1. Introduction and objectives

Fishery resources are an excellent source of food as well as a driver of job creation in many coastal regions. According to the FAO, supply of fish and fishery products from both capture fisheries (marine and inland) and aquaculture currently provides about 17% of the total supply of animal protein. At the same time, international trade of fish and fishery products has expanded significantly in the last decades, with about 36% of the production being exported. These statistics however do not reveal the concern about the current status of fishery resources and on the economic interpretation of fishing issues. A multidisciplinary vision of fisheries management from the perspective of different sciences such as biology, economics, sociology or law. In this way, they will be able to evaluate and assess fishery resources and propose management measures through different techniques such as mathematical simulations, statistics, surveys, assessments or negotiation. Therefore, it is of minimum interest to train these experts so they can advise stakeholders in the diverse world of fisheries: different administrations (local, regional, state or supranational), fishermen (artisanal, semi-industrial or industrial), social groups (shipowners, trade unions, consumers, processors, fish farmers, etc.). Furthermore, given the international scope of the marine environment, the need arises to establish a common method and language to be used between experts of the different countries sharing fisheries. To train specialists that can contribute to formulating the search for comparative measures from their respective countries to benefit all stakeholders is undoubtedly a great challenge that this Master addresses.

The objectives of this Master is to provide high level specialization in issues related to the economics and management of the fishing activity through:

- An analysis of the fishing system, exploitation mechanisms, marketing and administration, with special emphasis on the perspective of evaluation of resources and on the economic interpretation of fishing issues.
- A multidisciplinary vision of fisheries management from the perspective of different sciences such as biology, economics, sociology or law. In this way, they will be able to evaluate and assess fishery resources and propose management measures through different techniques such as mathematical simulations, statistics, surveys, assessments or negotiation. Therefore, it is of minimum interest to train these experts so they can advise stakeholders in the diverse world of fisheries: different administrations (local, regional, state or supranational), fishermen (artisanal, semi-industrial or industrial), social groups (shipowners, trade unions, consumers, processors, fish farmers, etc.). Furthermore, given the international scope of the marine environment, the need arises to establish a common method and language to be used between experts of the different countries sharing fisheries. To train specialists that can contribute to formulating the search for comparative measures from their respective countries to benefit all stakeholders is undoubtedly a great challenge that this Master addresses.

The first part of the Master (60 ECTS) is professionally oriented and is designed for participants that have obtained 120 ECTS. This degree is recognized as equivalent to the official Master of the Spanish university system.

4. Academic organization

The first part of the Master (60 ECTS) is professionally oriented and is designed for participants that have obtained 120 ECTS. This degree is recognized as equivalent to the official Master of the Spanish university system.

3. Diplomas

The University of Alicante (UA), the Spanish Ministry of Agriculture, Food and Environment (MAPAMA), through the General Secretariat of Fisheries (SGP), and the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), through the Mediterranean Agronomic Institute of Zaragoza (IAMZ). Pending final confirmation, the General Fisheries Commission for the Mediterranean (GFCM) and the Food and Agriculture Organization of the United Nations (FAO) will also be part of the organization. Furthermore, the Master course on the collaboration of the FAO Department of Fisheries and Aquaculture.

The Master is designed for participants that have obtained 120 ECTS. This degree is recognized as equivalent to the official Master of the Spanish university system.

6. Registration

The deadline for the submission of applications from non-Spanish candidates is 4 May 2017. Applications should be addressed to:

Instituto Agronómico Mediterráneo de Zaragoza Avda de Montañana 1005, 50059 Zaragoza (Spain)
Tel. : +34 976.71.6000 - Fax : +34 976.71.6001
e-mail: iamz@iamz.ciheam.org, Web: www.iamz.ciheam.org

They should enclose:
- Application form
- Curriculum vitae (must include academic and professional activities)
- Transcript of records (courses undertaken, with grades achieved)
- Certificates of language knowledge
- Reasons for applying to the Master

Selected candidates should formalize their pre-registration and enrollment in the UA in accordance with the established procedure, details of which will be provided when necessary.

For additional information about the programme, please contact the Programme Director:

José Luis Sánchez Lizaso
Departamento de Ciencia del Mar y Biología Aplicada, Instituto Cultural de Universidad de Alicante
Carrereta de San Vicente del Raspeig, 03080 Alicante, Spain
e-mail: jlsanchez@ual.es

Registration fees for each academic year of the Master amount to approximately 2800€. This sum covers tuition fees only and in no case will travel, board and lodging expenses be included, either during the
programme itself or during its technical trip. For candidates wishing to attend part of the course, the fees will be proportional to the credits they register for. Pending final confirmation, some scholarships will also be awarded to candidates from GFCM Contracting Parties and Cooperating non-Contracting Parties (Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia and Turkey) may apply for scholarships covering all or part of the registration fees, and for scholarships covering the cost of travel and accommodation. Pending final confirmation, some scholarships will also be awarded to candidates from international institutions, universities, research centres, and NGOs.

2. Scholarships

Candidates from international institutions, universities, research centres, and NGOs may apply for scholarships covering all or part of the registration fees, and for scholarships covering the cost of travel and accommodation. Pending final confirmation, some scholarships will also be awarded to candidates from the General Fisheries Commission for the Mediterranean, the European Commission, the European Union, and other international institutions. 

3. Scholarships

Candidates from other countries who require financial support should apply directly to other national or international institutions.

8. Master syllabus

PART ONE (first academic year) (60 ECTS)

1. Introduction to the marine ecosystem, fishery resources and aquaculture (6 ECTS)

1.1. Structure and characteristics of marine ecosystems

1.2. Fisheries ecology and management

1.3. Fisheries resources

1.3.1. Typology and distribution of fishery resources

1.3.2. Fishing exploitation and the ecosystem approach

1.4. Fishing and the environment

1.4.1. Revision of aquaculture production systems and management

1.4.2. Aquaculture and the environment

1.4.3. Aquaculture and governance

1.5. Practical work and case studies

2. Statistical analysis and database use (5 ECTS)

2.1. Statistical analysis in fisheries research

2.1.1. Statistical concepts and tools

2.1.2. Theory and practice of sampling

2.1.3. Practical work: statistical analysis, use of databases and design of fisheries statistical systems

3. Biological analysis (8 ECTS)

3.1. Theoretical concepts

3.2. Recruitment, growth and mortality

3.3. Selectivity

3.4. Standardization of fishing effort

3.5. Fishery statistical systems

3.6. Selectivity

3.7. Catchability, vulnerability and accessibility

3.8. Data sources for population dynamics

3.9. Practical work: estimation of biological parameters

4. Theory and models for fisheries evaluation (6 ECTS)

4.1. Analytical models

4.2. Virtual Population Analysis and yield-per-recruit models

4.3. Global models

4.4. Fisheries survey: swept area and acoustic perspectives

4.5. Difficulties in fisheries modelling: the problem of interactions between species, years and markets

4.6. An ecological model: Ecopath (Ecological Pathways Model)

4.7. Models of individual behaviour

4.8. Practical work: application of fisheries evaluation models

5. Economic analysis and policies (12 ECTS)

5.1. Basic economics

5.2. Fisheries business activity

5.3. The fishing vessel and oiling technology

5.3.1. Typologies of vessels and equipment parameters

5.3.2. Jobs and training

5.3.3. Fishing techniques and games

5.3.4. Technological change and quantitative change

5.4. Practical work: economic projections and business management strategies

6. Fish trade and processing (4 ECTS)

6.1. The fish trade worldwide

6.2. World fish trade institutions

6.3. Fish trade and marketing

6.4. The fishery production environment

6.4.1. Fish processing

6.4.2. Fish processing lines

6.4.3. The economic context of fishing

6.5. Practical work: estimation of input-output tables in capture fisheries

7. Theory and application of bioeconomic models and economic and social indicators (6 ECTS)

7.1. Static and dynamic bioeconomic models. Typology

7.2. Estimation of effort and of economic parameters. Definition of control parameters

7.3. Mosaic, a simple simulation model

7.4. MEFIS/BEMFIS, a complex model adapted to the Mediterranean

7.5. Application of bioeconomic models

7.6. The role of indicators and typology

7.7. Use of indicators in management

7.8. Practical work: modelling exercises (BEMFIS/MISE) and management protocols

8. Institutional framework: cooperation and research (4 ECTS)

8.1. Institutional cooperation

8.1.1. Objectives and cooperation management

8.1.2. Regional, national and private cooperation projects

8.2. Fisheries research

8.2.1. Research policies and their application to fisheries management

8.2.2. Practice and programmes

8.2.3. Research results and use

8.3. Final Master project: Mediterranean application

8.4. Practical work: design of a fisheries research campaign

9. Maritime law and socio-cultural perspective (5 ECTS)

9.1. Maritime and fisheries law

9.1.1. Worldwide legal framework

9.1.2. International agreements

9.1.3. International agreements

9.2. The historical perspective of the fishing communities

9.3. The socio-cultural perspective

9.4. The socio-political perspective

9.5. Analysis of regulation strategies

9.6. Participation in management

9.7. Practical work and case studies

10. Objectives and instruments for fishing policies (5 ECTS)

10.1. The institutional framework of fisheries policies

10.2. Technical measures and regulation instruments

10.3. Fishing converts

10.4. Marine protected areas of fisheries interest

10.5. Regional Fishery Organisations (RFOs)

10.6. The Common Fisheries Policy (CFP) of the European Union

10.7. Practical work: analysis of regulation strategies

11. Applied fisheries policies (5 ECTS)

11.1. Fisheries management in Europe (Spain, Iceland)

11.2. Fisheries management in Mediterranean countries (Morocco, Tunisia, Turkey)

11.3. Fisheries management in other countries (Peru)

11.4. Practical work: fishing policy planning project

12. Institutional Visits (5 ECTS)

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

PART TWO (second academic year) (60 ECTS)

13. Introduction to research (15 ECTS)

Basic tools to seek information and disseminate and learn methods and techniques applicable to fisheries research

14. Internships (15 ECTS)

Internships will be conducted in research departments, firms and other institutions that collaborate with the Master in order for participants to learn techniques and study methods related to the topic on which their Master thesis will be based. It will also be conducted to conduct extracurricular traineeships, for example, participation in fisheries assessment campaigns on board research vessels or research departments.

15. Final Master Project (Master thesis) (30 ECTS)

The Final Master Project (Master thesis) must be related to any of the topics addressed in the programme from the perspective of fisheries management or research and involve trainees working in local or regional entities, universities, research centres, services of the public administration and private companies. In the last two semesters, the Master students will have their EMUs at the Fisheries Service of the Government of the Balearic Islands, Regional Government of Catalonia, Social Marine Institute, Spanish Institute of Oceanography, National Research Council, Technological Institute for Environmental Control of Galicia, National Fisheries Research Institute of Morocco, Pen’s Institute for the Sea, and Agriculture Organization of the United Nations. General Fisheries Commission for the Mediterranean, European Commission, Environmental Commission for the Conservation of Atlantic Tuna, NAFO, WWF, MSC, Sea Around Us, Spanish Association for the Conservation of Marine Fisheries MERGASA, Fishermen’s guild, Shipowners Cooperative of Vigo, OPAGAC, Bilbao’s Group, Prebicios, SIMBAD.

Director of the programme

L. SÁNCHEZ-LLLASS, University of Alicante (Spain)

Coordinators of thematic areas

L. ALEGRET, University of Girona (Spain)

M. BELLOSO, RGB, Oceanographic Centre of Murcia (Spain)

A. FORCADA, University of Alicante (Spain)

R. FRANQUESA, University of Barcelona (Spain)

C. MONTERO, MSC Spain and Portugal Office, Madrid (Spain)

Lecturers

The name of the first part of the Master is delivered by over 70 lecturers from international institutions, universities, research centres, administration services and private firms including the following: