

# Postgraduate Certificate

## Animal Welfare in Fish Farming





## Postgraduate Certificate

### Animal Welfare in Fish Farming

Course Modality: Online

Duration: 2 months.

Certificate: TECH Technological University

Official N° of hours: 300 h.

Website: [www.techtute.com/in/veterinary-medicine/postgraduate-certificate/animal-welfare-fish-farming](http://www.techtute.com/in/veterinary-medicine/postgraduate-certificate/animal-welfare-fish-farming)

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# 01

# Introduction

This intensive program delves into the physiological response to stress in fish, which to some extent is different from that of other livestock species, and it presents evidence on the ability of fish to perceive pain and fear. Both facts are of crucial importance to be able to determine the degree of welfare in fish and to ensure their level of welfare is not compromised.



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*A complete and total update on animal welfare  
with the most complete and effective online  
program on the market”*

The Postgraduate Certificate in Fish Farming is a new and updated program that arises from the growing demand among veterinary professionals for specialized knowledge in animal welfare to minimize animal suffering, since, nowadays, consumers demand not only healthier and safer food, but also food obtained through practices that ensure animal protection and welfare.

It addresses the concept of Animal Welfare, its evolution and applied ethology, one of the main welfare problems in all animal facilities.

It also covers animal ethics or bioethics as a differentiating element with respect to other similar training courses. Since this topic is usually included in philosophy programs, it is usually addressed very superficially in health sciences. This highly relevant ethical aspect today will be extensively discussed in depth throughout this Postgraduate Certificate in Animal Welfare on in Fish Farming.

The program will help veterinary professionals acquire specialized and up-to-date knowledge in the field of animal welfare, which is increasingly demanded by society, as conflicts between animal advocates and those in food production are the order of the day.

This **Postgraduate Certificate in Animal Welfare in Fish Farming** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The latest technology in online teaching software
- ♦ A highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- ♦ Practical cases presented by practising experts
- ♦ State-of-the-art interactive video systems
- ♦ Teaching supported by telepractice
- ♦ Continuous updating and recycling systems
- ♦ Autonomous learning: full compatibility with other occupations
- ♦ Practical exercises for self-evaluation and learning verification
- ♦ Support groups and educational synergies: questions to the expert, debate and knowledge forums
- ♦ Communication with the teacher and individual reflection work
- ♦ Content that is accessible from any fixed or portable device with an Internet connection
- ♦ Supplementary documentation databases are permanently available, even after finishing the course



*Join the elite, with this highly effective program and open new paths to help you advance in your professional progress"*



*With a methodological design based on proven teaching techniques, this innovative program will take you through different teaching approaches to allow you to learn in a dynamic and effective way"*

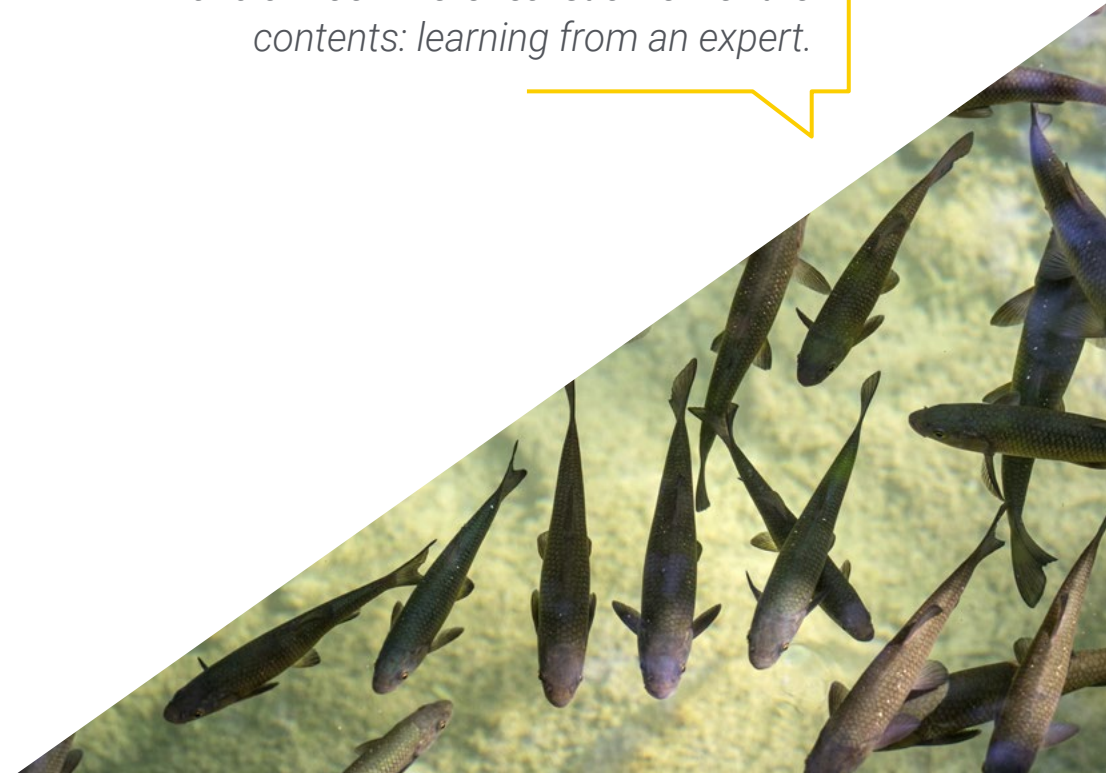
Our teaching staff is made up of professionals from different fields related to this specialty. That way we are sure to offer the training update we intend to provide. A multidisciplinary team of professionals trained and experienced in different environments, who will efficiently impart the theoretical knowledge, but above all, who will bring the practical knowledge from their own experience to the course: one of the differential qualities of this program.

The efficiency of the methodological design of this Professional Master's Degree, enhances the student's understanding of the subject. Developed by a multidisciplinary team of e-learning experts, it integrates the latest advances in educational technology. This way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need in your training.

The design of this program is based on Problem-Based Learning: an approach that conceives learning as a highly practical process. To achieve this remotely, we will use telepractice learning: with the help of an innovative interactive video system, and learning from an expert, you will be able to acquire the knowledge as if you were actually dealing with the scenario you are learning about. A concept that will allow you to integrate and fix learning in a more realistic and permanent way.

*A complete training program that will allow you to acquire the most advanced knowledge in all the areas of intervention of a specialized veterinarian.*

*Our innovative telepractice concept will give you the opportunity to learn through an immersive experience, which will provide you with a faster integration and a much more realistic view of the contents: learning from an expert.*



# 02 Objectives

Our objective is to train highly qualified professionals for the working An objective that is complemented, moreover, in a global manner, by promoting human development that lays the foundations for a better society. This objective is materialized in helping professionals to reach a much higher level of competence and control. A goal that, in just a few months, you will be able to achieve, with a high intensity and effective training program.



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*If your goal is to broaden your skill set to include new paths of success and development, this is your Professional Master's Degree: A training program that aspires to excellence”*



## General Objectives

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- ♦ Analyze the concept of animal welfare
- ♦ Examine human involvement in animal welfare
- ♦ Establish animal welfare assessment systems
- ♦ Develop the concept of "sentient being" in fishes
- ♦ Examine welfare assessment in fish farming
- ♦ Identify facility and management problems in fish welfare
- ♦ Understand welfare in aquarium fish



*A path to achieve training and professional growth that will propel you towards a greater level of competitiveness in the employment market"*





## Specific Objectives

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- ♦ Examine the concept of animal welfare in all its implications
- ♦ Analyze the physiological stress response in animals and its quantification
- ♦ Develop the concepts of stress and acute and chronic stress responses
- ♦ Fundamentalize the concepts of "eustress" and "distress"
- ♦ Determine the animal welfare implications in stress response
- ♦ Develop the concept of freedoms and needs to understand animal welfare
- ♦ Examine the concept of animal welfare assessment
- ♦ Specify current animal welfare assessment systems
- ♦ Define the physiological stress response in fish
- ♦ Analyze information on consciousness, pain and fear in fish
- ♦ Develop the most effective indicators to assess welfare in fish
- ♦ Examine measures of water quality and their implications for fish
- ♦ Discuss the main welfare issues in fish farming
- ♦ Establish the best management guidelines for fish to minimize suffering
- ♦ Examine the welfare of fish during capture in both farmed and commercial fisheries
- ♦ Determine the welfare of aquarium fish

# 03

## Course Management

Within the concept of total quality of our program, we are proud to put at your disposal a Teaching Staff of the highest level, chosen for their proven experience. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.



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*An impressive teaching staff, made up of professionals from different areas of expertise, will be your teachers during your training: a unique opportunity not to be missed”*

## Management



### Dr. De la Fuente Vázquez, Jesús

- Doctor in Veterinary Medicine, Complutense University, Madrid, 2003
- Master's Degree in Science in Pig Production, Aberdeen University, 1998
- Graduated in Veterinary Medicine, Complutense University, Madrid, 1997
- Assistant Professor in the Department of Animal Production, Faculty of Veterinary Medicine, UCM, since 2005
- Collaboration grant holder in teaching and research tasks, Department of Animal Production, Faculty of Veterinary Medicine, UCM, 1997
- European Social Fund predoctoral training fellow, Department of Agriculture, University of Aberdeen, 1998
- FPU predoctoral training grant, Universidad Complutense de Madrid, 1999-2002
- Three-month stay in the Department of Animal Science, Texas A&M University, 2001
- Contract Researcher in the Department of Food Technology, National Institute of Agricultural and Food Research and Technology, INIA, 2004
- Participation as a collaborating professor in more than 40 national and international courses on Animal Welfare
- Participated in more of 35 research articles in journals indexed in the Journal Citation Report
- Participation in more than 14 publicly and privately funded research projects
- Participation in ten book chapters and complete books
- Contribution in more than 60 communications to national and international congresses



## Professors

### Dr. Díaz Díaz-Chirón, María Teresa

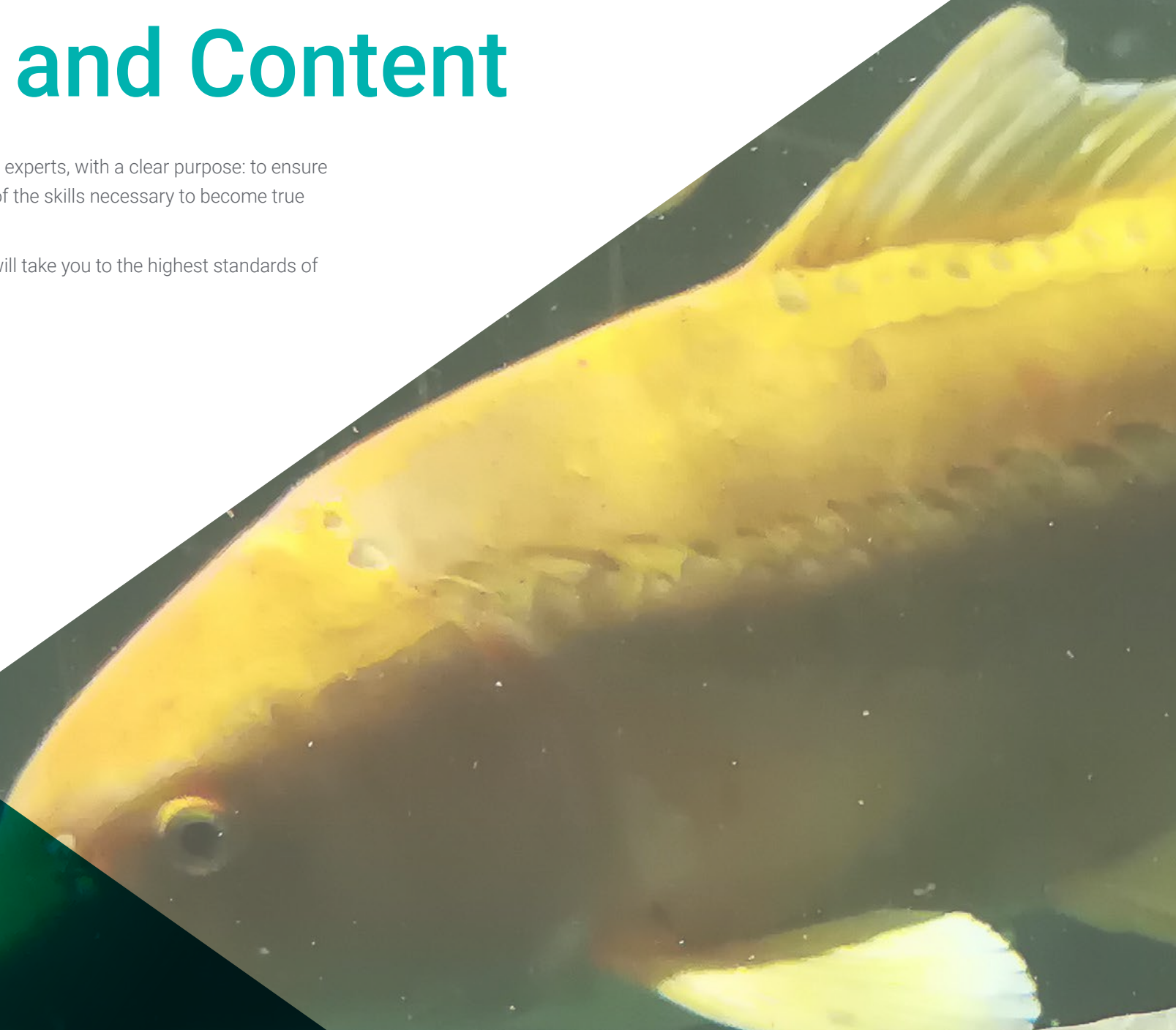
- ♦ Doctor in Veterinary Medicine, Madrid Complutense University, 2002
- ♦ Graduated in Veterinary Medicine, Complutense University of Madrid, 1997
- ♦ Assistant Professor in the Department of Animal Production, Faculty of Veterinary Medicine, UCM, 2019-2020
- ♦ Contract Researcher in the Department of Food Technology, National Institute of Agricultural and Food Research and Technology, INIA, 2003- 2004
- ♦ Post-doctoral Fellow, INIA-Autonomous Communities, Agrarian Technological Institute, Castilla y León, 2004-2007
- ♦ Senior Scientist at the National Institute of Agricultural and Food Research and Technology (INIA), since 2007
- ♦ Lines of Research, Publications, Congresses
- ♦ Author of more than 40 research articles in journals indexed in the Journal Citation Report
- ♦ Participation in more than 20 publicly and privately funded research projects
- ♦ Contribution in more than 70 communications to national and international congresses
- ♦ Director of four Doctoral Theses in the area of Production Factors and Welfare in meat quality

04

# Structure and Content

The contents have been developed by different experts, with a clear purpose: to ensure that our students acquire each and every one of the skills necessary to become true experts in this field.

A complete and well-structured program that will take you to the highest standards of quality and success.



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*A comprehensive teaching program,  
structured in well-developed teaching units,  
oriented towards learning that is compatible  
with your personal and professional life"*

## Module 1. Animal Welfare. Concepts and Evolution

- 1.1. Evolution of the Concept of Animal Welfare, from Antiquity to Present Day
  - 1.1.1. Animal Welfare in Antiquity
  - 1.1.2. Introduction to the Concept of Welfare
  - 1.1.3. Animal Welfare Today
- 1.2. Vision of the Concept of Animal Welfare from Different Cultures
  - 1.2.1. Buddhism
  - 1.2.2. Catholicism
  - 1.2.3. Islam
  - 1.2.4. Judaism
  - 1.2.5. Orthodox Church
  - 1.2.6. Protestantism
- 1.3. Concept of Animal Welfare, Approaches to Understanding It
  - 1.3.1. Definitions of Animal Welfare
  - 1.3.2. Emotion-Based Approach
  - 1.3.3. Function-Based Approach
  - 1.3.4. Ethology-Based Approach
- 1.4. Physiological Responses to Stress
  - 1.4.1. Hypothalamus-Pituitary-Adrenal-Glands Axis
- 1.5. Acute and Chronic Stress Response
  - 1.5.1. Physiological Responses to Chronic Stress
  - 1.5.2. Physiological Responses to Acute Stress
- 1.6. Concepts of "Eustress" and "Distress"
  - 1.6.1. Eustress: Optimal Stress
  - 1.6.2. Distress: Negative Stress
- 1.7. The Role of Stress Response in Welfare
- 1.8. Freedoms and Needs
  - 1.8.1. Concept of Freedoms
  - 1.8.2. The Role of Freedoms in Animal Welfare
  - 1.8.3. Concept of Needs
- 1.9. Animal Welfare Assessment Systems
  - 1.9.1. Direct Indicators
  - 1.9.2. Indirect Indicators

- 1.10. Developing Animal Welfare Assessment Protocols
  - 1.10.1. TGI 35 L
  - 1.10.2. WelfareQuality ®
  - 1.10.3. AWIN (Animal Welfare Indicators)

## Module 2. Animal Welfare in Fish Farming

- 2.1. Physiological Stress Response in Fish
  - 2.1.1. Stress Response in Fish
  - 2.1.2. Detecting and Measuring Stress Response
  - 2.1.3. Cortisol as a Stress Index
- 2.2. Consciousness in Fish
  - 2.2.1. Fish Are Capable of Suffering
  - 2.2.2. Basic Brain Organization of Teleost Fish
  - 2.2.3. Cognitive Capacity and Behavior Modification
- 2.3. Pain and Fear in Fish
  - 2.3.1. Sensitivity and Consciousness
  - 2.3.2. Pain
  - 2.3.3. Fear
- 2.4. Fish Welfare Indicators
  - 2.4.1. Based on the Group
  - 2.4.2. Based on the Individual
- 2.5. Water Quality and Fish Welfare
  - 2.5.1. Dissolved Oxygen
  - 2.5.2. Ammonia, Nitrates, Nitrites
  - 2.5.3. Carbon Dioxide, Gas Oversaturation
  - 2.5.4. Suspended Solids, Heavy Metals
  - 2.5.5. Acidity, Alkalinity, Hardness, Temperature, Conductivity
  - 2.5.6. Water Flow



- 2.6. Fish Welfare under Different Production Systems
  - 2.6.1. Pond Aquaculture
  - 2.6.2. Continuous Flow Systems
  - 2.6.3. Semi-Closed Water Circuit Systems
  - 2.6.4. Water Recirculation Systems
  - 2.6.5. Net Cages
  - 2.6.6. Offshore Culture Systems using Sea Cages
- 2.7. Fish Management and Welfare Implications
- 2.8. Fish Welfare Problems due to Animal Density
  - 2.8.1. Animal Density in Cages
  - 2.8.2. Animal Density in Tanks, Ponds and Raceways
  - 2.8.3. Animal Density and Behavior
  - 2.8.4. Relation between Animal Density and Welfare
- 2.9. Welfare in Commercial Fishery Capture and Fish Farming
  - 2.9.1. Stressors during Capture
  - 2.9.2. Commercial Catching Methods: Trawling, Seining, Trammel Nets and Pots
  - 2.9.3. Preparing for Capture, Crowding and Harvesting of Fish in Fish Farming

“ *This program will allow you to advance in your career comfortably* ”

# 05 Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





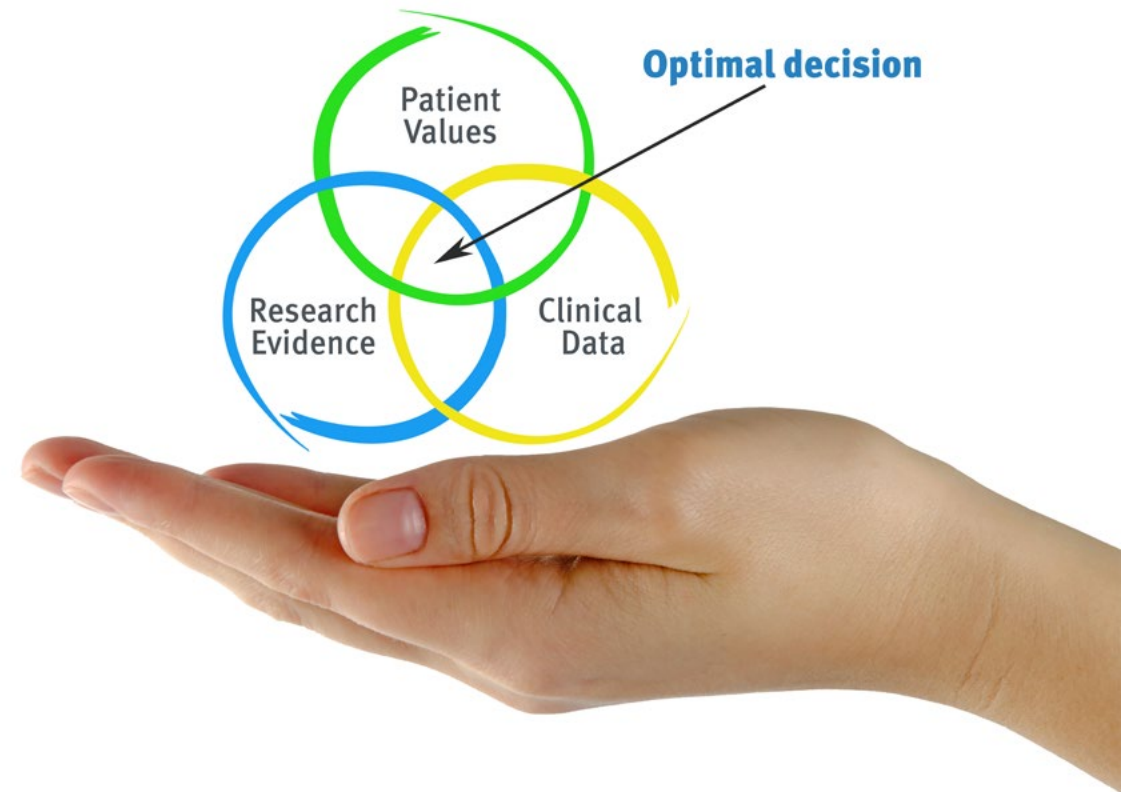
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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the actual conditions in a veterinarian's professional practice.

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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Veterinarians who follow this method not only manage to assimilate concepts, but also develop their mental capacity through exercises to evaluate real situations and knowledge application
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. The feeling that the effort invested is effective becomes a very important motivation for veterinarians, which translates into a greater interest in learning and an increase in the time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

*Veterinarians will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology more than 65,000 veterinarians have been trained with unprecedented success in all clinical specialties, regardless of the surgical load. Our teaching method is developed in a highly demanding environment, where the students have a high socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Latest Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current and procedures of veterinary techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### Interactive Summaries

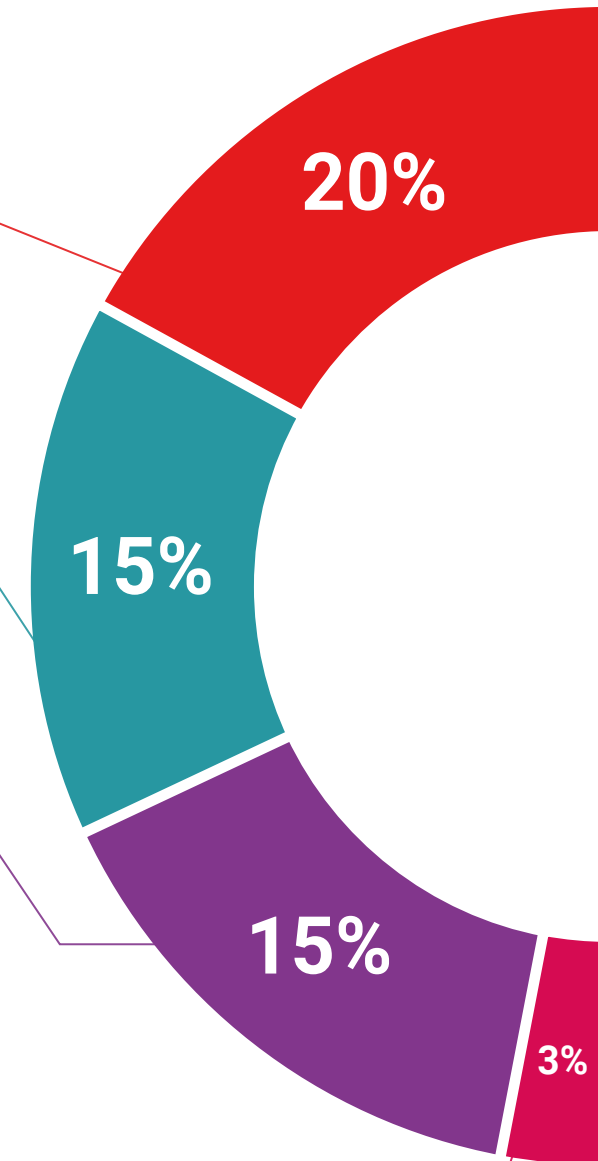
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

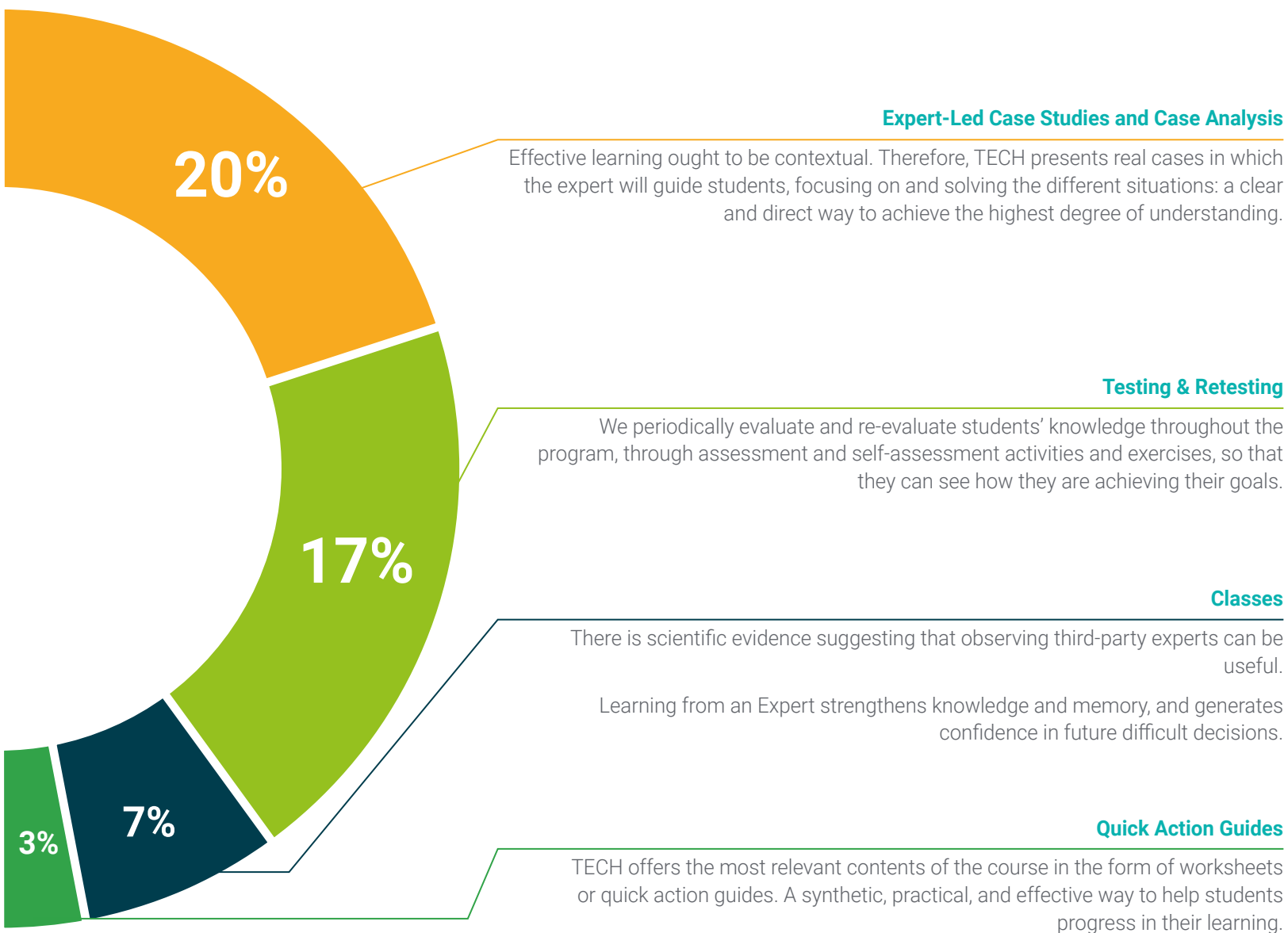
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





# 06 Certificate

The Postgraduate Certificate in Animal Welfare in Fish Farming guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"*

This **Postgraduate Certificate in Animal Welfare in Fish Farming** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate in Animal Welfare in Fish Farming**

Official N° of hours: **300 h.**





**PostgraduateCertificate**  
Animal Welfare in  
Fish Farming

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Duration: 2 months.

Certificate: TECH Technological University

Official N° of hours: 300 h.

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