



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali
ACADEMIC YEAR	2023/2024
MASTER'S DEGREE (MSC)	FIRM AND QUALITY FOR THE AGRICULTURAL AND FOOD SYSTEM
SUBJECT	ORGANIC GRASSLANDS AND ALPICULTURE
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50544-Discipline della produzione
CODE	20935
SCIENTIFIC SECTOR(S)	AGR/02
HEAD PROFESSOR(S)	DI MICELI GIUSEPPE Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	135
COURSE ACTIVITY (Hrs)	90
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	DI MICELI GIUSEPPE Monday 09:00 11:00 Studio del docente - Dip. SAAF Ed.4 Ingresso L, 2° Piano - studio 210 Friday 10:00 12:00 Studio del docente - Dip. SAAF Ed.4 Ingresso L, 2° Piano - studio 210

DOCENTE: Prof. GIUSEPPE DI MICELI

PREREQUISITES	no prerequisite
LEARNING OUTCOMES	Knowledge and understanding skills Acquisition of advanced methods and knowledge for understanding forage and their chemical properties. Acquisition of specific and technical understanding of forage system. Ability to apply knowledge and comprehension Ability to understand and organize autonomously studies both on forage system. Ability in judgement Ability to evaluate logics and results of sectorial studies on forage system and soil-plant-environment relationships. Ability to find autonomously hypothesis of solutions. Communication skills Ability to present results of forage studies/applications to heterogeneous audiences (scientists, technicians, farmers, policy makers, etc.), even using multimedia tools. Ability to interact and integrate with specialists in different disciplines. Ability to highlight and support the importance of forage system in any contexts. Ability to communicate efficiently technical and scientific justification when facing environmental issues and in forage crops. Ability to learn Ability in self-updating by reading of technical and scientific publications on topics of the forage crops. Acquiring skills and suitable language for pursuing further higher-level academic courses (i.e. Master, PhD) and for participating in seminars and qualifying courses on both forage crops.
ASSESSMENT METHODS	Students will be evaluated by one final oral exam on topics lectured in the course programme. Score ranges from 18 (minimum, elementary knowledge) to 30 cum laude (perfect knowledge and excellent ability of communication). Exam will start with a brief oral communication on a topic decided by the student, and will proceed with 4-6 questions randomly asked by the committee. Student knowledge will be evaluated considering answer correctness, language pertinence, ability in expressing logical connections among topics of soil science. Exam score will take into consideration the achievement by the students of the learning outcomes and educational objectives as described in the following paragraphs.
EDUCATIONAL OBJECTIVES	Objective of the course is to provide basic knowledge and applied about: forage production; forage management systems in hot-arid Mediterranean environments; eco-physiology of forage species; the relationships between forage production, quality and forage conservation issues in livestock farms.
TEACHING METHODS	The course (72 hours) is organised as follow: 50 hours of lectures in classroom, 22 hours of exercises in field. Reading materials and slides of lecture presentations will be provided in course. While lecturing a selection of some short educational video documentaries and multimedia resources will be projected and commented to stimulate learning capacity of students. Integral part of the course is a field trip in a suitable location.
SUGGESTED BIBLIOGRAPHY	1) Baldoni, R., Giardini L., 2000. Coltivazioni erbacee: Foraggiere e tappeti erbosi, III volume. Patron Editore, Bologna. 2) Fahey, G.C. (Ed.) 1995. Forage quality, evaluation and utilization. ASA-CSSA-SSSA Publishers, Madison, Wisconsin. 3) Barnes et al., 2003. Forages Vol. 1. An Introduction to grassland agriculture. Blackwell Publishing, Ames, Iowa. 4) Appunti del docente

SYLLABUS

Hrs	Frontal teaching
2	Organic forage crops: historical and evolution of the production and conservation of fodder in the Mediterranean environment
3	Morphology and physiology of grasses and legumes forage. The main stages of development of grasses and legumes. Influence of time of cutting on regrowth.
5	Agro-technical of forage crops in organic: soil preparation, time and method of sowing, organic and mineral fertilization, irrigation. Management of fertilization of the forage crop.
3	Nutritive value of forage crop: methods for assessing the quality of fodder. Environmental and genetic factors of variation in the quality of feed. Influence of the stage of development of the plant on the characteristics of grass.
8	Pasture: definition and issues. Techniques of pasture improvement. Natural resource management.
5	Techniques of pasture and response on the quality and production of fodder
2	Forage conservation: general conservation of fodder. Loss of conservation.
5	Haymaking: the drying process of forage in the field. Mechanical conditioning of the crop. Breathing and mechanical losses during haymaking of grasses and legumes. Post-harvest deterioration of hay. The artificial drying of hay.
5	Silage making: biochemical principles of silage. Ensilability of different forage crops: the case of maize silage of Italian ryegrass and alfalfa. Enzyme activities and fermentation. Microorganisms involved in fermentation and deterioration of silage. The cycle of clostridia. Losses during ensiling with particular reference to aerobic deterioration. Silage additives. Chemical analysis and nutritive value of silage. The practice of silage. Implications of the type of forage conservation on the dairy supply chain.

SYLLABUS

Hrs	Frontal teaching
4	Main forage leguminous and grassy forage species: medicago sativa, sulla hedisarium, dactilis glomerata, festuca arundinacea.
4	Main leguminous annual forage species and grasses: vetch, fenugreek, clover spp, annual rye grass, oats, barley.
4	Seed production : general aspects. The production of seed of fodder species. Case study of two forage crops
Hrs	Others
8	Technical visits: pastures and vegetation analysis
8	Technical visits: farming methods applied to organic forage crops
6	Technical visits: utilization of forage resources