General information		
Academic subject	**TOXICOLOGY OF RESIDUES IN FOOD AND PHARMACOSURVEILLANCE**	
Degree course	Safety Of Food Of Animal Origin And Health	
Academic Year	2021/2022	
European Credit Transfer and Accumulation System (ECTS)		5
Language	Italian	
Academic calendar (starting and ending date)	II Semester	
Attendance	Not Mandatory	

Professor/ Lecturer	
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Department and address	Veterinary Medicine Campus – Valenzano (BA)
Virtual headquarters	Microsoft Teams room. Access code: 8pz033x
Tutoring (time and day)	Tuesday and Thursday, 3:00 PM – 5:00 PM, by appointment only

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Syllabus	
Learning Objectives	The student must learn the fundamentals of the residual problem and the implications with public health, in particular, must know the kinetic mechanisms that lead to the formation of residual of xenobiotics in the tissues of food-producing animals and of the experimental practice that allows the evaluation of toxicological risk. They must also know the influence of environmental pollution on the food-producing animals and be able to prepare control and prevention plans.
Course prerequisites	No prerequisites are required
Contents	**General concepts** ➢ Definition of residue. ➢ Classification of residues. ➢ Factors influencing the formation of residues in animal species of zooeconomic interest ➢ kinetics, dynamics, biotransformation and elimination of xenobiotics from the animal organism ➢ Bioavailability and toxicity of residue relay ➢ Toxicological risk assessment; ➢ Direct and indirect toxicological risks related to the intake of residues. ➢ Community and national regulations in force regarding residues. **Special part** ➢ Acceptability of toxicological risk ➢ Definition of the Maximum Residual Limits for residues derived from substances of voluntary use ➢ Drugs; ➢ Food supplements; ➢ Additives ➢ pharmacosurveillance. ➢ Tolerability of toxicological risk ➢ PTWI for residues derived from environmental contaminants ➢ Dioxins,

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	➢ Heavy Metals, ➢ PAHs, ➢ Bio-contaminants.
Books and bibliography	Toxicology – Gary D. Osweiler Tossicologia e Sicurezza degli Alimenti- Derache Farmacologia Veterinaria - Belloli C, Carli S, Ormas P. II edizione. Idelson-Gnocchi (Napoli)
Additional materials	Didactic supports are provided by the teacher at the beginning of the course, and they are available in the Microsoft Teams room.

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
75	50	25	75
ECTS			
6	5	1	-

Teaching strategy	Teaching will be mainly based on the technology enhanced active learning (TEAL) methodology. It combines lectures, which remain the main teaching phase, with problem solving, case study, and roleplaying games. The latter ones will allow the integration of information through simulations and study of actual (or verisimilar) situations, to achieve a full learning process leading to the consolidation of knowledge and to the building of ability and competencies. Lectures weight will be reduced during practical training, when more room will be left to problem solving and learning by doing, which allow using and strengthening of logical thinking applied to actual problems, and support the awareness of strategies and techniques, explained during theoretical lessons, to support the building of abilities and competencies. The whole teaching process will be carried out by using iconic, verbal, and graphic communication models, sustained by the availability of technical supports. Teaching will be held in presence but, if made necessary by events linked to the COIVD-19 pandemics, remote lessons will be administered.
Expected learning outcomes	
Knowledge and understanding on:	At the end of the course, the student will acquire knowledge and understanding related to: • The general and basic principles on the interaction between different xenobiotics and animals intended for food production. • The legislation relating to the correct and conscious use of the drug to protect the health of animals and their products and to avoid exposure of the consumer to toxicological risks related to their presence in foods of animal origin • the cycle, the environmental impact, the penetration into the trophic chains and the toxicity of the most common environmental pollutants. • the environmental conditions that favour the development and formation of bio-contaminating substances and their impact with animal production and public health.
Applying knowledge and understanding on:	At the end of the course, the student must be able to: • Identify the sources of exposure of animals to the various xenobiotics • Prevent any exposure to substances potentially dangerous for animals and their productions.

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	• Evaluate the risks associated with the exposure of toxic substances harmful to the health of animals and their productions. • Act promptly to protect the environment, animals and humans. • arrange collective protection plans and the necessary interventions to protect the health of animals and humans. • be able to implement supply chain controls and take preventive measures to avoid exposure of animals to pollutants. • Collect, store and transport biological samples and request appropriate analytical investigations from the analysis laboratories • Correctly identify the conditions that affect the quality and safety of products of animal origin, to exclude productions that are potentially dangerous for human health due to the presence of residues of xenobiotic substances.
Soft skills	Autonomy of judgment • The student. at the end of the course, must be able, in full autonomy, to adopt the best strategies to safeguard the quality of animal production and protect the consumer from the risk associated with the exposure of xenobiotic substances present in O.A. foods. Communication skills • The student. at the end of the course, must be able to communicate, using the correct terminology, and to interact with colleagues and the scientific community, but also with breeders, processing industries and health authorities Ability to learn independently • Self-learning and keeping up-to-date on the development, use and risk potential of substances used in livestock. • Access the scientific databases for any further information on the toxic potential of the various xenobiotics.

Assessment and feedback	
Methods of assessment	The exam takes place orally on the dates established by the exam calendar. During the course, self-assessment tests will be offered to verify learning in itinere.
Evaluation criteria	Knowledge and understanding: • The student must demonstrate that he has acquired in an organic and in-depth way the knowledge of the basic principles of the residual problem, of the potential risks associated with the presence of xenobiotic residues in the foodstuffs of O.A. and the actions necessary to prevent, protect and safeguard animal production and the health of consumers. Applied knowledge and understanding: • The student must demonstrate that they have acquired adequate skills in identifying sources, routes of exposure and ways of forming residues. Autonomy of judgment: • The student must demonstrate ability to implement control plans to assess the presence of xenobiotic residues in O.A.'s food. Communication skills: • The student must demonstrate good ability to present the topics studied and be able to use scientific terminology appropriately Ability to learn: • The student must demonstrate the ability to autonomously rework the acquired knowledge and be able to access scientific literature and databases for continuous updating.
Criteria for assessment and attribution of the final mark	The final mark of the module is expressed in thirtieths, and a mark of no less than 18 is needed to pass it.

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	The student must demonstrate that he has acquired adequate knowledge and skills on the topics included in the study program, in particular he must know the xenobiotics potentially present in residual quantities in products derived from animals, their chemical nature, the sources and processes of exposure, the residual capacity in foodstuffs, the processes of elimination and possible accumulation, the risk connected with their presence, the legislation to protect the consumer. The vote is expressed out of thirty by the examination committee, made up of the lecturer and the professors of the scientific sector.
Additional information	

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