Universitat Autònoma de Barcelona

2023/2024

Fish Farming

Code: 102671
ECTS Credits: 3

Degree	Type	Year	Semester
2502445 Veterinary Medicine	OT	5	2

Contact

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Teaching groups languages

You can check it through this link. To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

Marcelo Amills Eras

Francesc Padros Bover

Prerequisites

There are no official prerequisites to attend this course. However, it is recommended that students have basic knowledge about fish physiology and its relation to their environment and /or to have completed and passed the "Aquaculture and Ictiopathology" course (3th year, Veterinary Medicine Degree).

Objectives and Contextualisation

The course Pisciculture is based on the assumption that the student already has basic knowledge of fish physiology and its close relationship with the environment in which they live, as well as the main pathological aspects that can affect the production of these species. From this point on, the course delves into the current systems of maintenance and production of these aquatic species from a more integrative and applied perspective. When talking about fish farming, reference is not only made to species destined for human consumption, but also to those destined for a more recreational function, such as ornamental fish and the world that surrounds them (distributors, large aquariums, etc.). Although both have different objectives, the bases of their production are the same.

The general objective of the course is to provide knowledge and understanding of the characteristics of the fish farming sector, as well as its critical points and where it is heading. Emphasis is also placed on the role that students, as veterinarians, can play in this productive sector. Over the last few years, the veterinarian has been approaching the world of fish farming very slowly and, basically, in aspects related to health. Despite this, they can also play an important role in other areas that directly affect production, such as nutrition and genetics, among others.

As specific objectives, the student will be trained:

a) to identify factors that determine the profitability in fish production,

b) to assess which implications has on the environment and animal welfare

c) to apply the knowledge acquired in the recognition of technical problems or management of a fish farm and in the reasoned approach of strategies for its improvement / resolution.

Competences

- Analyse, synthesise and resolve problems and make decisions.
- Apply scientific method to professional practice, including medicine
- Comunicar la informació obtinguda durant l'exercici professional de manera fluïda, oralment i per escrit, amb altres col·legues, autoritats i la societat en general.
- Demonstrate knowledge and understanding of the aspects of organisation, finance and management in all fields of the veterinary profession.
- Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
- Value and interpret the production and health parameters of one animal group, considering the economic and welfare aspects.

Learning Outcomes

1. Analyse, interpret and evaluate the production and healthcare parameters of a farm or fishery and produce a plan of corrective actions considering the factors of animal welfare, environmental protection and product quality.
2. Analyse, synthesise and resolve problems and make decisions.
3. Apply scientific method to professional practice, including medicine
4. Communicate information obtained during professional exercise in a fluid manner, orally and in writing, with other colleagues, authorities and society in general.
5. Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
6. Recognise and resolve the economic aspects that affect livestock and fishery production and health.

Content

Theory (9 hours) (TE)

The programme covers both basic and practical aspects necessary to know and understand the functioning and management of both important sectors in fish farming; inland and marine. It is approached from a more integrative and applied perspective, trying to exemplify the specific activities in the different phases of production (from the selection and maintenance of broodstock to obtaining commercial size). It also includes those aspects of production that affect animal welfare, the environment, and the quality of the final product and that constitute the main challenges for fish farming in the coming years. At the same time, it will explain how this knowledge is used in the management and production of ornamental fish, including fish farming as a tool for the preservation of endangered species.

Seminars (SEM)

Seminars (3 hours): Focused on aspects of fish genetics and health management of a fish farm.

Case Study (9 hours; 3h/case): 3 cases (presentation + follow-up + presentation-discussion); each one focused on different sectors: continental fish farming, marine fish farming and ornamental spices.

Visits (5 hours) (VEXT)

Includes two technical visits:

- *IRTA Aquaculture Center*, where the student will see all the facilities for different phases of marine species production, mainly those related to recirculation aquaculture systems (RAS).

- *L'Aquarium of Barcelona*. It aims to show how is the management of large aquariums and everything that involves the maintenance of a large number of species with different characteristics andrequirements.

Methodology

The center of the learning process is student's own work. The teacher's mission to help in this learning process would be twofold. First, providing them with information and second, showing them sources where they can get it. Supervise them is essential.

Following these ideas, and according to the objectives, the development of this course is based on the following methodologies and activities:

1.- Participative lectures in the classroom

The student acquires the expertise of the course by attending lectures about the basics on fish aquaculture. The participation and interaction of the student during lectures will be encouraged in this one-way method of transmission of knowledge from teacher to student.

2.- Seminars - Case studies

They are the basic and practical complement to the master classes. It is intended that trough team or group work, the student adopt an active role in the learning process in order to increase student's motivation. The specific objective may vary depending on the type of seminar, although always seeking to promote the analysis, reasoning, discussion and resolution capacity by the student.

In Case studies, the resolution will take place over three sessions. During the first, the teacher will present the case and the guidelines for its development. The resolution will take place jointly in class with the presentation of a report.

3.- Technical visits

They are basic to see the practical application of the concepts given during theoretical and practical lectures. Two technical visits are planned.

The teaching material that will be used throughout the course will be available in the Moodle platform of the subject.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lectures	9	0.36	1
Seminars	12	0.48	1, 2, 3, 4, 5
Technical visits	5	0.2	2
Type: Autonomous			
Preparation of case studies	26	1.04	1, 2
Study	20	0.8	1
Visits report	3	0.12	4

Assessment

• There is no final exam.

• The evaluation of the subject will take place from the evaluations of:

- oral presentation and correction reports of case study (maximum 75%)

- attendance and participation in theory classes, seminars, and technical visits (maximum 25%).

A minimum attendance of 70% of all classroom activities of the subject (lectures, seminars, and technical visits) is required to pass.

Attendance at the case defense sessions is compulsory. A minimum of 4 points out of 10 is required in each case, to be able to mediate with the rest of the parties and be able to pass the subject.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Assistance and participation to theory, seminars and technical visits	25 % final mark	0	0	1, 2, 3, 4, 5, 6
Oral presentation and correction of self-learning cases	75 % final mark	0	0	1, 2, 4, 5

Bibliography

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Einarsson, A. and Óladóttir, A.D. 2020. Fisheries and Aquaculture, Academic press, London. https://www.sciencedirect.com/book/9780128210567/fisheries-and-aquaculture

Hardy, R.W. and Kaushik, S.J (eds.) 2022. Fish Nutrition (4th Edition), Academic Press, London. https://doi.org/10.1016/B978-0-12-819587-1.11001-8.

Frederick S.B. Kibenge, F.S.B. and Powell, M.D. 2020. Aquaculture Health management. Desing and Operation Approaches. Academic Press .https://doi.org/10.1016/C2016-0-01482-1

MacKenzie, S. and Jentoft, S. 2016. Genomics in Aquacultur. Acadèmic press. https://www.sciencedirect.com/book/9780128014189/genomics-in-aquaculture

Roberts, H.E. 2010. Fundamentals of Ornamental Fish Health. Wiley-Blackwell

Wildgoose (2001). BSAVA Manual of Ornamental Fish, 2n ed. BSAVA ed.

Pillay, T. V. R. i Kutty, M.N. 2005. Aquaculture : principles and practices. 2nd Ed. Blackwell (Oxford)

Stickney R. R. 2016. Acuicultura. Texto introductorio. Acribia,S.A. https://www.ingebook.com/ib/NPcd/IB_Escritorio_Visualizar?cod_primaria=1000193&libro=9539

Benfey, T.J.; Farrell, A.P. Brauner, C.J. 2020. Aquaculture. Volume 38. Fish Physiology Book series.p 2-364.

Recommended websites

- http://mispeces.com/

- https://www.fao.org/aquaculture/es/

- https://www.observatorio-acuicultura.es/

- https://www.aquafeed.com/

- https://www.eurofishmagazine.com/

- https://www.globalseafood.org/advocate/

Software

Does not apply.