

General Information	BACELOR DEGREE IN BIOTECHONOLOGIES
Title of the subject	Livestock biotechnologies
Degree Course (class)	INDUSTRIAL AND AGRI-FOOD BIOTECHNOLOGIES
ECTS credits	6
Compulsory attendance	YES
Language	ITALIAN
Academic year	2020-2021

Subject Teacher		
Name and Surname	ELENA CIANI	
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Place and time of reception	Department of Biosciences, Biotechnologies and Biopharmaceutics (room 45, 4th floor, new building of Biological Departments, Campus E. Quagliariello, Via Orabona 4, 70126 BARI) Reception upon request: Tuesday 2.30 PM - 4.30 PM Wednesday 10.30 AM -12.30 AM	
ECTS credits details	Discipline sector (SSD)	Area
	AGRI7	---

Study plan schedule	Year of study plan		Semester	
	III		II	
Time management	Lessons	Laboratory	Exercises	Total
CFU	5	1		6
Total hours	125	25		150
In-class study hours	40	12		52
Out-of-class study hours	85	13		98

Syllabus	
Prerequisites / Requirements	Knowledge of the basic concepts of classical genetics
Expected learning outcomes (according to Dublin descriptors)	
Knowledge and understanding	Knowledge of molecular principles and techniques and data processing methodologies for estimating and monitoring genetic variability within and between livestock populations and for the analysis of quantitative traits of commercial interest. Knowledge of the principles of management, protection and improvement of livestock resources in the different farming systems
Applying knowledge	Ability to apply the most innovative principles and tools for monitoring, management, protection and improvement of livestock resources Ability to add value to products of animal origin through the consolidation of their link with the breed and the territory

Making informed judgments and choices	Ability to understand and contextualize the issues related with monitoring, management, protection and improvement of livestock populations, identify the best operational strategies, adapt them to the specific context of action and foresee their long-term implications.
Communicating knowledge	Ability to synthesize and expose the acquired contents in a critical and clear way Ability to use, in oral form, both the Italian language and another language of the European Union (with preference for the English one), with specific reference to the disciplinary lexicons acquired during the course
Capacities to continue learning	Ability to identify, select and acquire new cognitive elements, also through information technologies, and to link them through logical schemes and critical vision

Study Program

Content	<p>The contents of the course concern the study of principles and techniques applied (i) to the study of genetic variability in livestock species, (ii) to the study of the molecular bases of phenotypes of zootechnical interest, (iii) to the management and protection of animal diversity, (iv) to the implementation of genetic improvement schemes for livestock populations, (v) to the identification and traceability of the origin of livestock products.</p> <p>Emphasis will be given to the potential offered, in the above-mentioned areas, by the use of molecular markers, of which the main classes (STR, SNP) will be discussed, the main advantages and disadvantages and the main methods of analytical investigation will be illustrated.</p> <p>Notes will be given to recall and deepen the concepts underlying population genetics (Hardy-Weinberg equilibrium) and the study of the evolutionary phenomena impacting on genomes.</p> <p>The main methodological approaches for understanding the genetic architecture underlying the quantitative traits of zootechnical interest will be illustrated.</p> <p>Drawing on real examples, the methodological aspects related to the definition of actions aimed at the conservation and recovery of populations threatened by genetic erosion phenomena will be dealt with in an interactive way.</p> <p>The theoretical concepts at the basis of modern genetic improvement will be recalled, with reference to the potential deriving in this area from the use of genomic information.</p> <p>Specific applications of genetic markers, such as paternity tests and population assignment tests, will be illustrated.</p> <p>Finally, a critical analysis of the main online resources (databases, bioinformatics tools, etc.) relating to the topics addressed in the course will be carried out.</p>
Bibliography and textbooks	<ul style="list-style-type: none"> • P.J. Russell – Genetica – Edises • T. Brown – Genomi – Edises • G. Pagnacco, Genetica applicata alle Produzioni Animali, Citta Studi Edizioni, Milano • FAO – World Watch List for Domestic Animal Diversity (2000) • FAO – Global Plan of Action for Animal Genetic Resources

	<p>(2007)</p> <ul style="list-style-type: none"> • FAO – State of the World’s Animal Genetic Resources for Food and Agriculture (2007) • FAO - The Second Report on the State of the World’s Animal Genetics Resources for Food and Agriculture (2015) • FAO - Phenotypic characterization of animal genetic resources (2012) • FAO - Molecular genetic characterization of animal genetic resources (2011) • Additional material provided by the teacher
Notes to textbooks	
Teaching methods	The topics of the course will be treated with the aid of electronic presentation tools and classroom reading of extracts from reference texts. Active interaction by students will be encouraged through the discussion of real or simulated problems and cases.
Assessment methods (oral, written, ongoing assessment)	The exam consists of an oral test on the topics developed during the hours of theoretical and practical lessons in the classroom.
Evaluation criteria (describe criteria for each of the above expected outcomes)	<p>Knowledge of molecular principles and techniques and data processing methodologies for estimating and monitoring genetic variability within and between livestock populations and for the analysis of quantitative traits of commercial interest. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18).</p> <p>Knowledge of the principles of management, protection and improvement of livestock resources in the different farming systems. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18)</p> <p>Ability to apply the most innovative principles and tools for monitoring, management, protection and improvement of livestock resources. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18)</p> <p>Ability to add value to products of animal origin through the consolidation of their link with the breed and the territory. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18)</p> <p>Ability to understand and contextualize the problems of monitoring, management, protection and improvement of livestock populations, identify the best operational strategies, adapt them to the specific context of action and foresee their long-term implications. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18)</p> <p>Ability to synthesize and expose the acquired contents in a critical and clear way. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18)</p> <p>Ability to use, in oral form, both the Italian language and another language of the European Union (with preference for the English one), with specific reference to the disciplinary lexicons acquired during the course. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18)</p>

	Ability to identify, select and acquire new cognitive elements, also through information technologies, and to link them through logical schemes and critical vision. → Praiseworthy (30, 30 and praise); accurate (27-29); satisfactory (23-26); sufficient (18-22); insufficient (<18)
Further information	