

# Postgraduate Certificate Gestation Diagnosis and Ultrasound





## Postgraduate Certificate Gestation Diagnosis and Ultrasound

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/veterinary-medicine/postgraduate-certificate/gestation-diagnosis-ultrasound](http://www.techtute.com/us/veterinary-medicine/postgraduate-certificate/gestation-diagnosis-ultrasound)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 18*

05

Methodology

---

*p. 22*

06

Certificate

---

*p. 30*

# 01

# Introduction

In this program, fertilization is studied in depth as a phenomenon that involves a series of prior processes essential for gamete fertility and to avoid pathological processes that cause very serious alterations in the genetic imprint of the new-born. The physiology of the gametes, the knowledge of their union and fusion will allow us to know the physiological facts of the beginning a mammal's life.

Specialize in Gestation Diagnosis and Ultrasound with this high-level program taught by experts with extensive experience in the field.





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*This program is the best option you can find to specialize in Gestation Diagnosis and Ultrasound and make more accurate diagnoses”*

From the earliest data on animal reproduction in Egyptian hieroglyphs, through the ancient veterinarians to the present day, humankind has always been interested in the study of animal reproduction to increase populations and obtain better yields.

Animal reproduction has evolved exponentially in recent decades and its current development means that technologies implemented a few years ago are now obsolete. Technique, science and human genius combine and bring, as a consequence, results identical to natural reproduction.

The objective of this program focuses on the mastery and control of all physiological, pathological and biotechnological aspects that affect the reproductive organ function of domestic animals. The species studied in this Postgraduate Certificate are: bovids, equidae, swine, sheep, goats and canids; a selection made based on the importance and development of assisted reproduction at present.

This Postgraduate Certificate has been developed to expand upon the current knowledge of the specialization in the different techniques of Gestation Diagnosis and Ultrasound

The group of professors teaching the Postgraduate Certificate is made up of specialists in animal reproduction with more than 30 years of work experience, not only in the field of teaching, but also with practical activity, research and directly in livestock farms and animal reproduction centers. In addition, the teaching team is actively developing the latest techniques in assisted reproduction biotechnologies, making the genetic material of different species of international zootechnical interest available to the market.

The specialization will be based on the theoretical and scientific aspects, combining them with the practical and applicative professionalism of each of the subjects in the current work. Continuing education after completing undergraduate studies is sometimes complicated and difficult to balance with professional and personal activities, so with this Postgraduate Certificate, TECH gives students the opportunity to continue specializing online with a large amount of practical audiovisual support that will allow the student to advance in reproductive techniques in their work environment.

This **Postgraduate Certificate in Gestation Diagnosis and Ultrasound** contains the most complete and up-to-date educational program on the market. The most important features of the specialization are:

- » Practical cases presented by experts in Gestation Diagnosis and Ultrasound
- » The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional development
- » New developments in Gestation Diagnosis and Ultrasound
- » Practical exercises where self-assessment can be used to improve learning
- » Special emphasis on innovative methodologies in Gestation Diagnosis and Ultrasound
- » 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



*Don't miss the opportunity to take this Postgraduate Certificate in Gestation Diagnosis and Ultrasound with us. It's the perfect opportunity to advance your career"*

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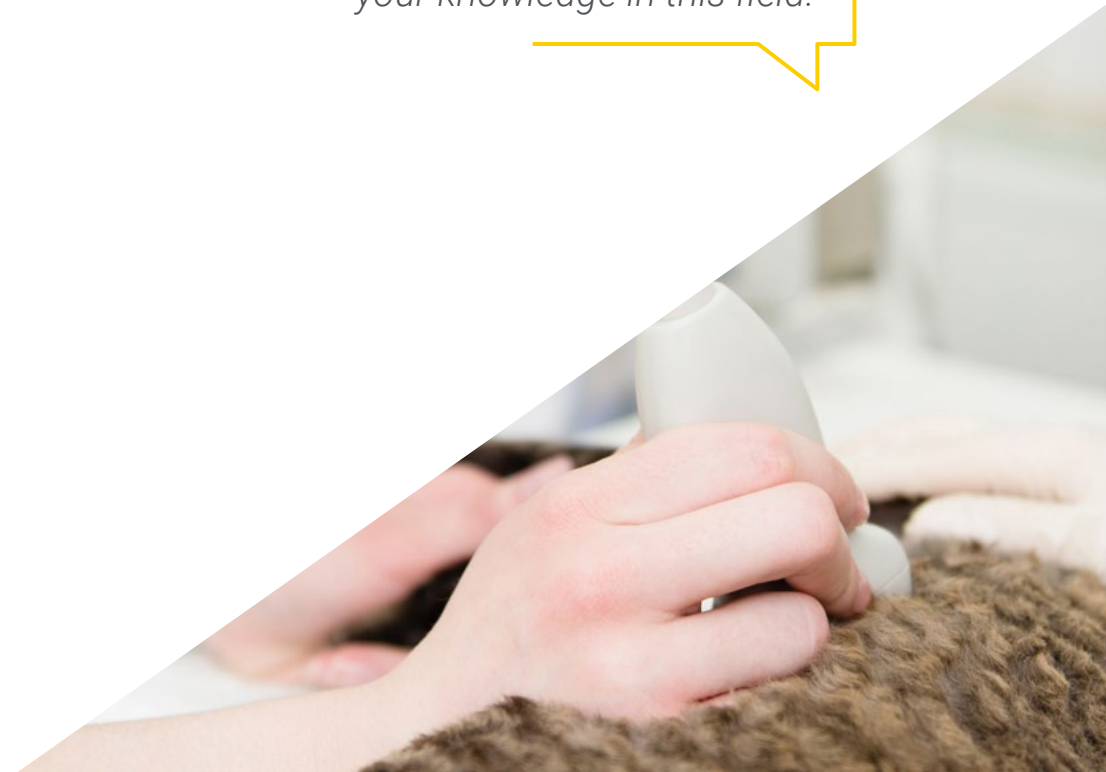
*This Postgraduate Certificate is the best investment you can make when choosing a refresher program to update your existing knowledge in Gestation Diagnosis and Ultrasound"*

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 that is programmed to train students in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned experts in Gestation Diagnosis and Ultrasound with extensive experience.

*This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.*

*This 100% online program will allow you to balance your studies with your professional work while increasing your knowledge in this field.*



# 02 Objectives

The program in Gestation Diagnosis and Ultrasound is oriented to facilitate the performance of the veterinary professional with the latest advances and most innovative treatments in the sector.







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*This is the best option to learn about  
the latest advances in Gestation  
Diagnosis and Ultrasound”*



## General Objectives

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- » Establish the complete process of fertilization and what happens around this phenomenon
- » Evaluate the factors involved in fertilization disturbances
- » Compile placental systems in different species of domestic mammals
- » Fundamentals of gestational diagnosis methods



*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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- » Examining gametic migrations
- » Develop the events prior to fertilization: sperm capacitation, acrosome reaction and gametic conjugation
- » Demonstrate the importance of pellucid membrane function
- » Specify the mechanisms of oocyte activation after fertilization.
- » Examine the factors involved in the processes that alter fertilization
- » Establish the endocrine function of the placenta and the regulation of placental hormones
- » Generate action protocols for embryo reabsorption and miscarriages



03

# Course Management

The program includes in its teaching staff leading experts in Gestation Diagnosis and Ultrasound, who bring the experience of their work to this specialization. They are world-renowned doctors from different countries with proven theoretical and practical professional experience.



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*Our teaching team, experts in Gestation and Ultrasound, will help you achieve success in your profession"*

## International Guest Director

Considered as a true reference in animal care, Dr. Pouya Dini is a prestigious **Veterinarian** highly specialized in the field of **Mammalian Reproduction Technology**. In this sense, he has a **comprehensive approach** based on the personalization of health to offer a first class clinical assistance to different species.

During his extensive professional career, he has been part of renowned veterinary organizations such as the UC Davis Veterinary Hospital located in the United States. Thus, his work has focused on providing **excellent clinical care** to a variety of species: from common pets such as dogs to exotic animals including birds. Thanks to this, he has been able to efficiently treat different pathologies ranging from **Respiratory Infections** or **Gastrointestinal Diseases** to **Cardiovascular Diseases**. In this way, it has optimized the quality of life of a variety of fauna. In tune with this, it has developed innovative **preventive care protocols**, boosting the overall long-term welfare of the animals.

In his commitment to excellence, he regularly updates his knowledge to stay at the forefront of the latest advances in **Veterinary Medicine**. This has allowed him to develop advanced technical skills to incorporate emerging technological tools such as Diagnostic Imaging Systems, Telemedicine and even sophisticated Artificial Intelligence techniques into his daily practice. As a result, he has been able to design and implement more precise and less invasive therapies to significantly optimize outcomes for conditions such as Musculoskeletal Injuries.

He has also balanced this facet with his role as a **Clinical Researcher**. In fact, he has an extensive scientific production on subjects such as **Gene Expression** in the equine placenta, **Reproductive Biotechnology** or the impact of cumulus cells in the in vitro maturation process to predict fertilization in horses.



## Dr. Dini, Pouya

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- ♦ Director of Assisted Reproductive Technology at UC Davis Veterinary Hospital, United States
- ♦ Specialist in Reproductive Biotechnology.
- ♦ Clinical Researcher at Gluck Equine Research Center, United States  
Expert in Equine Placenta
- ♦ Author of multiple scientific articles on Mammalian Reproductive Technologies
- ♦ Doctor of Philosophy with specialization in Equine Health, Ghent University
- ♦ Doctorate in Veterinary Medicine from Islamic Azad University
- ♦ Clinical internship at Gluck Equine Research Center
- ♦ Award for “Doctoral Thesis of the Year” by Ghent University
- ♦ Member of: European College of Animal Reproduction and American College of Theriogenology



*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Dr. Gomez Peinado, Antonio

- Coordinator of Obstetrics and Reproduction at Alfonso X El Sabio University, Faculty of Veterinary Medicine
- Degree in Veterinary Medicine
- Doctorate in Alfonso X El Sabio University Faculty of Veterinary Medicine - Professor of Animal Production



### Dr. Gómez Rodríguez, Elisa

- Professor of Veterinary Medicine at the Alfonso X El Sabio University
- Work development of assisted reproduction techniques at the " Spanish Institute of Animal Genetics and Reproduction" (IEGRA) in Talavera de la Reina, Toledo
- Degree in Veterinary Medicine, Complutense University Madrid
- Postgraduate course "Assisted Reproduction in Cattle Taught by IEGRA, UAX and HUMEKO, Talavera de la Reina
- Course on "Bovine Reproductive Ultrasound" Taught by Dr. Giovanni Gnemmi (HUMEKO), Talavera de la Reina





## Professors

### Mr. Pinto González, Agustín

- » Veterinarian of the Spanish Institute of Animal Genetics and Reproduction
- » Sani Lidia's Veterinarian
- » Degree in Veterinary Medicine
- » Specialization in Animal Reproduction at IEGRA
- » IEGRA's Diploma in Artificial Insemination in Cattle

### Dr. Peris Frau, Patricia

- » Postdoctoral fellow in charge of the UCLM research project entitled: "Improvements in Sperm Conservation of Different Species" In the Animal Health and Biotechnology Research Group (SaBio, IREC, UCLM)
- » Degree in Veterinary Medicine from the University of Murcia
- » D. in Agricultural and Environmental Sciences with international mention from the University of Castilla La Mancha
- » Member of the research team of the National Project entitled: "Increased in vitro embryo procurement in small ruminants through modification in the in vitro fertilization protocol" (AGL2017-89017-R)
- » Clinical Veterinarian at Animal Care Hospital Douglas, Cork, Ireland

# 04

# Structure and Content

The structure of the contents has been designed by the best professionals in the field of Gestation Diagnosis and Ultrasound, 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.





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*This Postgraduate Certificate in Gestation Diagnosis and Ultrasound contains the most complete and up-to-date scientific program on the market”*

## Module 1. Fertilization and Gestation

- 1.1. Phenomenology of Fertilization
  - 1.1.1. Gametic Migration of Spermatozoa
  - 1.1.2. Gametic Migration of the Egg
  - 1.1.3. Study of Gamete Fertility Time Prior to Fertilization
  - 1.1.4. Processes Occurring Prior to Fertilization: Sperm Capacitation, Acrosome Reaction and Gametic Conjugation
- 1.2. Structure and Function of the Pellucid Membrane
  - 1.2.1. Origin, Formation and Structure of the Pellucid Zone
  - 1.2.2. Molecular Characteristics of Pellucid Zone Glycoproteins
  - 1.2.3. Cortical Granules and Their Reaction at the Pellucid Membrane
  - 1.2.4. Spermatozoa-Pellucid Zone Binding Models
- 1.3. Development of Oocyte Activity after Fertilization
  - 1.3.1. Union and Penetration to the Pellucid Zone
  - 1.3.2. Union and Fusion of the Spermatozoon to the Oocyte Cell Membrane
  - 1.3.3. Prevention of Polyspermia
  - 1.3.4. Egg Metabolic Activation
  - 1.3.5. Sperm Nucleus Decondensation (Male Pronucleus)
- 1.4. Pathophysiology of Fertilization
  - 1.4.1. Factors Involved in Fertilization Disruption
  - 1.4.2. Polyspermia
  - 1.4.3. Monozygotic Twins
  - 1.4.4. Interspecific Hybrids
  - 1.4.5. The Chimeras
- 1.5. Study of Placental Systems in Domestic Animals
  - 1.5.1. Comparative Anatomy and Histology of the Placenta in Mammals
  - 1.5.2. The Placenta in Cows
  - 1.5.3. The Placenta in Sheep
  - 1.5.4. The Placenta in Mares
  - 1.5.5. The Placenta in Goats
  - 1.5.6. The Placenta in Female Dogs
  - 1.5.7. The Placenta in Sow





- 1.6. Placental Endocrinology
  - 1.6.1. Endocrine Function of the Placenta
  - 1.6.2. Hormones Produced by the Placenta, Specific to the Species
  - 1.6.3. Placental Lactogens
  - 1.6.4. Prolactin
  - 1.6.5. Regulation of all Placental Hormones in Mammals
- 1.7. Characteristics of Fetal Development in Domestic Species
  - 1.7.1. Fetal Development in Cows
  - 1.7.2. Fetal Development in Mares
  - 1.7.3. Fetal Development in Sheep
  - 1.7.4. Fetal Development in Goats
  - 1.7.5. Fetal Development in Female Dogs
  - 1.7.6. Fetal Development in Sows
- 1.8. Methods of Gestation Diagnosis in Domestic Females
  - 1.8.1. Study of all Methods of Gestation in Mammals
  - 1.8.2. Diagnosis of Pregnancy in Cows
  - 1.8.3. Diagnosis of Pregnancy in Mares
  - 1.8.4. Diagnosis of Pregnancy in Sheep
  - 1.8.5. Diagnosis of Pregnancy in Goats
  - 1.8.6. Diagnosis of Pregnancy in Female Dogs
  - 1.8.7. Diagnosis of Pregnancy in Sows
- 1.9. Gestation Interruption Embryonic Resorptions and Miscarriages
  - 1.9.1. Pharmacological Methods of Pregnancy Termination
  - 1.9.2. Determination of Embryonic Resorptions in Mammals
  - 1.9.3. Abortion, How Does It Develop and Its Main Causes?
  - 1.9.4. Necropsies of Aborted Fetuses, Sample Collection for Analysis and Specific Treatments
  - 1.9.5. Placental Apoptosis in Venereal Diseases
- 1.10. Mammalian Gestational Immunology
  - 1.10.1. Embryo Antigenicity
  - 1.10.2. Immune Changes During Pregnancy
  - 1.10.3. Immune Pathologies of Reproduction
  - 1.10.4. Alteration of Immune-Mediated Growth Factor

# 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. Gervas, 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.





#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, 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 students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their 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 future difficult decisions.



#### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



06

# Certificate

The Postgraduate Certificate in Gestation Diagnosis and Ultrasound guarantees students, in addition to the most rigorous and up-to-date education, access to a qualification issued by TECH Global University.



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

This program will allow you to obtain your **Postgraduate Certificate in Gestation Diagnosis and Ultrasound** 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 Gestation Diagnosis and Ultrasound**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



\*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.



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
online training  
development language  
classroom



## Postgraduate Certificate Gestation Diagnosis and Ultrasound

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