



CIHEAM
ZARAGOZA



ULPGC • UNIVERSIDAD DE
LAS PALMAS DE GRAN CANARIA



Objective

Aquaculture is the area of food production that has most grown over the past 30 years. It has now a consolidated activity capable of satisfying the increasing demand for fish products, in contrast to the stagnation of fisheries catches since the late 1980s. In 2022, aquaculture produced an estimated 94 million tonnes of aquatic animals, representing 51% of the total supply, surpassing capture fisheries for the first time. Production is expected to exceed the 100 million tonne threshold in 2027. Moreover, 55% of prawns, 70% of mussels, and up to 90% of species such as salmon, carp and oysters come from aquaculture.

This development generates a constant demand for specialised professionals in a wide range of aquacultural activities, in response to which the University Master in Marine Aquaculture has been building up its training offer for over 25 years. With modules on the principles of aquaculture and cultivation techniques, as well as cross-sectional topics such as nutrition, pathology, genetics, reproduction, engineering, economics, and the environment, this international Master programme offers a complete overview of the aquaculture sector and is a unique opportunity to meet and work with professionals and students from all over the world and share hands-on experience with top experts.

Organisation

The Master programme is jointly organised by the University of Las Palmas de Gran Canaria (ULPGC) through the Faculty of Marine Science, and the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) through CIHEAM Zaragoza (Mediterranean Agronomic Institute of Zaragoza), with the collaboration of the Aquaculture Research Group, the Scientific and Technological Park, the ECOAQUA Institute of the ULPGC, the Masar al'an Programme of the Spanish Agency for International Development Cooperation (AECID), and the National Institute for Agricultural and Food Research and Technology of the Spanish National Research Council (INIA-CSIC).

Why choose this Master?

- 1. International experience.** A unique opportunity to create a network of professional contacts and study and work with students and experts from different countries.
- 2. Lecturers with renowned experience.** More than 40 aquaculture professionals from Spain and other countries, each a specialist in their own field.
- 3. Innovative and multidisciplinary programme.** Updated contents of the most innovative scientific and technological bases that support the development of aquaculture, delivered through theoretical lectures, seminars, technical visits, lab practicals and on-hand training in the aquaculture facilities of the ULPGC.
- 4. Access to cutting-edge aquaculture facilities.** Over 2500 m² devoted to integrated algae, mollusc, crustacean and finfish production and 500 m² of nutrition, histology, genetics, reproduction, and pathology labs, and a feed manufacture workshop.
- 5. Initiation to research in renowned institutions.** Conduct a research project and work towards a Master thesis in ULPGC research groups or partner institutions or firms.
- 6. Official University Master Degree** awarded by ULPGC and a Master of Science degree awarded by CIHEAM (equivalent to the official master's of the Spanish university system). Post-graduate specialisation diploma awarded by CIHEAM upon completion of the first year.
- 7. High employability rate** for graduates in public administrations, firms, universities, and research centres in the aquaculture sector.



Programme

Year One (60 ECTS)

During the first year (60 ECTS), the programme provides intensive basic training in all fields of aquaculture through theoretical and practical classes from October 2026 to June 2027. These activities are conducted in combination with field visits and seminars. The programme will be delivered in the Scientific and Technological Park and requires full-time participation. The total duration of the course is 600 teaching hours.

Unit 1. Introduction to aquaculture (1 ECTS)

Relevance of aquaculture. Current status of various production categories. Evolution of aquaculture in geographic regions.

Unit 2. Nutrition (12 ECTS)

Physiology of nutrition. Nutritional requirements and dietary ingredients: lipids, proteins, carbohydrates, vitamins and minerals, nutritional energy.

Unit 3. Health (12 ECTS)

Animal welfare in aquaculture. General and specific anatomic pathology in cultured fish. Immunology. Major viral diseases. Major bacterial diseases. Parasitic diseases caused by fungi. Non-infectious diseases. Prevention and treatment of diseases.

Unit 4. Reproduction (4 ECTS)

Physiology and control of reproduction in shellfish and crustaceans. Physiological regulation mechanisms of reproduction in teleosts. Induced reproduction in bivalve molluscs and decapod crustaceans. Induced reproduction in teleosts. Broodstock management in fish. Design of facilities. Food and nutritional requirements of broodstock.

Unit 5. Genetic improvement (6 ECTS)

Population genetics. Quantitative genetics. Biotechnology. Genetic improvement in aquaculture. Genetic improvement in fish. Microsatellite techniques applied to marine cultivation.

Unit 6. Engineering systems and facilities (3 ECTS)

Water delivery systems. Pumping systems. Aeration and oxygenation systems. Hatchery, nursery and on-growing facility design.

Unit 7. Economics and management (3 ECTS)

Financial-economic assessment of projects. Project design and development. Feasibility studies. Marketing and commercialisation. Research project management.

Unit 8. Technical hatchery production (8 ECTS)

Auxiliary cultures. Compared production techniques. Larval development histology. Mesocosmos technology. Algae culture. Recent advances in larval feeding. Hatchery techniques.

Unit 9. On-growing techniques (5 ECTS)

On-growing in extensive systems. On-growing in intensive on-land systems. On-growing in intensive sea farming systems. Finishing feeds: nutritional value and fish colour. Overall fish fillet quality. On-growing techniques.

Unit 10. Culture techniques of different species (3 ECTS)

Macroalgae culture. Mussel culture. Oyster culture. Clam and cockle culture. Scallop culture. Peneids and Macrobrachium culture. Catfish culture. Tilapia culture. Carp culture. Salmonid culture. Halibut culture. Turbot culture. Seabass and seabream culture. New species culture. Alternative culture systems. Fish aquaria.

Unit 11. Environment (3 ECTS)

Aquaculture and the environment. Biodiversity associated with marine aquaculture. Sustainability of marine aquaculture. Codes of conduct. Aquaculture as a tool for preserving endangered species.

Year Two (60 ECTS)

In the second year (60 ECTS) students can specialise in any of these areas through the implementation of a research project and the final Master thesis in any of the ULPGC research groups or in partner institutions or companies. This training period is an introduction to applied research in aquaculture to be completed before June 2028, for subsequent public defence.

Unit 12. Introduction to research (30 ECTS)

Complementary courses. Project planning, data processing, interpretation and presentation. Optical histology techniques. Electron microscopy techniques. Fish morphophysiology.

Unit 13. Master thesis (30 ECTS)

The final Master thesis will consist of a research project carried out by the student on an original topic in any of the research groups, institutions and firms collaborating in the Master. The research topics and supervisors will be proposed by the Master's Advisory Committee. Students may also propose other topics and supervisors with a solid international scientific reputation.

In collaboration with:



Admission

The course is designed for a maximum of 20 participants who meet the following criteria:

- Higher university degree or equivalent, preferably in agronomy, veterinary sciences, biology, biotechnology and other related degrees.
- Knowledge of Spanish, which will be the working language of the course.

Since some of the conferences and part of the teaching materials will be in English, knowledge of this language will also be valued in the selection of candidates.

CIHEAM Zaragoza will organise an intensive Spanish course online between July and September 2026 for participants that require it.

Registration

Registration fees are approximately 1000 euro for each academic year of the Master. These fees cover the documentation, attendance at lectures, seminars and practicals, study tours and visits. They do not include travel costs, accommodation or meals.

The deadlines for pre-registration in the 2026-2028 edition will be published at: <https://www.ulpgc.es/masteres-administracion/inicio>

There are two application periods for the university Master. The first period opens in the spring and closes in June. If there are places still available following the first application period, a second period will open from 1 to 15 September.

Scholarships

Candidates from CIHEAM member countries (Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia and Türkiye), and from the priority Arab countries of the Spanish Cooperation Programme Masar Al'an (Algeria, Egypt, Jordan, Morocco, Mauritania, Palestine, Syria and Tunisia), may request scholarships awarded by CIHEAM Zaragoza covering registration fees, a monthly assignment, and medical and accident insurance. Candidates from countries that do not belong to CIHEAM may request a 'CIHEAM Zaragoza - INIA-CSIC' scholarship covering registration fees, a monthly assignment, and medical and accident insurance. This scholarship may also include a contribution to travel expenses.

These two types of scholarships are administered by CIHEAM Zaragoza and will be awarded based on academic merit. Priority will be given to candidates from low and middle-income countries according to the World Bank classification.

Scholarship applications should be submitted **before 4 May 2026** at: admission.iamz.ciheam.org.

Degrees

- Postgraduate Specialisation Diploma (60 ECTS)
- Official Spanish Master Degree issued by the ULPGC and Master of Science Degree issued by CIHEAM (120 ECTS)

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More info:

