGEMENT (5 ECTS)

Content:

Basic theory
Regulation methods. Reactive and adaptative management
Typology of bioeconomic models
Estimation of effort and economic parameters
Models as management tools

Learning outcomes:

- To know the economic concepts linked to fisheries management, as well as the fisheries regulation methods, their agents and instruments.
- To be qualified to analyse and study complex systems created by the interaction of independent processes that lead to the disequilibrium of exploitation patterns.
- To assess the advantages of adaptive management as an iterative process of decision making that permit the most adequate management strategies to be discerned.
- To be able to understand, manipulate and interpret a whole series of static and dynamic bioeconomic models that are valuable management tools that take into account environmental, technical and socio-economic parameters.

Unit 6
19 Jan.-
06 Feb. '09

APPLIED BIOECONOMIC MODELS AND ECONOMIC AND SOCIAL INDICATORS (5 ECTS)

Content:

The MEFISTO1 model and other programs
The role of indicators. Typology
The use of indicators in management

Learning outcomes:

- To improve knowledge on the fisheries bioeconomic processes by using simulation models to improve the scientific advice needed to optimize management.
- To gain experience in the use of the bioeconomic simulation model Mefisto to assess the effect of different management actions on the fisheries system and make possible an evaluation of the biological and economic consequences of implementing different policies.
- To know how to use a wide range of biological and economic indicators and reference points as tools to evaluate fishing fleets and to support fisheries management.

Unit 7
09-20 Feb. '09

INSTITUTIONAL FRAMEWORK, COOPERATION AND RESEARCH (5 ECTS)

Content:

Research policies and their application to fisheries management
Research institutions and programmes
International cooperation

Learning outcomes:

- To analyse the research programmes of interest for fisheries management, and to know how to develop research projects according to particular problems, from a technical to an institutional scope.
- To be aware of the importance of applying a multidisciplinary approach in fisheries research, and to know the aims of international cooperation in the Mediterranean region.
- To know the typology, function and working mechanisms of local and international institutions working on fisheries research and management.

Unit 8
23 Feb.-
05 Mar. '09

STATISTICAL ANALYSIS AND DATABASE USE (5 ECTS)

Content:

Statistical concepts and tools
Statistical data and information management
Statistical services of FAO and other institutions

Learning outcomes:

- To be aware of the importance of fisheries statistical programmes in management plans, and to understand the existing links between policy plans and management strategies and the data necessary to provide answers.
- To be acquainted with the statistical funds relevant for fisheries data analysis, and to be familiar with the computer software used in this analysis.
- To analyse the different type of data, the data collection methods and the theoretical elements in the design and application of fisheries statistical systems.
- To be familiar with the fundamental principles of sampling that have direct impact on the reliability of the derived statistics.
- To realize the role of computers and information systems in increasing the scope, detail and utility of data collected and resulting estimates.
- To gain experience in the use of the most relevant databases at international level.

Unit 9
09-20 Mar. and
13-17 Apr. '09

**MARITIME LAW AND THE SOCIOCULTURAL PERSPECTIVE
(5 ECTS)**

Content:

Maritime and fisheries law
Legal framework and international agreements
The historical, sociocultural and sociopolitical perspective of fishing activity
Social analysis. Employment and social services

Learning outcomes:

- To understand the legal principles regulating fisheries at international, regional and national levels, and to understand the space in which this legal framework and its application and control mechanisms evolve.
- To understand the fisheries activity from an historical perspective, analysing its evolution and dynamics, and valuing its sociocultural dimension.
- To be familiar with the sociopolitical context of fisheries through the knowledge of the different types of organizations and fishermen associations, and by the social analysis of fisheries activities.
- To enhance the participation of the sector and other stakeholders in the definition of management policies and strategies, to be able to explain the long-term effects to the parts involved in short-term measures, and to develop skills to negotiate solutions that may enhance sustainability with actors of opposite interests.

Unit 10
23-31 Mar. '09

**OBJECTIVES AND INSTRUMENTS FOR FISHERIES POLICIES
(5 ECTS)**

Content:

Fishing control
Technical regulation measures
Economic instruments and market regulation
Institutional coordination and strategic planning

Learning outcomes:

- To know the current fisheries objectives and to acquire an ethical commitment to the sustainability of resources and fisheries communities, promoting the sustainable development of fisheries and the application of the precautionary principle for the conservation of aquatic resources and the minimization of impacts on marine ecosystems.

- To analyse the conservation measures guaranteeing the maintenance of stocks by means of the establishment of total allowable catches, the limitation of fleet fishing effort, the application of technical measures to improve selectivity and to regulate the minimum sizes of catches, and the protection of zones to recover endangered stocks.
- To analyse the economic and structural measures to reduce fleets, support workers of the fisheries sector, develop the processing industry, modernize fleets and increase their competitiveness and viability.
- To know the market regulations, such as the establishment of minimum prices, incentive to consume particular species, the support to the participation of producers' associations in the direct sale of products, and the control of the sanitary, quality and presentation aspects of products to satisfy consumers' interests.
- To know how to implement the regulations called for by the different organisms and to control compliance with them.
- To be aware of the need of coordination between the different institutions involved in the definition and control of the application of fisheries policies at national level and their role in strategic planning.

Unit 11
02-03 and
20-23 Apr. '10

APPLIED FISHERIES POLICIES (5 ECTS)

Content:

The Common Fisheries Policy (CFP) of the European Union
Fisheries management in Spain
Fisheries management in Morocco
Regional Fishery Organisations (RFOs)
Specific policies: sustainable development of fisheries, recreational fishing and protected zones of fishing interest
Practical work: project of an action plan on a given fishing problem

Learning outcomes:

- To have in-depth knowledge of the Common Fisheries Policy of the European Union, its evolution, problems and main points of debate.
- To evaluate the objectives, policies and instruments implemented by the main regional organizations in the Mediterranean, and to be familiar with the different institutions that give them scientific and technical advice in the definition of their management policies.
- To analyse, by means of case studies, national fisheries management systems implemented in the Mediterranean, stressing the historical and development peculiarities that have forged their evolution and current structure.
- To master the specific policies to manage environmental, social or work problems affecting the fisheries sector and its relation with other coastal economic or social activities.
- To gain practical experience in the analysis of particular problems of the fisheries sector and in the design of action plans to manage them.

Unit 12
09-10 Oct. and
17-28 Nov. '08,
07 Feb.,
16-17 Mar.,
01 Apr. and
28-30 Apr. '09

INSTITUTIONAL VISITS (5 ECTS)

Content:

Technical visits and seminars in government institutions, research centres, fishing organisations, processing industries and markets

Learning outcomes:

- To have first-hand knowledge about the diverse management and research institutions from the Spanish national and regional administrations related to the fisheries sector.

- To contact private institutions belonging to the fisheries sector, from fishing to product processing and marketing.
- To foster dialogue and exchange with different professionals of the fisheries sector in order to understand their problems and to analyse their management plans.

EXAMINATIONS

Participants take 5 written examinations, each unit being independently graded. Written exams consist of a set of questions that require a concise answer. Lengthy questions are avoided.

Participants may retake failed exams once.

Participants prepare a written document that is presented and defended to assess the project carried out as practical work in Unit 11, that complement the written examination of this Unit. For the evaluation of Unit 12, participants present written reports on the technical visits.

LANGUAGE OF INSTRUCTION

The working language is Spanish, therefore participants should prove knowledge of Spanish at the start of the course. From the beginning of July to the end of September IAMZ organizes an intensive course of Spanish for those who require it. In the selection of candidates, knowledge of English and French is nevertheless valued, as part of the documentation distributed may be written in either of these languages.

ACADEMIC STAFF

Some 70 lecturers participate in each edition of the M.Sc. programme. Some of them belong to the organizing institutions and many others are guest lecturers from various institutions in Spain and in other countries. 35% come from Administration Services, 26% from Higher Education Institutions, 23% from Research Centres, 13% from International Organizations and 3% from Private Companies.

Part 2

The Master of Science thesis

Project (60 ECTS)

This part is organized in 2 Units

INTRODUCTION TO RESEARCH (30 ECTS)

The aim of this unit is to provide the prior knowledge, skills and attitudes necessary to carry out a research or professional project in a particular topic in the speciality of fisheries economics and management.

Learning outcomes:

- To improve skills in the search for scientific and/or technical information, as well as in its selective treatment.
- To develop criteria for defining the objectives of a particular research study or professional project.
- To know how to plan the work in order to best achieve the objectives set and to optimise time.
- To develop skills in the use of techniques and methodologies relevant to the execution of a research or professional project and to discern the advantages and disadvantages of each one for each particular project.
- To know how to integrate knowledge and to learn how to analyse and contrast results or strategies.
- To value the guidance received to plan and develop the work, fostering dialogue, criticism and capacity to work as a member of a team.
- To develop skills for self-directed learning and autonomous work.
- To improve the capacity of response to unforeseen situations and the ability to reorient a research or a project if need be.

MASTER THESIS (30 ECTS)

The aim of this unit is to apply previous education received throughout the Master programme to carry out original research or a professional project in the topic chosen in the previous unit, that concludes with the elaboration of a written thesis.

Learning outcomes:

- To be able to apply previously acquainted knowledge, methods and techniques in a discerning manner.
- To develop skills in the analysis of problems and in the definition of objectives.
- To know how to correctly design the diverse experiments included in the research project or the different activities constituting the professional project.
- To be competent in data collection and analysis according to a pre-established research protocol or project plan.
- To gain experience in the analysis of results or strategies and the elaboration of conclusions that may contribute to clarify and find a possible solution to problems.
- To develop skills in the synthesis and presentation of contents and in the preparation of scientific or technical texts.
- To gain practice in the preparation and presentation of oral communications and in their public defence.
- To acquire attitudes to favour exchange and collaboration with other researchers and professionals.

Research or professional work is carried out in well-recognized institutions (universities, research centres or firms), generally throughout Spain or in the participant's country of origin, under the scientific supervision of a thesis director that must be a doctor of renowned prestige. Participants choose the topic according to their interest of training, which is approved by a Committee. If the participant so requires, the organizing institutions advise on the choice of the most appropriate thesis director and institution to carry out the desired project, and likewise propose topics related to their research activities or other topics of interest previously accorded with other institutions.

The assessment of acquired competences for both units is made by an examining board composed of representatives of the organizing institutions and external members selected in each case for their expertise and prestige in the field of the research or professional work. For the first unit, this assessment is based on: (i) an oral examination by the examining board; (ii) the evaluation done by the thesis director on the performance of the candidate; and (iii) the evaluation based on the reports presented periodically by the participant, with the support of the thesis director, on the development and progress of the research or professional work. For the second unit, assessment is based on quality of the thesis and on its public presentation and defence.

Research or professional activities: most common topics for Master of Science theses

- Socio-economic analyses of fishing systems in particular countries or regions
- Development and application of bioeconomic modelling tools
- Fisheries management strategies
- Valorization and marketing of sea products
- Fisheries sustainability
- Environmental impact of fisheries activities

INDICATIVE MASTER THESES REALIZED WITHIN THE AREA

1. **Title:** Analysis of the value chain of artisanal fisheries in the El-Jadida region (Morocco) (2008)
Author: Mohamed Amrani, Agronomist, Moroccan
Place of realization: Institut National de Recherche Halieutique, Casablanca, Morocco, and Gabinete de Economía del Mar, Facultad de Ciencias Económicas y Empresariales, Universitat de Barcelona, Spain
Thesis directors: Mounir Lamine and Ramón Franquesa
2. **Title:** Fisheries in the Southern Ionian coast of Calabria: local economy and impact on the marine resources of a critical zone for Loggerhead turtle nesting (2008)
Author: Giulia Cambiè, Politic Sciences, Italian
Place of realization: University of Calabria, Italy, and Gabinete de Economía del Mar, Facultad de Ciencias Económicas y Empresariales, Universitat de Barcelona, Spain
Thesis directors: Juan Camiñas and Ramón Franquesa
3. **Title:** Analysis of preference and acceptability of new convenience fish products (2008)
Author: Ahmed Al-Amrousi, Marine Sciences, Egyptian
Place of realization: Departamento de Análisis Económico y de Administración de Empresas, Facultad de Ciencias Económicas y Empresariales, Universidad de A Coruña, Spain
Thesis directors: Domingo Calvo
4. **Title:** Bioeconomic modelling of small pelagics from the Central Moroccan Atlantic (2006)
Author: Abdelkabar Kamili, Agronomist, Moroccan
Place of realization: Centre Régional d'Agadir, Institut National de Recherche Halieutique, Agadir, Morocco, and Instituto de Ciencias Marinas, Consejo Superior de Investigaciones Científicas, Barcelona, Spain
Thesis directors: Francesc Maynou and Hmida Otmani

5. **Title:** Success and failure of fisheries cooperatives: case studies from Turkey (2006)

Author: Vahdet Unal, Agronomist, Turkish

Place of realization: Department of Fish Capture and Processing Technology, Faculty of Fisheries, University of Ege, Bornova, Izmir, Turkey, and Gabinete de Economía del Mar, Facultad de Ciencias Económicas y Empresariales, Universidad de Barcelona, Spain

Thesis directors: Huseyin Ozbilgin, Gul Kitapcioglu and Ramón Franquesa

Detailed additional information is available at

http://www.iamz.ciheam.org/en/pages/paginas/pag_formacion8.htm

