



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2017/2018		
MASTER'S DEGREE (MSC)	FIRM AND QUALITY FOR THE AGRICULTURAL AND FOOD SYSTEM		
INTEGRATED COURSE	QUALITY OF ZOOTECHNICAL PRODUCTS AND ANIMAL FEED - INTEGRATED COURSE		
CODE	15382		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	AGR/19, AGR/18		
HEAD PROFESSOR(S)	TODARO MASSIMO	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)	DI GRIGOLI ANTONINO	Professore Associato	Univ. di PALERMO
	TODARO MASSIMO	Professore Associato	Univ. di PALERMO
CREDITS	9		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	<p>DI GRIGOLI ANTONINO</p> <p>Monday 10:00 12:00 Area Zootecnica - Dipartimento Scienze Agrarie, Alimentari e Forestali (Edificio 4 - Ingresso G - Stanza 70)</p> <p>Wednesday 10:00 12:00 Area Zootecnica - Dipartimento Scienze Agrarie, Alimentari e Forestali (Edificio 4 - Ingresso G - Stanza 70)</p> <p>TODARO MASSIMO</p> <p>Monday 10:00 12:00 Edificio 4 Ingresso G stanza n.18</p> <p>Thursday 10:00 12:00 Edificio 4 Ingresso G stanza n.18</p> <p>Friday 08:00 18:00 Al di fuori degli orari indicati tutti gli studenti possono inviare una mail per concordare un incontro</p>		

DOCENTE: Prof. MASSIMO TODARO

PREREQUISITES	Knowledge of general chemistry and general animal husbandry
LEARNING OUTCOMES	<p>Knowledge and understanding.</p> <p>Students will acquire knowledge on various quality parameters of livestock products and on the factors able to modify them, including animal feeding. Ability to independently meet the challenges of animal production and animal nutrition. Knowledge of the techniques and processes for the management of product quality. Knowledge of the principles of animal nutrition and animal feeding and their implications on the quality of products.</p> <p>Applying knowledge and understanding.</p> <p>Ability to identify and evaluate the professional interventions such as the choice of the breed, feeding, breeding techniques capable of modifying the quantity and quality of animal products (milk and meat) obtained by the main zootechnics species.</p> <p>Making judgments.</p> <p>Being able to indicate, in relation to the different conditions, the adoption of measures or technologies to improve the quantitative and qualitative aspects of livestock production. Ability to develop independent judgment with respect to the efficiency and effectiveness of livestock management and animal feeding choices and their implications on the quality and safety of animal products.</p> <p>Communication skills.</p> <p>Ability to present the results of technical and management actions, both in written and oral form, with clear technical-scientific language, understandable at all levels of the industry. Ability to support the importance of the envisaged interventions and to highlight their impact on the quality of livestock products.</p> <p>Learning skills.</p> <p>Ability to keep up to date through the consultation of the scientific publications of livestock sector. Ability to follow, using the knowledge acquired in the course, training of advanced stage.</p>
ASSESSMENT METHODS	Oral exam on 5 topics of the program, vote will be in thirty of thirty. Evaluation will be insufficient if the student demonstrates difficulty in focusing on the arguments required. As the degree of detail of the proven knowledge increases, the vote will gradually increase from 18 to 30. The excellent mastery of the topics known and the high capacity of language will determine the maximum vote: 30 cum laude.
TEACHING METHODS	Lectures, laboratory exercises, educational visit at dairy farms

MODULE QUALITY OF ZOOTECHNICAL PRODUCTS

Prof. ANTONINO DI GRIGOLI

SUGGESTED BIBLIOGRAPHY

Materiale utilizzato e discusso a lezione (disponibile su file.pdf).

A. Giussani. Il latte di qualità. Edizioni Edagricole.

G. Bittante, I. Andrighetto, M. Ramanzin, Tecniche di produzione animale, Liviana Editore.

P.G. Monetti, Allevamento dei bovini e dei suini, Giraldi Editore.

R. Parigi Bini, A. Someda De Marco. Zootecnica speciale dei bovini – Produzione della carne. Patron Editore.

AMBIT	50544-Discipline della produzione
INDIVIDUAL STUDY (Hrs)	90
COURSE ACTIVITY (Hrs)	60

EDUCATIONAL OBJECTIVES OF THE MODULE

Objective of this course is to impart knowledge about the parameters that identify the quality of productions obtained from the major farm animal species, ruminants and monogastrics.

In particular, both traditional and innovative management systems and breeding techniques will be examined, for bovine, sheep, goats, buffaloes, pigs and donkeys, for the production of milk, meat and wool.

The role that the technical and organizational choices play for production efficiency of livestock, with particular reference to quality of animal products will also be examined.

SYLLABUS

Hrs	Frontal teaching
2	Introduction to the course. General overview of livestock sectors in Italy, with particular reference to the dairy and meat sectors.
3	MILK PRODUCTION. Livestock production system and housing structures for different species. Hygienic and sanitary requirements of animal products and for production, processing and storage facilities, according to current legislation.
15	Milk: definition, synthesis and secretion mechanisms. Main factors affecting production and quality of milk. Physical and chemical parameters of milk (freezing point, specific gravity, pH, titratable acidity), and factors affecting them. Chemical and nutritional parameters of milk (lactose, fat, protein, casein, minerals, vitamins, enzymes, hormones, nutraceuticals) and factors affecting them. Organoleptic parameters of milk (aroma and flavor) and factors affecting them. Clotting ability of milk and factors affecting it. Hygienic and sanitary parameters of milk (somatic cells, microbial count, infectious agents and contaminants) and factors affecting them. Manual and mechanical milking of cows, ewes and goats and influence on milk production and quality. Mastitis: causes of emergence and influencing factors.
2	Wool and coat obtained from livestock species. Main quality parameters of wool.
3	Outlines on buffalo and donkey breeding; quality of products obtained from them.
9	BOVINE, PIG, OVINE AND CAPRINE MEAT PRODUCTION. Types of bovine, pigs, sheep and goats for slaughter. Outlines on the breeding of the different categories bred for meat production. Slaughter. Meat yield and influencing factors. Qualitative characteristics of bovine, swine, sheep and goats carcass and classification according to SEUROP grids.
9	Qualitative parameters of meat and factors (hygiene and sanitary, chemical, nutritional, technological, organoleptic and psycho-sociological) affecting them. Influence of farming systems on the quality of meat products. Meat labeling and current legislation.
2	Organic livestock production and quality of products.
Hrs	Practice
10	Visit of livestock holdings with milk and meat production. Visit of cheese factory and cheese aging center. The visits will take two days.
Hrs	Workshops
5	Laboratory analysis, of the main chemical and technological parameters of milk and meat.

**MODULE
ANIMAL ALIMENTATION**

Prof. MASSIMO TODARO

SUGGESTED BIBLIOGRAPHY

- 1) Bittante G., Andrighetto I., Ramanzin M. – Fondamenti di Zootecnica. Liviana Editore
2) Antongiovanni M. - Nutrizione degli animali in produzione zootecnica. Edagricole Editore

AMBIT	21005-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	45
COURSE ACTIVITY (Hrs)	30

EDUCATIONAL OBJECTIVES OF THE MODULE

The educational objective is to provide the knowledge related to animal feeding and nutrition and their effects on meat and milk quality. The course is structured so as to provide students with no knowledge of animal nutrition: the basics of physiology of digestion, chemical-physical assessment of livestock feeds in order to calculate the ration of a specific animal category on the basis of nutritional needs.

SYLLABUS

Hrs	Frontal teaching
4	Physiology of digestion in monogastrics and ruminants
2	Feed evaluation: chemical composition and use of energy and nitrogen
2	Digestibility and palatability of animal feed
2	Nutritional value: evaluation and calculation methods
1	Evaluation of feed proteins and their biological value
1	Feed intake and appetite regulation factors
2	Nutritional requirements depending on livestock production
2	Food Dismetabolie: acidosis, ketosis, fatty liver disease, hypocalcemia postpartum
2	The effects of animal feeding on milk quality
2	The effects of animal feeding on meat quality
2	Outlines of the calculation of the animal ration
Hrs	Practice
4	Visit to dairy farms and dairies
Hrs	Workshops
4	Laboratory analysis of livestock feed