

COURSE OF STUDY	LAND AND ENVIRONMENTAL SCIENCE AND TECHNOLOGY (L-25)
ACADEMIC YEAR	2023/2024
ACADEMIC SUBJECT	Sustainable livestock farming (6 ECTS)

General information	
Academic subject	<i>Sustainable livestock farming</i>
Degree course	<i>Land and Environmental Science and Technology</i>
Academic Year	<i>Second</i>
European Credit Transfer and Accumulation System (ECTS)	6
Language	<i>Italian</i>
Academic calendar (starting and ending date)	<i>1st semester (09/25/2023 – 01/19/2024)</i>
Attendance	<i>Not obligatory</i>

Professor/ Lecturer	
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Virtual headquarters	
Tutoring (time and day)	Monday and Wednesday, from 14.30 to 15.30. Upon appointment requested by e-mail, tutoring may be performed also in other days and time and by e-learning platforms.

Syllabus	
Learning Objectives	<i>The course aims to provide basic knowledge relating to the morpho-functional, ethological and reproductive features of livestock and wildlife animals. Animal farming technologies will be studied in different environments, with particular reference to nutrition, reproductive aspects, animal welfare, quality of animal productions and the main factors that influence them. Sustainable farming techniques and organic farming will also be explored.</i>
Course prerequisites	<i>Basic knowledge of chemistry and biology.</i>
Contents	<i>Knowledge of the relationship between animal breeding and the environment: consistency and geographical distribution of farms in different environments; Principles of animal nutrition and feeding in different species; Knowledge of the chemical and nutritional value of feeds and by-products commonly used in the formulation of animal diets; Basics of feed rationing in relation to animal requirements; Principles of animal genetics: inheritance of productive traits (milk, meat, eggs); methods of reproduction; genetic selection and improvement; Cattle: breeding technologies for the production of milk and meat; Pigs: breeding technologies for meat production; Breeding technologies of Equidae; Sheep and Goats: breeding technologies for the production of milk and meat; Poultry: farming technologies for broilers and laying hens; Quality features of livestock productions: milk, meat, eggs and wool;</i>

	<p><i>Principles of management and breeding techniques of livestock and wildlife animals;</i> <i>Environmental impact of livestock farms;</i> <i>Sustainable and organic farming systems.</i></p>
Books and bibliography	<ul style="list-style-type: none"> • <i>Antongiovanni M., Gualtieri M. Nutrizione e alimentazione animale. Edagricole, 1998.</i> • <i>Balasini D. Zootecnica speciale. Principali razze di animali domestici e tecniche di allevamento per le diverse produzioni. Edagricole scolastico, 1991.</i> • <i>Balasini D. Zootecnica Generale. Edagricole scolastico, 1995.</i> • <i>Borgioli E. Nutrizione e alimentazione degli animali agricoli. Edagricole, 1991.</i> • <i>Marsico G. Animali di interesse faunistico e venatorio. Allevamento e gestione. Appunti di produzione animale e qualità delle materie prime. Studi e ricerche in agricoltura, Ambiente e territorio, 3. Aracne Editrice, 2016.</i> • <i>Marsico G., Tarricone S. Cinghiali, suini e ibridi. Studi e ricerche in agricoltura, Ambiente e territorio, 2. Aracne Editrice, 2014.</i> • <i>Marsico G., Tarricone S., Appunti di produzione animale e qualità delle materie prime. Studi e ricerche in agricoltura, Ambiente e territorio, 7. Aracne Editrice, 2018.</i> • <i>Martin Rosset W. L'alimentazione dei cavalli. Edagricole, 1994.</i>
Additional materials	<ul style="list-style-type: none"> • <i>Lesson notes.</i> • <i>Scientific papers.</i>

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/Self-study hours
Hours			
150	32	28	90
ECTS			
6	4	2	0
Teaching strategy		<i>The course contents will be treated by means of PowerPoint presentations and videos in the classroom.</i>	
Expected learning outcomes			
Knowledge and understanding on:		<ul style="list-style-type: none"> ○ <i>Relationship between animal breeding and the environment: consistency and geographical distribution of farms in different environments;</i> ○ <i>Principles of animal nutrition and feeding in different species;</i> ○ <i>Feeds commonly used in livestock production (pasture, haylage, silage, by-products, etc.) in relation to animal species (cattle, sheep and goats, pigs, horses, poultry);</i> ○ <i>Principles of feed formulation in relation to animals' requirements, in compliance with current regulations;</i> ○ <i>Principles of animal genetics: inheritance of productive traits (milk, meat, eggs); methods of reproduction; genetic selection and improvement;</i> ○ <i>Cattle: breeding technologies for the production of milk and meat;</i> ○ <i>Pigs: breeding technologies for meat production;</i> ○ <i>Breeding of Equidae;</i> ○ <i>Sheep and Goats: breeding technologies for the production of milk and meat;</i> ○ <i>Poultry: farming technologies for broilers and laying hens;</i> 	

	<ul style="list-style-type: none"> ○ <i>Production and quality of milk, meat, eggs and wool;</i> ○ <i>Management and breeding techniques of livestock and wildlife animals;</i> ○ <i>Environmental impact of livestock farms;</i> ○ <i>Sustainable and organic farming systems.</i>
Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ <i>Ability to put in relation yield and quality of livestock productions;</i> ○ <i>Ability to describe the features of animal products and the factors that influence their production.</i>
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ The student must show to be able to formulate personal judgments, including the autonomous processing and application of learned knowledge and skills. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student must be able to describe the context by using a clear and proper terminology. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ The student must be able to re-elaborate the concepts learned, demonstrating the ability to solve new and complex theoretical-practical problems in other contexts.

Assessment and feedback	
Methods of assessment	<i>Profit will be assessed by an oral exam that will focus on the topics of the program. The student must show the skills acquired during the course, i.e. the knowledge of: the principles of animal nutrition; the effects of animal nutrition on the quality of livestock production; the proper terminology to describe livestock production.</i>
Evaluation criteria	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student must prove knowledge and understanding of the teaching contents, including the ability to process data, set theoretical schemes and make critical interpretation of the concepts. • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student must show application skills, also by approaching problems and finding possible solutions. • <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ The student must show to be able to formulate personal judgments, including the autonomous processing and application of learned knowledge and skills. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student must show application skills, also by approaching problems and finding possible solutions. • <i>Communication skills</i> <ul style="list-style-type: none"> ○ The student must be able to use in a clear and proper way the scientific and technical terminology. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ The student must be able to re-elaborate the concepts learned, demonstrating the ability to solve new and complex theoretical-practical problems.
Criteria for assessment and attribution of the final mark	<i>For students enrolled in the current year, an exemption test is foreseen, halfway through the course, which consists of an oral exam. The outcome of this test, expressed as a vote out of thirty, is valid for one academic year. During the oral exam, the acquisition of knowledge on the topics developed during the theoretical and theoretical-practical lessons in the classroom, in the laboratory</i>

	<p><i>and/or in livestock/feed companies will be ascertained, as reported in the Academic Regulations of the Degree Course (art. 9) and in the related study plan (Annex A).</i></p> <p><i>The student will have to demonstrate the acquisition of: knowledge of the principles of animal nutrition; the ability to use specific language; knowledge and skills related to the influence of animal feed on the yield and quality of livestock production.</i></p>
Additional information	