



UNIVERSITÀ DEGLI STUDI DI PALERMO

Department: Biological, Chemical and Pharmaceutical Sciences and Technologies

A.Y. 2023/2024

DEGREE COURSE IN ANIMAL PHARMACEUTICALS AND NUTRACEUTICALS - ANIMAL PHARMACEUTICS AND NUTRACEUTICS -

Characteristics



Class of Bachelor's Degree
(BSc) on Pharmacy (L-29)



3 YEARS



PALERMO



PLANNED ACCESS



2278

Educational objectives

The educational programme aims at the acquisition of knowledge, skills and competences in the field of pharmaceutical sciences with particular reference to drugs intended for animals and nutraceuticals, functional foods, medical foods and food supplements intended for animals.

The degree course trains professionals with knowledge of veterinary drugs and of their impact on animal health and on the environment, the chemical composition and nutritional value of animal feed, their properties, supplements and nutraceuticals, and chemical quality and safety control of medicines intended for animals and nutraceuticals, with respect, namely, to the repercussions on food-producing animals.

The Degree Course in Animal Pharmaceuticals and Nutraceuticals is divided into 3 years and 180 ECTS

The training system of the degree course aims at providing, in the first two years, an in-depth theoretical preparation on the basic subjects together with a solid laboratory experience in the pharmaceutical and nutraceutical fields. The laboratories will be individual, allowing the student to carry out the experimental exercise in practice. Between the second and third year students will study in depth specific topics mainly in the field of pharmaceutical sciences with particular reference to drugs intended for animals and nutraceuticals, functional foods, medical foods and food supplements intended for animals.

The course will also enable students to carry out a period of training internship (9 credits) in companies and institutions in the area, many of which have already expressed their availability during the preliminary consultations to define shared collaborations in this sense. The course concludes with a final exam which, in accordance with DR 1810/2018, consists of an oral discussion on a topic chosen by the graduating student from a list of topics which is published by the CdS at the beginning of each academic year. Among the topics proposed, topics developed during the internship activity may also be indicated.

Graduates acquire the necessary skills to carry out professional activities in different fields of application:

- 1) Quality control of veterinary drugs and nutraceuticals and food matrices of animal and vegetable origin. In particular, graduates will acquire knowledge, skills and abilities related to the determination of the chemical composition of veterinary drugs and nutraceuticals, functional foods, medical foods and complementary and medicated feed intended for animals. Particular attention will be given to the determination of the chemical composition, to the indications for use as well as to aspects relating to chemical and microbiological contamination of the same.
- 2) Formulation of veterinary drugs and nutraceuticals and complementary feed and medicated feed.
- 3) Information on these products with respect to the chemical and biological characteristics of the micro and macronutrients, their bioavailability and any changes induced by the processes of production, conservation and use.
- 4) Technical support activities on the chemical composition and nutritional value of complementary feeds, nutraceuticals, functional and medical foods for professionals working in the animal feed industry and livestock farms.
- 5) Medical-scientific information for the medical-veterinary and pharmaceutical classes.

Professional opportunities

Profile:

Production technician of drugs, complementary feed, medicated feed, healthy veterinary food and products.

Functions:

Graduates in Animal Pharmaceuticals and Nutraceuticals work as technical specialists in the aspects related to the production processes of the pharmaceutical, animal feed and animal health products industry (supplement food, biomedical devices, etc.) and to the related quality control in accordance with current regulations (in particular those codified in the pharmacopoeias) and assist specialists working in the sector.

Legenda: Per. = periodo o semestre, Val. = Valutazione (V=voto, G=giudizio), TAF= Tipologia Attività Formativa (A=base, B=caratterizzante, C=Affine, S=stages, D=a scelta, F=altre)

Skills:

- 1) Technical skills in the manufacture and management of the production process of drugs, agro pharmaceuticals and products for health.
- 2) Technical skills on products and processes of the pharmaceutical, chemical, agrochemical, food, medical-surgical aids industry and animal health products.
- 3) Methodological and technical skills in the quality control (QC) of processes and products in manufacturing industry (namely pharmaceutical, chemical, food and animal health products);
- 4) Expertise in regulatory processes relating to veterinary drugs, from the registration and marketing authorization to the control of production plants and manufacturing quality.
- 5) Technical skills in research and development (R&D) in the pharmaceutical and animal health products fields.

Professional opportunities

Pharmaceutical, feed and animal health products (complementary feed, medicated feed, etc.), food and agrochemical industry, research and development, production, quality control, regulatory activities and quality systems; private and public companies in the chemical-pharmaceutical sector performing analyses, studies and design of drugs and health products for animals; public and private research and experimentation agencies for medicines and products for animal health and environmental protection.

Profile:

Pharmaceutical representative and communicator of medicines and animal health products

Functions:

Graduates in Animal Pharmaceuticals and Nutraceuticals work as pharmaceutical representative and communicators, experts of drugs and specific products for animal health and assist specialists working in the sector

Skills:

- 1) technical skills on products and processes of the pharmaceutical, chemical, agrochemical, food, medical-surgical aids and animal health products industry.
- 2) skills and ability to provide information/illustration/transmission/dissemination of news with healthcare personnel on actions, advantages, contraindications, news on veterinary drugs, medical devices, animal health products, animal food supplements

Professional opportunities:

Pharmaceutical, feed and animal health products, food and agrochemical industries, as a pharmaceutical representative.

Final examination features

The final test has the objective of assessing the level of maturity and critical skills of the undergraduate, with respect to learning and to the acquired knowledge, on completion of the activities provided by the course syllabus. In accordance with DR 1810/2018, the final exam consists of an oral discussion on a topic chosen by the graduating student from a list of topics published by the Board of the Degree Course at the beginning of each academic year. Among the topics proposed, topics developed during the internship activity may also be indicated.

Subjects 1 ° year	CFU	Sem.	Val.	SSD	TAF
22950 - ANIMAL BIOLOGY AND ZOOLOGY	12	1	V		
- ANIMAL BIOLOGY Mauro(RD)	6	1		BIO/05	A
- ZOOLOGY Arculeo(PO)	6	1		BIO/05	A
22949 - BOTANY FOR VETERINARY SCIENCE AND PHARMACOGNOSIS - INTEGRATED COURSE	12	1	V		
- PHARMACOGNOSIS Venturella(RU)	6	1		BIO/14	B
- VETERINARY BOTANY Troia(RD)	6	1		BIO/02	C
19181 - PHYSICS WITH ELEMENTS OF MATHEMATICS D'Oca(PA)	6	1	V	FIS/07	A
22945 - APPLIED MICROBIOLOGY FOR PRODUCTS FOR ANIMALS Presentato(RD)	6	2	V	BIO/19	B
01900 - GENERAL AND INORGANIC CHEMISTRY Terenzi(PA)	6	2	V	CHIM/03	A

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Subjects 1 ° year	CFU	Sem.	Val.	SSD	TAF
22947 - PHYSIOLOGY OF ANIMAL NUTRITION AND ANIMAL FEED <i>Todaro(PA)</i>	8	2	V	AGR/18	C
20262 - COMPUTING SKILLS	3	2	G		F
15638 - SAFETY IN LABORATORIES AND IN THE WORKPLACE	1	2	G		F
20692 - ENGLISH LANGUAGE SKILLS - EQUIVALENT TO LEVEL B1	6	2	G		E

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Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
01799 - ANALYTICAL CHEMISTRY <i>Bongiorno(PA)</i>	6	1	V	CHIM/01	B
01933 - ORGANIC CHEMISTRY <i>Rizzo(RD)</i>	6	1	V	CHIM/06	A
22961 - VETERINARY BIOCHEMISTRY <i>Allegra(PO)</i>	6	1	V	BIO/10	A
22958 - VETERINARY DRUG ANALYSIS <i>Plescia(RU)</i>	8	1	V	CHIM/08	B
22959 - ANIMAL NUTRACEUTICS AND FOOD CHEMISTRY FOR ANIMALS - INTEGRATED COURSE	12	2	V		
- ANIMAL FOOD CHEMISTRY <i>Avellone(PA)</i>	6	2		CHIM/10	B
- ANIMAL NUTRACEUTICS <i>Barraja(PO)</i>	6	2		CHIM/08	A
22962 - DESIGN AND DEVELOPMENT OF NUTRACEUTICALS, COMPLEMENTARY FEED AND MEDICAL FEED <i>Lauria(PO)</i>	6	2	V	CHIM/08	B
22963 - INFECTIOUS DISEASES AND ANIMAL WELLBEING	8	2	V	VET/07	C
Free subjects (suggested)	12				D

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Subjects 3 ° year	CFU	Sem.	Val.	SSD	TAF
22970 - DOSAGE FORMS TECHNOLOGIES OF VETERINARY DRUGS AND NUTRACEUTICALS <i>Cavallaro(PO)</i>	8	1	V	CHIM/09	B
22971 - PHARMACOLOGICAL BASES IN VETERINARY SCIENCE <i>Venturella(RU)</i>	6	1	V	BIO/14	B
22968 - REGULATIONS ON FOOD, HEALTH PRODUCTS AND VETERINARY DRUGS <i>Scialabba(RD)</i>	6	1	V	CHIM/09	B
22969 - VETERINARY PHARMACEUTICAL CHEMISTRY <i>Diana(PO)</i>	8	1	V	CHIM/08	B
22966 - INDUSTRIAL PRODUCTION AND QUALITY CONTROL OF VETERINARY DRUGS AND NUTRACEUTICAL PRODUCTS <i>Fiorica(PA)</i>	9	2	V	CHIM/09	B
13351 - ADVANCED SKILLS RELATED TO THE LABOUR MARKET	1	2	G		F
13121 - PRACTICE	9	2	G		F
05917 - FINAL EXAMINATION	3	2	V		E

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Subjects 3 ^o year	CFU	Sem.	Val.	SSD	TAF
Free subjects (suggested) II	6				D
	56				

OPTIONAL SUBJECTS

Free subjects (suggested)	CFU	Sem.	Val.	SSD	TAF
22965 - ELEMENTS OF ANIMAN HUSBANDRY	6	2	V	AGR/17	D
22967 - NEW CHEMICAL-PHARMACEUTICAL APPROACH AGAINST ANTIBIOTIC RESISTANCE <i>Montalbano(PA)</i>	6	2	V	CHIM/08	D

Free subjects (suggested) II	CFU	Sem.	Val.	SSD	TAF
22964 - VETERINARY MEDICAL DEVICES AND REGULATIONS <i>Cavallaro(PO)</i>	6	2	V	CHIM/09	D

PROPAEDEUTICAL TEACHINGS

22966 - INDUSTRIAL PRODUCTION AND QUALITY CONTROL OF VETERINARY DRUGS AND NUTRACEUTICAL PRODUCTS

22970 - DOSAGE FORMS TECHNOLOGIES OF VETERINARY DRUGS AND NUTRACEUTICALS

22968 - REGULATIONS ON FOOD, HEALTH PRODUCTS AND VETERINARY DRUGS