

# Postgraduate Certificate

## Nutrition and Food in Ruminants





## Postgraduate Certificate Nutrition and Food in Ruminants

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techitute.com/pk/veterinary-medicine/postgraduate-certificate/nutrition-food-ruminants](http://www.techitute.com/pk/veterinary-medicine/postgraduate-certificate/nutrition-food-ruminants)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

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*p. 28*



# 01

# Introduction

This course in Ruminant Nutrition develops the main aspects related to digestive physiology, nutrition and feeding of ruminants and their marked anatomical and physiological differences with respect to the other species studied. A specificity that allows them to have, as a main characteristic, the ability to take advantage of resources rich in fiber, such as pastures and forages, which have little nutritional value for non-ruminant species.

A high-value course designed for professionals to update and perfect their technical and practical knowledge in this sector. A complete and effective course that will propel you to a higher level of competence.







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*Become one of the most demanded professionals of the moment: train yourself with our Course in Nutrition and Feeding of Ruminants"*

This Course in Nutrition and Feeding of Ruminants is unique given its level of specialization and the logical learning sequence in which the content is organized.

Its ultimate goal is to specialize and update professionals in the most advanced technical and scientific aspects of animal nutrition and feeding.

Knowledge that enables the entry, linkage and specialization in one of the most important sectors of animal production at present and with more labor demand and need for specialization.

The current world population estimated at 7.6 billion is expected to increase to 8.6 billion by 2030 and animal nutrition is one of the disciplines called upon to help solve the problem of producing sufficient and economical protein to feed this growing demand in an efficient and sustainable manner.

With an innovative format, this training allows participants to develop autonomous learning and optimal time management.

In short, it is an ambitious, broad, structured and interwoven proposal, which covers everything from the fundamental and relevant principles of nutrition to the manufacture of food. All this with the characteristics of a course of high scientific, teaching and technological level.

These are some of its most notable features:

- ◆ 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 the course



*Join the elite, with this highly effective training and open new paths to your professional progress"*

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*A Postgraduate Certificate that will enable you to work in Ruminant Nutrition and Feeding with the solvency of a high-level professional"*

Our teaching staff is made up of professionals from different fields related to this specialty. In this way, we ensure that we provide you with the training update we are aiming for. A multidisciplinary team of professionals trained and experienced in different environments, who will develop the theoretical knowledge in an efficient way, but, above all, will put at the service of the course the practical knowledge derived from their own experience: one of the differential qualities of this training.

This mastery of the subject is complemented by the effectiveness of the methodological design of this Expert. 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: 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

*With a methodological design that relies on proven teaching techniques, this course in Nutrition and Feeding of Ruminants will take you through different teaching approaches to allow you to learn in a dynamic and effective way.*



# 02

# Objectives

Our objective is to train highly qualified professionals for work experience. 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 focused on helping medical professionals reach a much higher level of expertise and control. A goal you will easily achieve with a course of high intensity and precision.





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*If your objective is to redirect your capacity towards new paths of success and development, this is your course: a training that aspires to excellence"*



## General Objective

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- ◆ Determine the properties, use and metabolic transformations of nutrients in relation to the nutritional needs of an animal
- ◆ Provide clear and practical tools so that the professional can identify and classify the different foods that are available in the region and have better elements of judgement to make the most appropriate decision in terms of differential costs, etc. diferenciales, etc
- ◆ Propose a series of technical arguments which allow for a better quality of diet and nutrition and therefore, improve the end produce (meat or milk)
- ◆ Analyze the different raw material components with both positive and negative effects on Animals. Nutrition and how animals use them for the production of animal protein
- ◆ Identify and understand the different levels of digestibility for each of the various nutritional components according to their origin
- ◆ To analyze the key aspects for the design and creation of diets (food) aimed at achieving the maximum utilization of nutrients by animals intended for animal protein production
- ◆ Provide specialized training on the nutritional requirements for the two main species of Pigs to be used in animal protein production
- ◆ Develop specialized understanding of the nutritional requirements of the porcine species and the different feeding strategies needed in order to guarantee that they reach the expected welfare and production standards according to their production stage
- ◆ Provide specialized theoretical and practical knowledge on the physiology of the digestive system of ruminants
- ◆ Analyze the digestive system of ruminants and their particular way of assimilating nutrients from fiberrich foods
- ◆ Analyze the main additive groups used in the food production industry, focused on ensuring the quality and performance of different food products
- ◆ Analyze, in a clear way, how the complete animal feed manufacturing process is developed: the phases and processes which feed undergoes to guarantee its nutritional composition, quality and safety





## Specific Objectives

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- ♦ Analyze the digestive system of ruminants and their particular way of assimilating nutrients from fiberrich foods
- ♦ Analyze the nutritional metabolism of ruminants, recognising their potential and their limitations
- ♦ Determine the nutritional requirements for the maintenance and production of the main ruminants of zootechnical interest
- ♦ Examine the main food resources for ruminants' nutrition, their main characteristics, their advantages and limitations
- ♦ Evaluate the main feeding strategies for ruminants according to the production context



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





04

# Course Management

For our course to be of the highest quality, we are proud to work with a teaching staff of the highest level, chosen for their proven track record. 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. Sarmiento García, Ainhoa

- ♦ Phd in Science and Chemical Technology. (09/ 09.2017 / 2019) University of Salamanca.
- ♦ University Master's in Innovation of Biomedical Sciences and Health. (10- 10.2015 - 2016) University of Leon
- ♦ Degree in Veterinary Medicine. (09- 10.2015 - 2014) University of Leon

## Professors

### Dr. Fernández Mayer, Anibal Enrique

- ♦ PhD in Veterinary Science
- ♦ Postdoctorate of Veterinary Science, with a focus on: Animal Nutrition in Institute of Animal Science (IAS)
- ♦ Agricultural Engineer, National University of La Plata (1975-1979), Buenos Aires

### Lic. Ordoñez Gómez, Ciro Alberto

- ♦ Animal technician
- ♦ Master's Degree in Animals. Nutrition
- ♦ University Professor in the area of animal nutrition with emphasis on ruminants

### Dr. Páez Bernal, Luis Ernesto

- ♦ PhD in Monogastric Nutrition and Production
- ♦ Doctor Scientiae in Zootechnics, Nutrition and Monogastric Production. Federal University of Viçosa (UFV), MG, Brazil. 2008, MSc in Zootechnics, Nutrition and Monogastric Production. Federal University of Viçosa (UFV), MG, Brazil. 2004
- ♦ Medical veterinary with a Master's Degree in Monogastric Nutrition and Production
- ♦ Lecturer

### D. Portillo Hoyos, Diana Paola

- ♦ Professional Graduated from the National University of Colombia

### D. Rodríguez Patiño, Leonardo

- ♦ Animal technician with a Master's Degree in Veterinary Nutrition



05

# Structure and Content

The contents of this training Progression's Degree have been developed by the different experts on this course, with a clear purpose: to ensure that our students acquire each and every one of the necessary skills 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. Nutrition and Food in Ruminants

- 1.1. Digestion and Ruminant Process in Bovines
  - 1.1.1. Anatomy of the Digestive System of a Ruminant
  - 1.1.2. Physiology and Importance of Rumination
  - 1.1.3. Ruminant Microorganisms and their Importance
  - 1.1.4. Digestion of Carbohydrates in Rumen
  - 1.1.5. Digestion of Fats in Rumen
  - 1.1.6. Digestion of Nitrogen Compounds in Rumen
- 1.2. Post-ruminal Digestion and Metabolism
  - 1.2.1. Post-ruminal Digestion of Carbohydrates, Lipids and Proteins
  - 1.2.2. Absorption of Nutrients in the Ruminant
  - 1.2.3. Metabolism of Carbohydrates, Lipids and Proteins in Ruminants
- 1.3. Protein Requirements
  - 1.3.1. Methodology for Protein Titration in Ruminants
  - 1.3.2. Maintenance Requirements
  - 1.3.3. Gestation Requirements
  - 1.3.4. Milk Production Requirements
  - 1.3.5. Growth Requirements
- 1.4. Energy Requirements
  - 1.4.1. Methodology of Energetic Valuation in Ruminants
  - 1.4.2. Maintenance Requirements
  - 1.4.3. Gestation Requirements
  - 1.4.4. Milk Production Requirements
  - 1.4.5. Growth Requirements
- 1.5. Fiber Requirements
  - 1.5.1. Fiber Valuation Methods
  - 1.5.2. Fiber Requirements for Maintaining Good Health and Production in Ruminants
- 1.6. Mineral and Vitamin Requirements
  - 1.6.1. Hydrosoluble Vitamins
  - 1.6.2. Liposoluble Vitamins
  - 1.6.3. Macrominerals.
  - 1.6.4. Microminerals







- 1.7. Water, Requirements and Factors which Affect its Consumption
  - 1.7.1. Importance of Water in the Production of Ruminants
  - 1.7.2. Water Quality for Ruminants
  - 1.7.3. Water Requirements for Ruminants
- 1.8. Nutrition and Food in Lactating Ruminants
  - 1.8.1. Physiology of Esophageal Leakage
  - 1.8.2. Requirements in Lactating Ruminants
  - 1.8.3. Diet Design for Lactating Ruminants
- 1.9. Main Foods in Diets for Ruminants
  - 1.9.1. Fibrous Foods
  - 1.9.2. Energy Rich Foods
  - 1.9.3. Protein Rich Foods
  - 1.9.4. Vitamin Supplements
  - 1.9.5. Mineral Supplements
  - 1.9.6. Additives and Others
- 1.10. Dietary Formulation and Supplements for Bovines
  - 1.10.1. Requirement Calculations
  - 1.10.2. Ration Balancing Methods
  - 1.10.3. Dietary Formulation for Beef Cattle
  - 1.10.4. Dietary Formulation for Dairy Cattle
  - 1.10.5. Dietary Formulation for Sheep and Goats



*This training will allow you to advance  
in your career comfortably"*

06

# 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.







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*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.



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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 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.

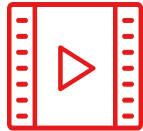
***Re-learning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.***

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 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.

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

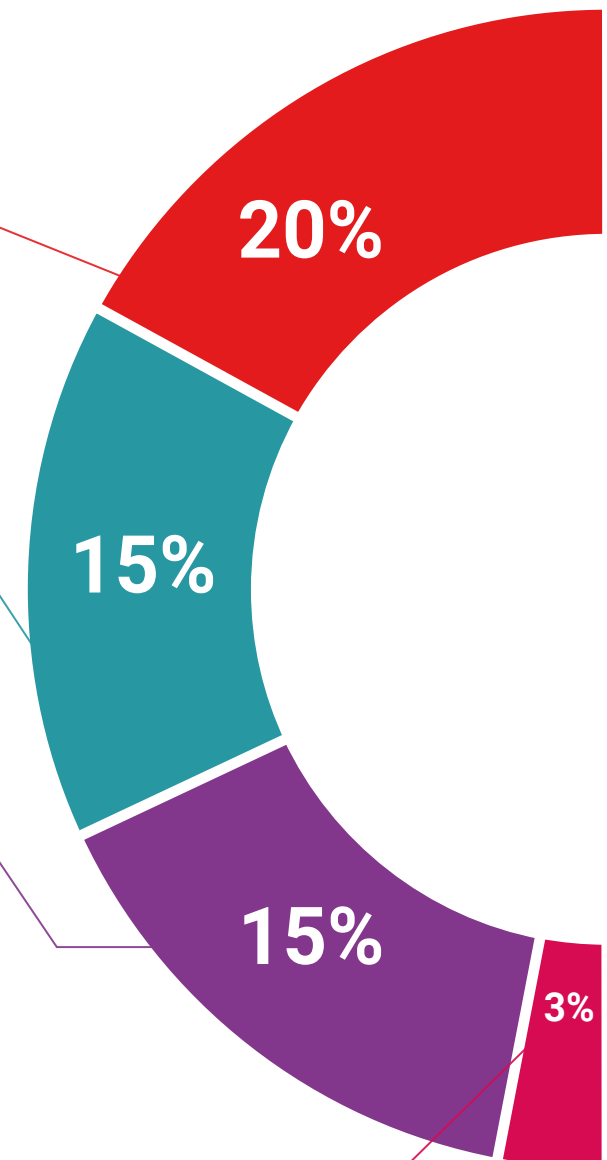
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

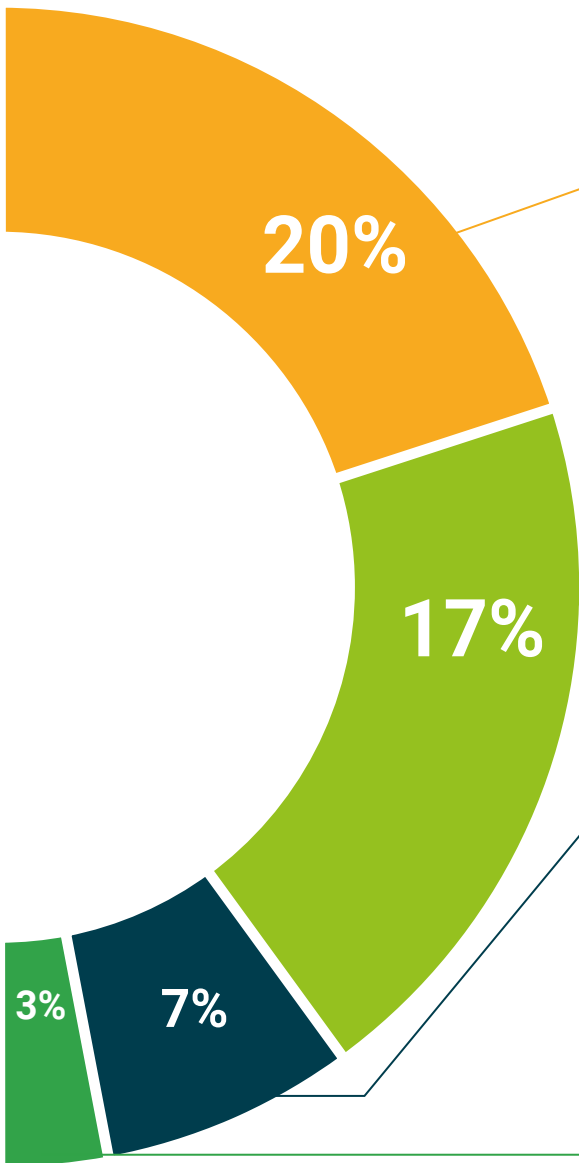
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



### 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 & Re-testing

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.





07

# 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.



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*Include in your training a Course in Ruminant Nutrition and Feeding: a highly qualified added value for any professional in this area"*

This **Postgraduate Certificate on Nutrition and Food in Ruminants** 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 and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professionals from career evaluation committees.

Title: **Postgraduate Certificate Nutrition and Food in Ruminants**

Official Number of Hours: **150**



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



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



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