UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2018/2019		
BACHELOR'S DEGREE (BSC)	AGRIFOOD SCIENCES AND TECHNOLOGIES		
INTEGRATED COURSE	ANIMAL AND FISH PRODUCTS		
CODE	18516		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	BIO/07, AGR/19		
HEAD PROFESSOR(S)	BONANNO ADRIANA	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)	MESSINA CONCETTA MARIA	Professore Ordinario	Univ. di PALERMO
	BONANNO ADRIANA	Professore Ordinario	Univ. di PALERMO
CREDITS	9		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	**BONANNO ADRIANA**		
	Tuesday 09:00 13:00	Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4 ingresso G stanza 70	
	Wednesday 09:00 13:00	Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4 ingresso G stanza 70	
	Thursday 09:00 13:00	Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4 ingresso G stanza 70	
	MESSINA CONCETTA MARIA		
	Monday 13:00 14:00	diSTeM: Via archirafi o Vle delle Scienze Ed 16, da concordare via email col docente	

DOCENTE: Prof.ssa ADRIANA BONANNO

PREREQUISITES	Knowledge of chemistry and biology are required.
LEARNING OUTCOMES	LEARNING OUTCOMES 1.Knowledge and understanding To have knowledge for understanding the physiological processes on the basis of animal productions, and evaluating the products of animal origin through the examination of the main characteristics that contribute to define their quality. 2.Applying knowledge and understanding To have the ability to identify and modulate, in livestock and fish farms, the technical and managerial elements that, while respecting animal welfare and environmental sustainability, could contribute to develop efficient production processes and obtain products of high quality standards by which to meet the needs of final consumers and the processing industry. 3.Making judgements To have the ability to assess the implications and the production results connected to technical and managerial interventions implemented in livestock and fish farms. 4.Communication To have the ability to expose, either orally or through the writing of a paper, arguments focusing on techniques and management applicable in livestock and fish production systems, and to discuss, also with a non-expert audience, about the importance of the introduction of solutions and innovations with positive reflections on animal welfare, products quality and environment. 5.Lifelong learning skills To have with some autonomy the ability to use the specific language of these topics, update the knowledge by examining the technical and scientific publications related to the livestock and fisheries sector, and to be able to undertake further advanced studies.
ASSESSMENT METHODS	The learning evaluation is based on a single oral exam conducted in the same exam session for the two modules. The exam consists of a colloquy in which the student have to answer to a minimum of six questions designed to ascertain the acquired skills, in accordance with the expected learning outcomes, namely the knowledge and understanding of the topics, the ability to apply the knowledge and interpret the related results, in addition to language ownership and adequacy in the oral exposition. The exam is evaluated with a final mark expressed on a 18-30-point scale, and determined by the weighted average of the marks attributed to the single modules for which, in turn, the student's participation in the lessons is considered positively. To overcome the exam, and then achieve a mark higher than 18/30, the student has to show the possession of a minimum level of skills and a sufficient ability in oral exposition. The lack of an acceptable knowledge of the topics lead to an insufficient evaluation. The maximum score (30/30 with distinction) is reached by the student who participated in the lessons, and shows to have achieved excellent knowledge and abilities.
TEACHING METHODS	Frontal lessons (70% of time), laboratory activities and technical visits to livestock and fish farms.

MODULE
SYSTEMS AND PRODUCTION OF ANIMAL SPECIES

Prof.ssa ADRIANA BONANNO

SUGGESTED BIBLIOGRAPHY

MATERIALE DIDATTICO di RIFERIMENTO
TESTO: G. Bittante, I. Andrighetto, M. Ramanzin, Tecniche di produzione animale, LIVIANA Editore
Lezioni in Power Point

ALTRI TESTI CONSIGLIATI
P.G. Monetti, Allevamento dei bovini e dei suini, GIRALDI Editore
G. Succi, Zootecnia speciale, Editrice CLESAV.
G. Succi, I. Hoffmann, La vacca da latte, Editrice CITTA' STUDI.
D. Balasini, Zootecnica Speciale, EDAGRICOLE.
I. Giavarini, Tecnologie avicole, EDAGRICOLE
S. Cerolini S., M. Marzoni Fecia di Cossato, I. Romboli, A. Schiavove, L. Zaniboli, Avicoltura e Coniglicoltura, Point Veterianie Italie (PVI) Editore

AMBIT	50128-Discipline della tecnologia alimentare
INDIVIDUAL STUDY (Hrs)	90
COURSE ACTIVITY (Hrs)	60

EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims to provide students with the scientific and technical knowledge to pursue and evaluate the technological, hygienic, sanitary and organoleptic quality, and the nutritional and health properties of the foods (milk, meat and eggs) obtained from the main livestock species (cattle, sheep, goats, pigs, poultry). The role of physiology, genetic, housing, feeding and management in the farming system is deepened with regard to animal welfare and products quality. The legislative rules establishing the hygienic requisites of animal products and regulating their quality checking, traceability and certification are examined.

SYLLABUS

Hrs	Frontal teaching
2	Introduction to the course. General description of livestock sectors in Italy.
6	DAIRY PRODUCTION. Main dairy cattle, sheep and goats breeds. Activity of their breeders association with particular reference to genetic improvement programs.
6	Milk: synthesis and secretion mechanisms; manual and mechanical milking; lactation curve and milk composition; milk quality traits; health standards for milk and structures for production, storage and processing according to current legislation.
4	Dairy farming systems and management: reproduction, feeding, housing and related milking plant; welfare conditions and evaluation of comfort, organic farming. Calf and heifer rearing.
4	Sheep and goats farming systems: reproduction, suckling and weaning of lamb, feeding, grazing techniques, housing and related milking plant.
8	MEAT PRODUCTION. Main Italian and foreign breeds. Precocity of development in relation to genetic type. Cross-breeding. Rearing of beef cows. Veal calves. European regulations for calves protection. Light and heavy calves. Transport and slaughter. Qualitative characteristics of the carcass and meat. Stressors and welfare assessment. Organic farming. Sheep meat production, carcass types and classification.
6	Pig meat production: genetic types, rearing of young males and females, boar and sow, reproduction, suckling and weaning of piglets, housing and feeding of fattening pigs, light and heavy pigs production, slaughter, characteristics and evaluation of carcass and pig meat, welfare, outdoor pigs farming system.
6	EGG-LAYING HENS and BROILER CHICKENS. Genetic types reared for eggs and meat. Reproduction and eggs deposition. Housing systems and feeding for chick, pullet, laying hens and reproducers. Rearing of broiler Slaughter. Eggs and meat quality. Welfare.

Hrs	Practice
6	Laboratory activities for the physico-chemical evaluation of foods of animal origin.
12	Farms technical visits.

MODULE
SOURCING AND QUALITY OF FISH PRODUCTS

Prof.ssa CONCETTA MARIA MESSINA

SUGGESTED BIBLIOGRAPHY

Jennings, Kaiser & Reynolds (2001). Marine Fisheries Ecology. Blackwell Science.
Cataudella & Carrada (2000). Un mare di risorse. Consorzio Uniprom, Roma. http://www.fishbase.org/search.cfm
AA.VV. (2001). Acquacoltura responsabile. Eds.: Cataudella & Bronzi. Uniprom Roma.
Stickney & McVey (2002). Responsible Marine Aquaculture. CABI Publishing, NY USA.

Bibliografia specifica.
Appunti a lezione.

AMBIT	10691-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	45
COURSE ACTIVITY (Hrs)	30

EDUCATIONAL OBJECTIVES OF THE MODULE

The main goal of the fish production module, is to transfer the knowledge on the effects of ecological factors and chain management, on the status and quality of fish production, "from sea to fork"; The main methods for assessing fisheries resources will be illustrated, as different types of fisheries, of different ecological value and of different environmental impacts, will be able to return productions of different quality and nutritional value to meet different markets; the module Will illustrate the role of aquaculture in satisfying the global, national and regional demand for fish products. The main methods of sustainable aquaculture in the Mediterranean and its resources will be presented. The indicators and methodologies for characterizing the quality of fishery products, both wild and farmed, will be defined: quality of resources, nutritional quality, shelf-life. It will be illustrated how local production can be exploited, both in fisheries and aquaculture, through the emphasis on intrinsic quality characteristics through traditional and innovative transformation processes through the adoption of environmental certifications to support quality Process and product and through brands of typicity and niche productions.

SYLLABUS

Hrs	Frontal teaching
4	Fisheries and aquaculture. Definition of fisheries; artisanal, industrial, fisheries; Demersal and pelagic fishing; Special fisheries and their effect on productions. Impact of fishing gear on the environment and fish production
3	Production and exploitation of fishery resources; Estimate of the production: Populations, and stock concept
3	Distribution of fisheries resources
3	Methods of evaluation of fish resources; Fishing effort measures; The estimate of biomass of demersal stocks; The management of fishing resources; The concept of sustainable fishing
4	Aquaculture production; The FAO Code of Conduct of responsible aquaculture; Aquaculture and environmental sustainability; biology of aquaculture; control of reproduction in aquaculture; farmed species
4	Extensive aquaculture; management of coastal areas; Intensive aquaculture; Forced cycle systems and environmental parameter monitoring; Continental aquaculture and mariculture; inshore and offshore aquaculture
3	Sustainability in aquaculture; Aquaculture and repopulation; Organic aquaculture. Quality of national and regional aquaculture products: quality markers. Distinction of farmed and wild product

Hrs	Practice
6	CASE STUDY: quality aspects of fish products, focus groups, laboratory tests or guided tours