

## SCIENZE VETERINARIE

## VETERINARY SCIENCE

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**Area disciplinare:** Scienze Veterinarie

**Dipartimenti interessati:** Medicina Veterinaria

**Costo:** rata unica annuale di 354,23 euro (per ogni anno di iscrizione)

**Scadenza bando:** 13/09/2018

**Breve descrizione:** Il Corso di Dottorato sviluppa attività di formazione alla ricerca in un ambito esteso a molti settori scientifici delle Scienze Veterinarie. Lo scopo è quello di elaborare ricerche per promuovere l'aggiornamento ed il miglioramento della pratica veterinaria, delle produzioni animali, delle performance riproduttive degli animali di interesse zootecnico e da compagnia, del benessere animale e della sicurezza degli alimenti di origine animale. Le tematiche di ricerca comprendono settori scientifici di base nell'ambito applicativo delle scienze veterinarie quali la fisiologia e le biotecnologie della riproduzione animale; le produzioni animali (scienze zootecniche, alimentazione, benessere animale); la patologia (aree parassitologica e dell'anatomia patologica); la clinica veterinaria ostetrica e chirurgica; la farmacologia e la tossicologia veterinaria; la sicurezza, la qualità e la valorizzazione degli alimenti di origine animale.

**Disciplinary area:** Veterinary Science

**Departments involved:** Veterinary Medicine

**Cost:** annual fee of € 354,23

**Deadline for applicants:** 13/09/2018

**Brief description:** The PhD program develops research training activities in a field that is extended to many scientific sectors of Veterinary Science. The aim of the PhD course in Veterinary Science is to develop research projects aimed at updating and improving veterinary practice, including the following subjects: animal physiology; animal production (zootecnics, animal welfare and nutrition); animal reproduction; animal pathology, parasitology, and parasitic diseases; clinical science, including obstetric, and surgery; safety and quality of food of animal origin. Research topics include: physiology and biotechnology applied to reproduction of livestock animals and pets; livestock management systems, animal feeding and animal welfare; pathology and anatomical pathology; parasitic disease of pets and livestock animals, including zoonosis; new diagnostic, surgical and obstetrical procedures in the treatment of animal disease (including stem cell, reparative and growth factors therapy); pharmacology and toxicology; food safety and food quality assurance in the whole production chains, including raw, fresh and processed food products.

### KEY INFORMATION

- **Disciplinary area:** Veterinary Science
- **Department:** Veterinary Medicine
- **Cost:** annual fee of € 354,23
- **Deadline for applicants:** 13/09/2018
- **Coordinator:** Prof. Fiammetta Berlinguer
- **Venue:** Department of Veterinary Medicine
- **Type of lessons:** frontal and practical lessons
- **Language:** Italian - English
- **Positions open:** 6
- **ECTS:** 180
- **Deadline for applicants:** from 03/08/2018 to 13/09/2018

### OVERVIEW

**Brief description:** The PhD program develops research training activities in a field that is extended to many scientific sectors of Veterinary Sciences. The aim is to develop research aimed at updating and improving veterinary practice and animal production techniques, at healthy domestic and wild animal nutrition and safety of feedstuffs, at optimizing reproductive performance of livestock and pet animals, at investigating the effect of different management systems on animal welfare, and at developing new production chains of foods of animal origin. Research topics include animal reproductive physiology and biotechnology, animal production (zotechnics, nutrition, animal welfare), pathology (parasitology, parasitic diseases, and pathological anatomy), obstetric, surgery, pharmacology, and toxicology. The safety, quality, and valorisation of food of animal origin are also part of the training objectives.

The PhD students, using biomedical research methods applied to veterinary sciences, food safety and zotechnical productions, will carry out their activities in laboratories, clinics and in all the facilities of the Department of Veterinary Medicine, food processing industries of animal origin and research institutions affiliated with the Department of Veterinary Medicine. All PhD students will be followed and guided in the development of the research project by a tutor.

The PhD program promotes internationalization through research periods abroad, the preparation of co-tutoring agreements with foreign researchers, the stipulation of agreements with foreign universities and research institutions and the presence in the course board of researchers belonging to universities and research institutions located outside the national territory.

#### Teaching goals:

The PhD program aims to train qualified researchers in the disciplines that are part of the Veterinary Sciences through a multidisciplinary scientific and cultural training also transferred through the provision of highly qualified specialized courses. In line with the two curricula in Reproduction, Pathology, Animal

breeding and Welfare and in Production, Quality and Food Safety, the specific training objectives of the course are:

- possess a thorough and up-to-date knowledge of the mechanisms that underlie reproductive and productive biology and the condition of animal welfare, with the aim of improving reproductive performance and profitability of livestock farms;
- acquire technical knowledge and experience regarding animal production to improve its quality through the careful management of resources and production processes;
- develop specific knowledge for the study of animal pathologies and parasites, to develop all the control measures that can allow the quantitative-qualitative improvement of the productions through the reduction of pharmacological interventions;
- investigate the latest surgical and obstetric techniques in order to improve and update the veterinary clinical practice;
- develop specific skills in the fields of pharmacology and toxicology, food microbiology, residues and contaminants of food products; certification of the quality of food process and products with voluntary and EU regulated standard (organic, quality schemes for agricultural products and foodstuffs); hygiene management in food process and establishments, including Codex Alimentarius standard and HACCP; Food Business Operator compliance to the requirements of EU food law.

### **Expected employment and professional opportunities**

The PhD students in Veterinary Science will be able to work in university and industrial research sectors, in national and foreign organizations and companies that develop research and innovation activities in the field of livestock and small animals breeding, providing their knowledge on reproduction techniques, the prevention and treatment of diseases, animal welfare, animal and food production techniques. The skills acquired can be exploited in the different phases of the animal food supply chain through the improvement of both livestock productive and reproductive management, and of food quality and security. The professionals can be involved in the processing and transformation of food, through consultancy activities for the management of process and product safety, traceability, study and product characterization and development of new products. They can also be used in the management and enhancement of the finished product, through product certification consultancy.

### **Language**

All courses are taught in - Italian / English - and teachers use both languages during lessons. PhD students can attend language course at the University Linguistic Center.

### **Laboratories, facilities, libraries, and databases**

The Department of Veterinary Medicine has the following research laboratories: food microbiology laboratory (No. 3), chemistry and rheological analysis of food (No. 1); microbial identification (1); molecular biology (No. 3); analysis of food for zootechnical use and animal products (No 1); study of the metabolic profile (no. 1); parasitological analysis (n.3); embryology laboratory (n.2), histology and cell culture (n.1); endocrinology laboratory (n.1), haematology and clinical biochemistry (n.1). Clinical research activities will be carried on in the teaching hospital and affiliated clinics, while research work focusing on animal

production and breeding will be carried on in the department teaching farm and in the affiliated research centre, such as AGRIS Sardegna, private farms, the Comparative Surgery Centre of the University of Sassari, and at the Veterinary Pharmacology and Toxicology laboratory (n.1) at the University of Pisa. The research activities concerning the Safety of Food of Animal Origin will be developed at the following research laboratories of the Department of Veterinary Medicine: food microbiology, molecular identification and typing of pathogens, food chemistry and pilot plant (dairy and processed meat products) and also in the context of agreements, at public research institutes and food establishments.

The book collection available to the doctoral students includes 34,150 books on all the topics related to veterinary medicine and preparatory subjects for the study of veterinary medicine: anatomy, physiology, pharmacology, pathology, parasitic and infectious diseases, parasitology, surgery, anaesthesiology, endocrinology, inspection and control of food of animal origin. In addition, the PhD students have free access to the University Library System (<http://sba.uniss.it/>), which includes 40,000 electronic journals by subscription and another 10,000 selected journals among those free on the Web, more than 50 databases and over 600 freely selected resources available on-line as thematic portals, online catalogues, open archives collections, working papers collections; 15,000 e-books; free access to UnissResearch institutional archive which comprises the research products of the University and of other institutions and research centers operating in Northern Sardinia in the (10,500 publications including the PhD theses).

## REQUIREMENTS

**Education:** master's degree

**Selection process:** Public call with evaluation of qualifications, research project and interview

**Language:** all applicants will have to demonstrate competence in the English language

## TEACHING

### Teaching schedule

The course is organized in two curricula: Animal Reproduction, pathology, production and welfare, and Production, quality and security of food of animal origin. The PhD Course provides students with teaching, seminars, workshops, and coaching which enables them to gain the PhD degree. The training schedule of the PhD students is formulated and expressed in research training credits (CFR). CFR are mainly acquired through publications, presentation of works at conferences and conventions, work and research activities, participation in summer schools, seminar activity on their own researches, disciplinary and interdisciplinary training activities. One CFR corresponds to:

- 25 hrs of project work, internships, stages, student tutoring (max 2.5 x thesis);
- 8 hrs of frontal lessons;
- 8 hrs of teaching held by the PhD student;
- Lectures, courses lasting from 5 to 8 hrs (if less than 4 hrs long: 0.5 CFR)

At the end of the three-year course, the PhD students must have acquired 180 CFR for the acquisition of the PhD degree in Veterinary Sciences, divided according to the following breakdown:

Activity		Type	CFR						
			1 <sup>st</sup> year		2 <sup>nd</sup> year		3 <sup>rd</sup> year		TOT
			min	max	min	max	min	max	
Project work		Obbligatory	40		40		40		120
Frontal lessons organized by the Central University PhD School	Common to all UNISS PhD Courses	Obbligatory	6		2				8
	Free choice	Obbligatory							4
Frontal lessons organized by the PhD course in Veterinary Science	Common and specific to each curricula	Obbligatory	4		4		4		12
Lectures, congress, courses, etc..	Free choice	Obbligatory	4		4		4		12
Student tutoring, teaching assistance	Free choice	Optional, with a maximum limit		5		5		5	15
Stage and internships	Free choice	Optional			0		0		
TOTAL			54	60	50	60	48	60	180

A significant quota of CFR is allocated to the project work, i.e. the definition and carrying out of a research project through research work, advanced didactic programs, individual in-depth study, and in many cases also through cultural exchange with other countries. The project work is realized in the elaboration of a thesis conducted with scientific method and discussing original results.

Teaching activities organized by the Central University PhD School are provided by both UNISS professors and internationally renowned researchers. They will be common to all courses, will focus on cross-cutting themes and will be compulsory for all PhD students of the School (6 CFR in the first year, and 2 CFR in the second year). In additions, each PhD student will have to include in his/her training plan courses provided by the other PhD programs of the School for a minimum of 4 CFR in the three years.

Teaching activities organized by the PhD course in Veterinary Science will be provided by highly qualified researchers from UNISS, others university and research centres. Each curriculum will offer courses for a minimum of 4 CFR annually. PhD students will then be able to choose which courses to follow, provided that at least 50% of the courses must be chosen within their curriculum.

Some training activities are compulsory and the minimum number of CFRs that the PhD student must achieve is fixed: frontal lessons organized by the Central University PhD School common to each student (6 CFR in the first year, and 2 CFR in the second year) and at choice (4 CFR in the three years), frontal lessons organized by the PhD course in Veterinary Science (4 CFR per year), seminars etc (12 CFR in the three years). Other activities are optional, such as internships, and for some it is fixed the maximum number of CFR that the student can achieve within his teaching plan (student tutoring, teaching assistance: max 5 CFR per year).

The training offer is therefore flexible and must be structured according to an individual path defined by the PhD student and by his/her tutor, which guarantees the achievement of 60 CFR per year. The student will have to present the three-year course plan at the beginning of the course for its approval by the

teaching board. The plan can be reviewed over the course of three years, but any revision will have to be approved by the teaching board.

**Attendance:** it is mandatory to attend at least the 70% of the classes from each course followed (40% for PhD students without scholarship and for those working for external companies).

### Teaching schedule of the year 2017/2018

Area	Curriculum	Title	Professor
Scientific communication	Both	Scientific methodology and communication	Daniele Dessì – University of Sassari
Animal Production	Both	Productive animal systems and conditions in Lebanon	Chadi Hosri – Lebanon University
	Both	A time for all physiological processes: the biological clock and the circadian rhythms in domestic animals	Giuseppe Piccione – University of Messina
	Both	A dromedary: A model system for biological animal production	Abdesselem Trimeche - Ecole Nationale de Médecine Vétérinaire de Sidi-Thabet, 2020 Sidi-Thabet, Ecole Supérieure d'Agriculture de Mateur, 7030 Mateur, Tunisie
	Both	Particularities of reproduction in the dromedary, with an overview of the pathology linked to reproduction	Sana Khaldi - Ecole Nationale de Médecine Vétérinaire de Sidi-Thabet, 2020 Sidi-Thabet, Ecole Supérieure d'Agriculture de Mateur, 7030 Mateur, Tunisie
	Both	Safety of Feedstuffs for Farm Animals	Prof.ssa Petra Wolf – University of Rostock, Germany
	Both	Use of insect-derived products in monogastrics: aspects on animal health and welfare and regulatory framework for animal production	Professor Achille Schiavone - University of Torino
Management of microbiological risk in the production of food of animal origin	Production, quality and security of food of animal origin	Surveillance and outbreak investigation of foodborne bacteria in Denmark	Mia Torpdhal - Statens Serum Institut (Copenhagen, Denmark)
	Production, quality and security of food of animal origin	Surveillance and antimicrobial resistance in Salmonella enterica: a global challenge	Mia Torpdhal - Statens Serum Institut (Copenhagen, Denmark)
	Production, quality and security of food of animal origin	Occurrence of Listeria monocytogenes in the food processing environment, characterization of isolates, and its control	Kieran Jordan - Teagasc Food Research Centre, Moorepark, Fermoy Co. Cork (Ireland)
	Production, quality and security of food of animal origin	Challenge studies to determine the ability of food to support the growth of Listeria monocytogenes	Kieran Jordan - Teagasc Food Research Centre, Moorepark, Fermoy Co. Cork (Ireland)
	Production, quality and security of food of animal origin	Control sanitario de moluscos: monitoreo ambientales en Galicia	Jesus L. Romalde - Departamento de Microbiología y Parasitología Centro de Investigaciones Biológicas (CIBUS)-Facultad de Biología Universidade de Santiago de Compostela
	Production, quality and security of food of animal origin	Shellfish depuration: a realistic approach to avoid viral risks	Jesus L. Romalde - Departamento de Microbiología y Parasitología Centro de Investigaciones Biológicas (CIBUS)-Facultad de Biología Universidade de Santiago de

			Compostela
Official controls of foods of animal origin	Production, quality and security of food of animal origin	Legislazione comunitaria riguardante gli alimenti di origine animale	Alfredo Rossi - Veterinario dirigente Area Igiene Alimenti di Origine Animale, A.S.L. Benevento
	Production, quality and security of food of animal origin	Il controllo ufficiale nella Regione Sardegna: aggiornamenti e nuovi scenari	Dirigenti Servizi Veterinari, A.T.S. Sardegna
	Production, quality and security of food of animal origin	Il nuovo Regolamento (UE) 625/2017 relativo ai controlli ufficiali e il processo di adozione della legislazione terziaria: stato dell'arte e novità di rilievo	Maurizio Ferri - Veterinario dirigente Area Igiene Alimenti di Origine Animale, A.S.L. Pescara
	Production, quality and security of food of animal origin	I controlli ufficiali in Europa ed in Italia: un confronto fra alcuni modelli e prospettive della loro evoluzione in seguito all'applicazione dal Regolamento (UE) 625/2017	Cornelia Rossi - Broy Veterinario Ufficiale, Servizio Veterinario di Stato, Berlino
Animal Pathology	Animal Reproduction, pathology, production and welfare	Diagnosi malattie batteriche e virali	Ennio Bandino – Istituto Zooprofilattico Sperimentale della Sardegna
	Animal Reproduction, pathology, production and welfare	Malattie Virali	Annalisa Oggiano – Istituto Zooprofilattico Sperimentale della Sardegna
	Animal Reproduction, pathology, production and welfare	Prevention of hypocalcemia in dairy cattle	Dott. Joze Staric - University of Ljubljana · Clinic for reproduction and large animals
	Animal Reproduction, pathology, production and welfare	Eziologia e patogenesi delle malattie animali	Dott. Ciriaco Ligios – Istituto Zooprofilattico Sperimentale della Sardegna
	Animal Reproduction, pathology, production and welfare	Diagnosi malattie batteriche e virali	Dott. Ciriaco Ligios – Istituto Zooprofilattico Sperimentale della Sardegna
	Animal Reproduction, pathology, production and welfare	Griffon vulture conservation in mediterranean region	Dott. Stavrov Xirouchakis - University of Crete   UOC · Natural History Museum of Crete

## CONTACTS

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