Postgraduate Certificate
Reproductive Aquaculture

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Postgraduate Certificate
Reproductive Aquaculture

- Modality: **online**
- Duration: **12 weeks**
- Certificate: **TECH Global University**
- Credits: **12 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/veterinary-medicine/postgraduate-certificate/reproductive-aquaculture**

Index

01

Introduction

The use of appropriate techniques for reproductive aquaculture will make it possible to achieve improvements in the sector that will benefit the world's population. In this course we offer you the best training in the market in this sector, so that you can increase your skills and give a boost to your career.

Aquaculture professionals must have extensive knowledge in Reproductive Aquaculture to protect and maintain the sector"

Reproduction activities are of paramount importance in aquaculture work. Reproductive models in larval and fry rearing facilities differ according to the species, and therefore have to be adapted to the rearing needs of each species. Therefore, it is essential to know the general characteristics of the reproductive processes, as well as the particularities of each species.

One of the main factors to take into account in fish reproduction is the action of sex hormones. A specialized knowledge of their mechanisms of action and their regulation will allow us to use them as an essential tool to achieve good results in reproduction facilities.

The use of artificial fertilization techniques involves various mechanisms to implement them, so it is necessary to examine in depth the procedures for obtaining male and female gametes, as well as their subsequent cryopreservation. These techniques also allow certain types of chromosomal manipulation that can provide certain reproductive advantages.

The reproduction of mollusks and crustaceans, as well as plant elements such as algae, are of great importance in this course, since their knowledge is essential for professionals in the sector. It should also be noted that biotechnology and genetics in aquaculture have made a great contribution to the production of aquaculture species in order to continue progressing and contributing to a more efficient and biosustainable production of aquaculture species.

This Postgraduate Certificate provides students with specialized tools and skills to successfully develop their professional activity in the wider aquaculture environment, works on key competencies such as knowledge of the reality and daily practice of the professional, and it further promotes responsibility in the monitoring and supervision of their work, as well as communication skills through essential teamwork. In addition, as it is an online Postgraduate Certificate, the student is not constrained by fixed timetables or the need to move to another physical location, but can access the contents at any time of the day, balancing his or her work or personal life with their academic life.

This **Postgraduate Certificate in Reproductive Aquaculture** contains the most complete and up-to-date educational program on the market. The most important features of the program include:

- Practical cases studies are presented by experts in Aquaculture
- The graphic, schematic, and eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- New developments in Reproductive Aquaculture
- Practical exercises where self-assessment can be used to improve learning.
- Special emphasis is placed on innovative methodologies in Reproductive Aquaculture
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Immerse yourself in this high-quality educational training-program, which will allow you to face the future challenges in Aquaculture Reproductive"

This Postgraduate Certificate is the best investment you can make in selecting a refresher program to bring your knowledge of Reproductive Aquaculture up to date"

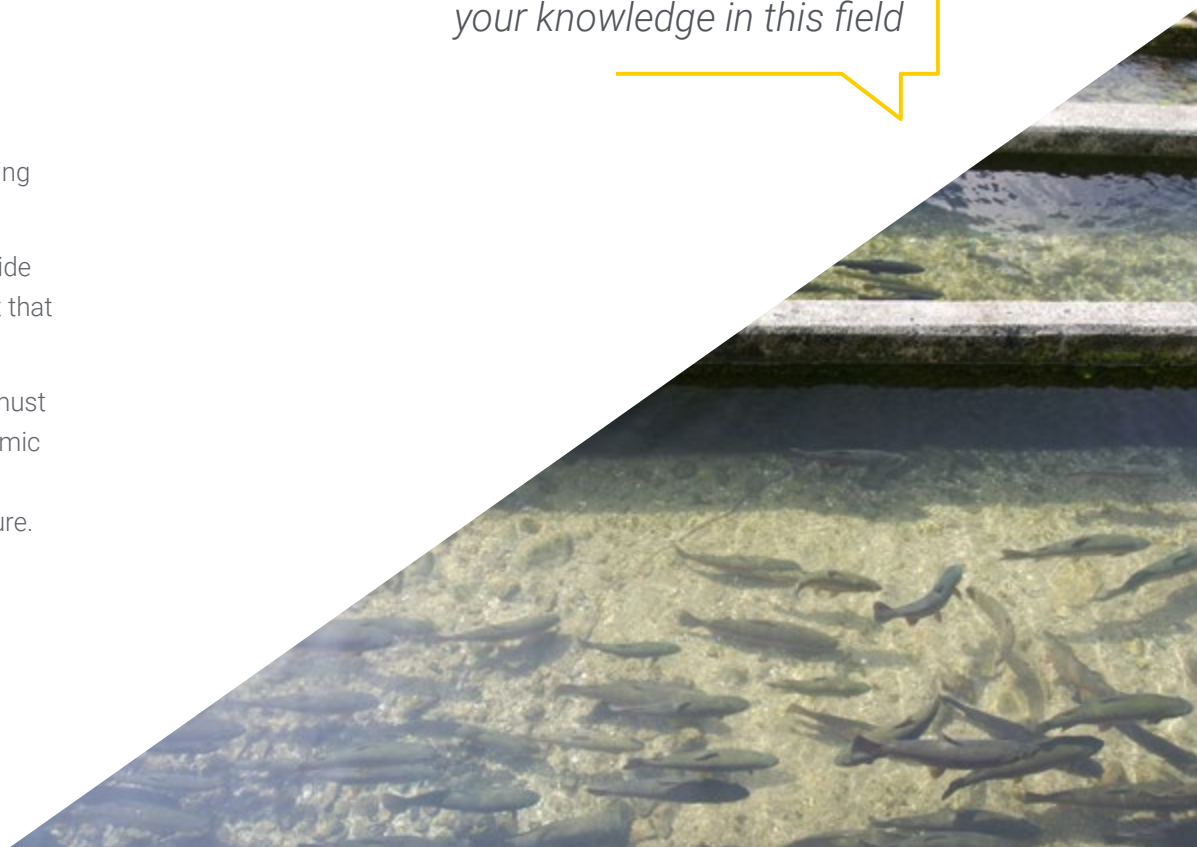
This training comes with the best didactic material, providing you with a contextual approach that will facilitate your learning

This 100% online course will allow you to combine your studies with your professional work while expanding your knowledge in this field

Its teaching staff includes professionals from the veterinary field, who bring the experience of their work to this training, as well as recognised specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training programmed to train in real situations.

This program is designed around Problem Based Learning, whereby the specialist must try to solve the different professional practice situations that arise during the academic year. To this end, the professional will be assisted by an innovative interactive video system developed by renowned and experienced experts in Reproductive Aquaculture.



02

Objectives

The **Postgraduate Certificate in Reproductive Aquaculture** is designed to facilitate the performance of the veterinary professional with the latest advances and most innovative procedures in the sector.

Our goal is to achieve academic excellence and to help you achieve professional success as well"

General Objectives

- Analyze the reproductive processes of the different species used in Aquaculture
- Determine the factors associated with reproductive processes in aquaculture
- Develop the most important concepts in Artificial Fertilization
- Analyze in a more intensive way the different methods of reproduction
- Generate specialized knowledge on Algae Reproduction
- Analyze the genetic characteristics of aquaculture species
- Further develop the study of the most innovative Molecular Technology applied in Aquaculture
- Evaluate future applications of Biotechnology in aquaculture species
- Analyze the contribution of aquaculture to biodiversity conservation

Make the most of the opportunity and take the step to get up to date on the latest developments in Reproductive Aquaculture"

Specific Objectives

- Specify the physiological mechanism of action of the reproductive organs
- Generate specialized knowledge on hormonal regulation in reproductive processes
- Determine the importance of sexual determination and differentiation
- Analyze the efficacy of environmental control in reproduction
- Determine the most commonly used fertilization methods
- Build specialized knowledge on reproductive processes in algae.
- Determine the usefulness of Cryopreservation in breeding farms
- Examine the importance of diet and endocrine disruptors on the reproductive processes
- Analyze the progressive innovation of aquaculture through selection and biotechnology
- Establish the genetic characteristics of aquaculture species
- Analyze cloning techniques of aquaculture species and their applications
- Determine Genetic Selection Techniques, Crossbreeding, Reproductive Biotechnology, and breeding programs present in the management of aquaculture species
- Examine Structural Genomics and possible applications in aquaculture
- Analyze Functional Genomics and possible applications in aquaculture
- Evaluate the possibilities of Transgenesis and gene editing in aquaculture species

03

Course Management

The program's Teaching Staff includes leading experts in Aquaculture who contribute their vast work Experience to this training Program. They are World-renowned Professionals from different Countries with proven Theoretical and Practical Professional Experience.

We have the best Teaching Team in the field of Aquaculture, with years of experience and who are determined to transmit all their knowledge about this Sector"

Management

Mr. Gracia Rodríguez, José Joaquín

- Degree in Veterinary Medicine from the University of Murcia.
- Diploma in Aquaculture Specialization. Polytechnic University of Valencia
- Advanced Ichthyopathology Course
- International Congress on Sustainable Aquaculture
- Certificate in Pedagogical Aptitude University of Extremadura
- Attendance at the AVEPA Continuing Education Conference
- Teacher in Higher Vocational Training Degrees in the Sanitary Branch
- Training in Biosecurity and Pathology in the Ornamental Aquaculture Sector
- Speaker at National Congresses and Courses on Ornamental Aquaculture
- Training Courses for Livestock Farmers on Safety and Regulations in the Transport of Animals.
- Food Handler Courses for Companies and Individuals.
- Consultant in Ichthyopathology for several companies in the Aquaculture Sector
- Technical Director in the Ornamental Aquaculture Industry
- Coordination of Projects in Maintenance of Wild Species and Water Quality
- Projects in Natural Parks for the Control of Allochthonous Ichthyofauna
- Projects for the Recovery of Native Crayfish
- Carrying out Wildlife Species Censuses
- Coordination of livestock Sanitation Campaigns in Castilla-La Mancha
- Veterinarian in a Breeding and Genetic Improvement Company in the Rabbit Breeding Sector

Management

Ms. Herrero Iglesias, Alicia Cristina

- Degree in Veterinary Medicine from the University of Extremadura.
- Master's Degree in Secondary Education, International University of La Rioja
- Course "Animal Welfare in Livestock Production" organized by the Official College of Veterinarians of Madrid, in collaboration with the Faculty of Veterinary Medicine UCM and the Ministry of Environment and Land Management of the Community of Madrid
- Occupational Trainer, given by the INESEM Postgraduate Training Center.
- "Trainer of Trainers" Course given by the University Antonio de Nebrija .
- Teacher in the Degree in Veterinary Medicine, University of Alfonso X el Sabio (Madrid)
- Since February 2012 she has been Teaching "Ethnology and Veterinary Business Management" and "Animal Production"
- From the Academic Year 2016-2017 to the present, she has been teaching Hematological Analysis Techniques and Immunological Diagnostic Techniques for the 2nd year of the Formative Cycle of Higher Degree of Clinical and Biomedical Laboratory in Opesa (Madrid)
- Secondary School Teacher Cristóbal Colón School (Talavera de la Reina) Academic Year 18/19
- Veterinary Trainer in the Alonso Herrero HACCP Company for the Training of Food Handlers

Professors

Ms. García-Atance Fatjó, María Asunción

- Degree in Veterinary Medicine from the Complutense University of Madrid, 1994 Presentation of the Dissertation, obtaining the Degree in 1995
- Currently working on their Doctorate, expected date of thesis defence: 2020/2021
- Collaborator in the Teaching of the subjects; Genetics and Breeding and Health between 1998 and 2005 in the Degree of Veterinary Medicine at the Complutense University of Madrid
- Teaching and Research Staff at the Complutense University of Madrid
- Associate Professor at the Alfonso X el Sabio University in Veterinary Science since 2012, being currently coordinator of the subjects Genetics and Breeding and teacher of Ethnology, Animal Production and Supervised Practices.

04

Structure and Content

The structure of the content has been designed by the best Professionals in the Aquaculture Sector, with extensive Experience and Recognized Prestige in the Profession, backed by the volume of cases Reviewed, Studied, and Diagnosed, and with extensive knowledge of New Technologies applied to Veterinary Medicine.

We have the most complete and up-to-date academic program in the market. We strive for excellence and for you to achieve it too"

Module 1. Species Reproduction in Aquaculture

1.1. Reproduction in Aquaculture Species.
- 1.1.1. Important Concepts
- 1.1.2. Types of Reproductive Systems
- 1.1.3. Sexual Behavior

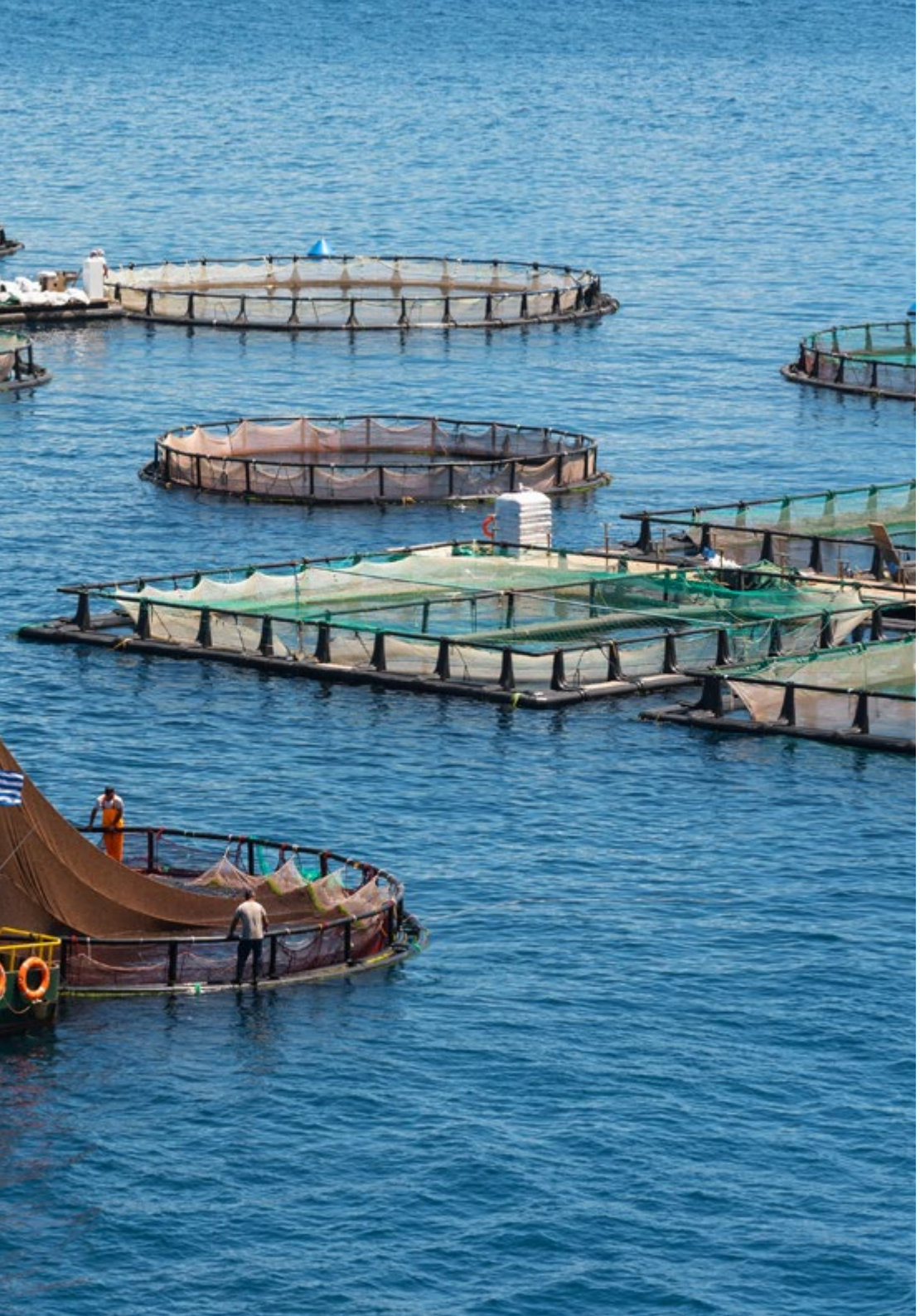
1.2. Sex Determination and Differentiation in Aquaculture Species
- 1.2.1. Concept
- 1.2.2. Genotypic Sex Determination
- 1.2.3. Environmental Sex Determination
- 1.2.4. Sexual Differentiation

1.3. Reproductive Physiology I. Males
- 1.3.1. Physiology and Maturation
- 1.3.2. Spermatogenesis
- 1.3.3. Testicular Hormones

1.4. Reproductive Physiology II Females
- 1.4.1. Physiology and Maturation
- 1.4.2. Ovogenesis
- 1.4.3. Ovarian Hormones

1.5. Hormonal Regulation of Reproduction in Aquaculture
- 1.5.1. Regulation of Blood Levels
- 1.5.2. Thyroid Receptors
- 1.5.3. Thyroid Structures
- 1.5.4. Thyroid Hormone and Reproduction

1.6. Artificial Fertilization in Aquaculture
- 1.6.1. Physiological Changes during the Fertilization Process
- 1.6.2. Gamete Collection
- 1.6.3. Fertilization
- 1.6.4. Incubation
- 1.6.5. Types of Chromosome Manipulation



1.7. Environmental Control of Reproduction in Aquaculture Facilities
- 1.7.1. Photoperiod
- 1.7.2. Temperature
- 1.7.3. Aquaculture Application
- 1.7.4. Control of Sexual Maturation

1.8. Cryopreservation
- 1.8.1. Concepts and Objectives
- 1.8.2. Semen Cryopreservation
- 1.8.3. Oocyte Cryopreservation
- 1.8.4. Embryo Cryopreservation

1.9. Diet and Endocrine Disruptors in Reproduction
- 1.9.1. Effects of Different Food Components
- 1.9.2. Level of Intake and its Consequences
- 1.9.3. Concept of Endocrine Disruptor
- 1.9.4. Actions of Endocrine Disruptors

1.10. Algae Reproduction
- 1.10.1. Reproductive Physiological Characteristics
- 1.10.2. Life Cycle of Algae
- 1.10.3. Types of Reproduction
- 1.10.4. Storage and Conservation

Module 2. Biotechnology and Genetics in Aquaculture

2.1. Biotechnology, Genetics, and Selective Breeding in Aquaculture
- 2.1.1. History of Selection in Aquaculture Species
- 2.1.2. History of Biotechnological Applications in Aquaculture Species

2.2. Genetics applied to Aquaculture Species.
- 2.2.1. Qualitative Traits
- 2.2.2. Phenotypic Variation and Environmental Influence
- 2.2.3. Population Size and Inbreeding
- 2.2.4. Population Genetics: Genetic Drift and its Effects

2.3. Cloning and related Techniques in Aquaculture Species
- 2.3.1. Gynogenesis
- 2.3.2. Androgenesis
- 2.3.3. Cloned Populations
- 2.3.4. Cloning by Nuclear Transfer

2.4. Crossing Strategies
- 2.4.1. Intraspecific Crossing
- 2.4.2. Interspecific Hybridization

2.5. Genetic Selection: Breeding Programs
- 2.5.1. Bases of Genetic Selection
- 2.5.2. Response to Selection
- 2.5.3. Individual and Family Selection
- 2.5.4. Correlated Traits Indirect Selection

2.6. Reproductive Biotechnology in Aquaculture Species
- 2.6.1. Polyploidy and Xenogenesis
- 2.6.2. Sex Reversal and Breeding

2.7. Aquaculture Structural Genomics
- 2.7.1. Molecular Markers and Mapping: Localization of Genes
- 2.7.2. Marker-assisted Selection

2.8. Functional Genomics Aquaculture
- 2.8.1. Gene Expression
- 2.8.2. Implication of Expression in Productive and Physiological Traits
- 2.8.3. Proteomics and Applications

2.9. Gene Transfer and Gene Editing
- 2.9.1. Generation of Transgenic Individuals
- 2.9.2. Productive applications of Transgenic Individuals
- 2.9.3. Biosafety in the use of Transgenic Individuals
- 2.9.4. Applications of Gene Editing in Aquaculture

2.10. Conservation of Genetic Resources of Aquaculture Species
- 2.10.1. Maintenance of Diversity and Ecosystems: Contribution of Aquaculture
- 2.10.2. Genetic Resource Banks in Aquaculture

This training will allow you to seamlessly advance in your career"

05

Methodology

This training provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

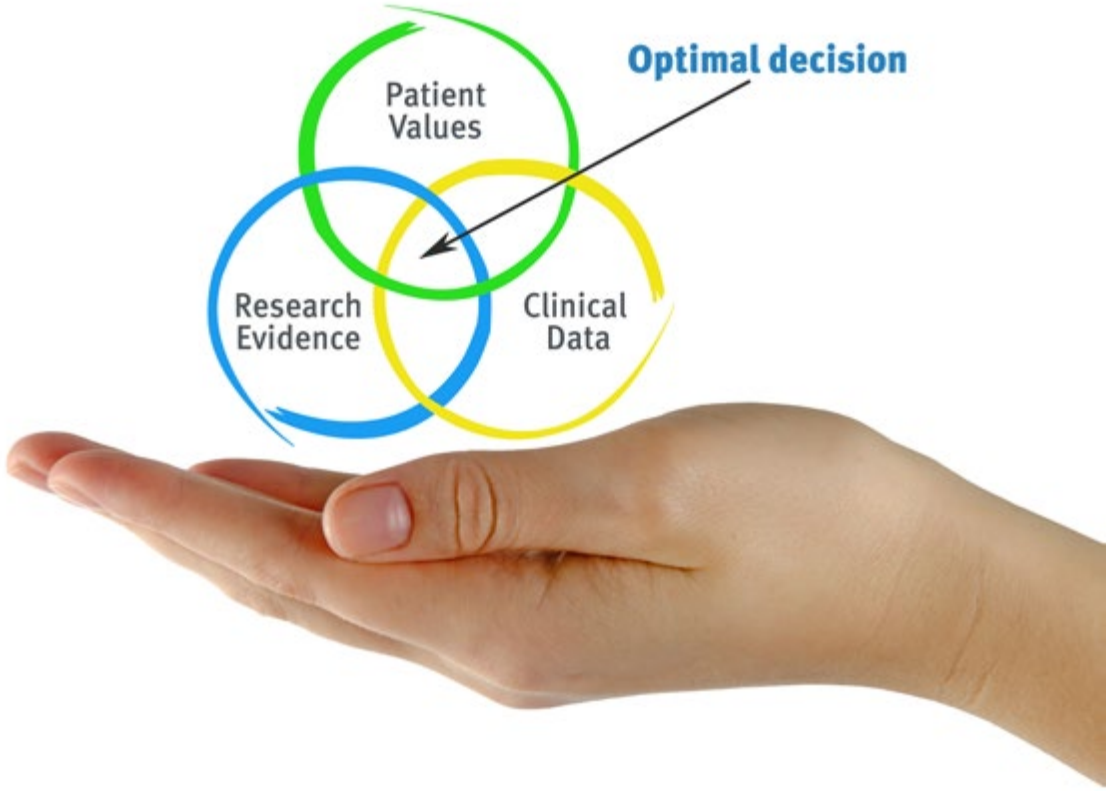
This teaching system is used in the most prestigious medical schools in the world, and major publications such as the ***New England Journal of Medicine*** have considered it to be one of the most effective.

Discover Re-learning, 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

In a given clinical situation, what would you do? 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 abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you can 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 potential or because of its uniqueness or rarity. It is essential that the case be based on current professional life, trying to recreate the real conditions in the Veterinarian's Professional Practice.

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:

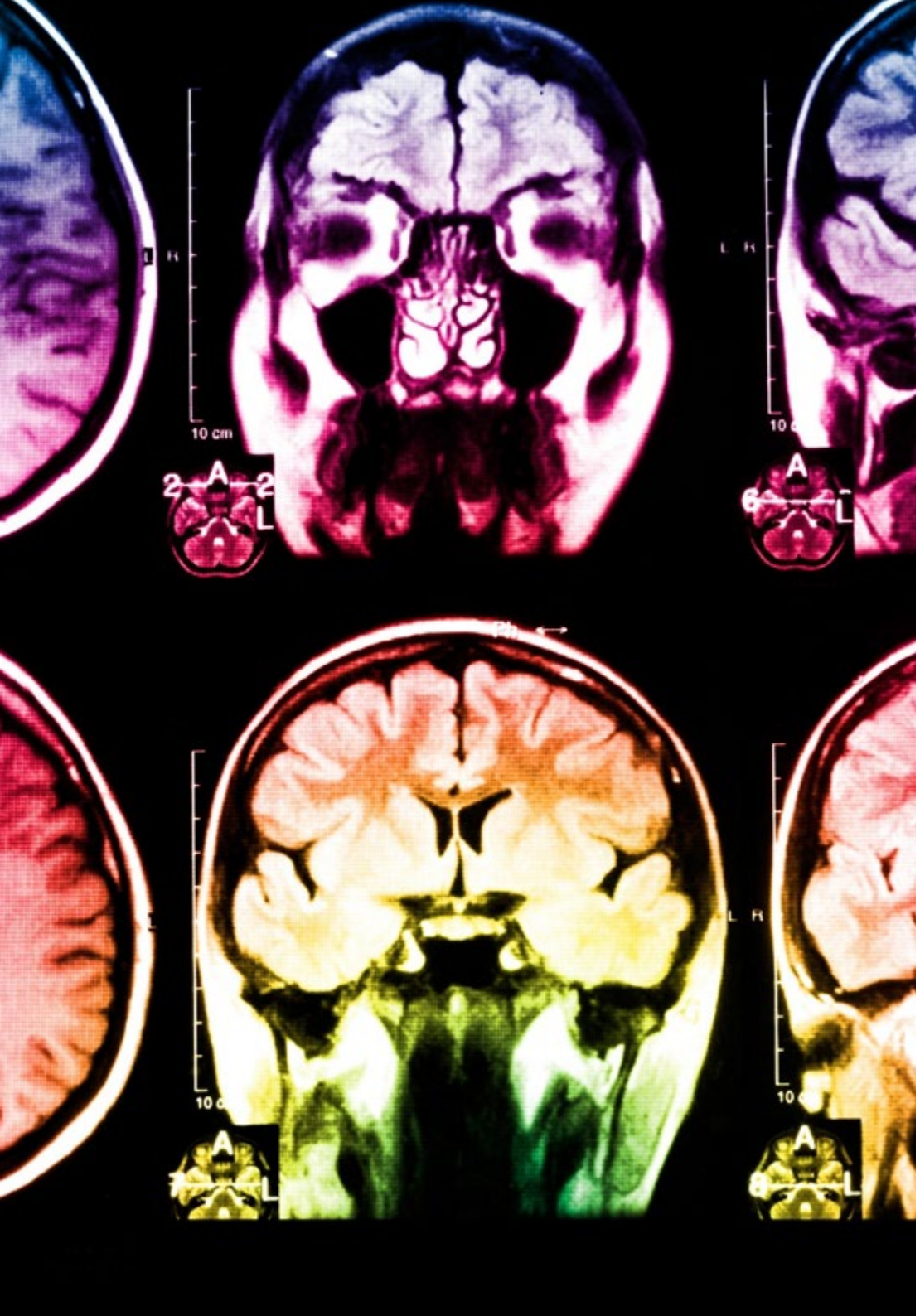
1. Veterinarians who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity through exercises to evaluate real situations and the application of knowledge.
2. The learning process has a clear focus on practical skills that allow the student to 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.

Re-learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

Our 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, which represent a real revolution with respect to simply studying and analyzing 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 Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

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

Re-learning 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 to success.

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

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

In this program you will have access to the best educational material, prepared with you in mind:

Study Material

All didactic content is created by the very specialists who will teach the course, making it both specific and practical.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.

Latest Techniques and Procedures on Video

We bring you closer to the latest Techniques, to the latest Educational Advances, to the forefront of current Veterinary Techniques and Procedures. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.

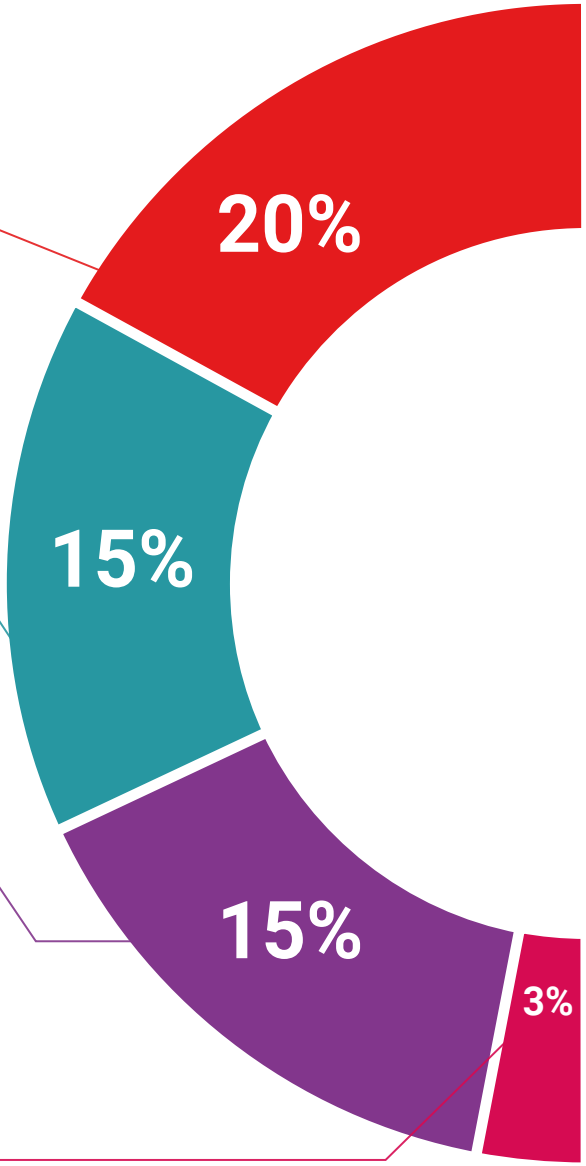
Interactive Summaries

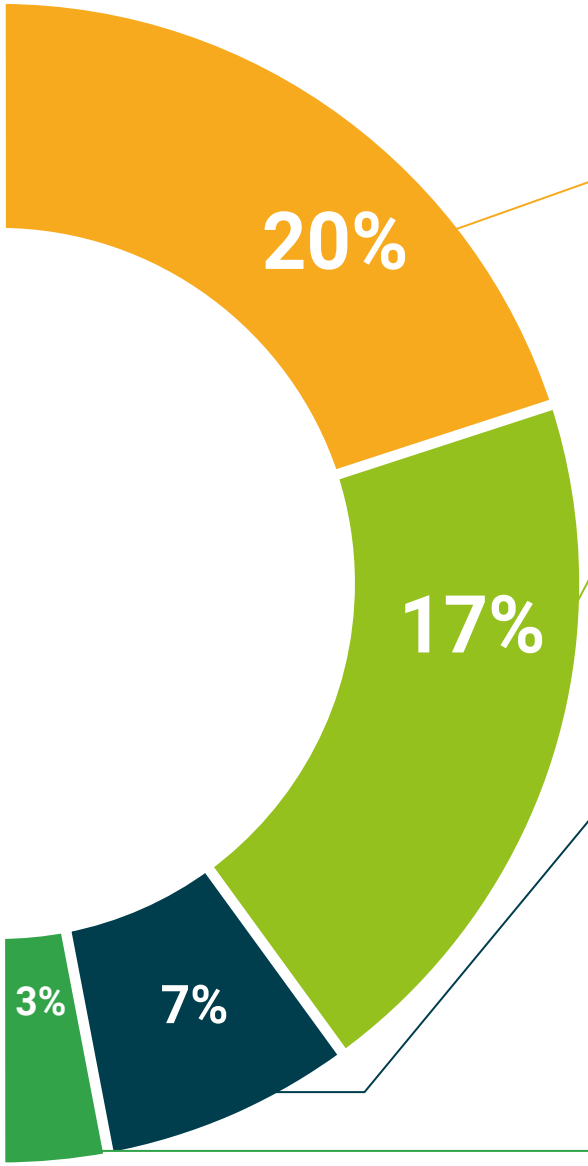
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".

Additional Reading

Recent articles, consensus documents, international guides. in our virtual library you will have access to everything you need to complete your training.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

Testing & Retesting

We periodically evaluate and re-evaluate your knowledge throughout the program, through assessment and self-assessment activities and exercises: so that you can see how you are achieving your goals.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an expert strengthens knowledge and memory, and generates confidence in our future difficult decisions.

Quick Action Guides

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.

06

Certificate

Through a different and stimulating learning experience, you will be able to acquire the necessary skills to take a big step in your training. An opportunity to progress, with the support and monitoring of a modern and specialized university, which will propel you to another professional level.

Successfully complete this training and receive your university degree without travel or laborious paperwork"

This program will allow you to obtain your **Postgraduate Certificate in Reproductive Aquaculture** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (***official bulletin***). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Reproductive Aquaculture**

Modality: **online**

Duration: **12 weeks**

Accreditation: **12 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Reproductive Aquaculture

This is a program of 360 hours of duration equivalent to 12 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

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