



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze Agrarie, Alimentari e Forestali		
<b>ACADEMIC YEAR</b>	2022/2023		
<b>MASTER'S DEGREE (MSC)</b>	FIRM AND QUALITY FOR THE AGRICULTURAL AND FOOD SYSTEM		
<b>SUBJECT</b>	ZOOTECNICAL MACHINES AND PLANTS		
<b>TYPE OF EDUCATIONAL ACTIVITY</b>	B		
<b>AMBIT</b>	50546-Discipline della ingegneria agraria		
<b>CODE</b>	22738		
<b>SCIENTIFIC SECTOR(S)</b>	AGR/09		
<b>HEAD PROFESSOR(S)</b>	GRECO CARLO	Ricercatore a tempo determinato	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>			
<b>CREDITS</b>	6		
<b>INDIVIDUAL STUDY (Hrs)</b>	90		
<b>COURSE ACTIVITY (Hrs)</b>	60		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>MUTUALIZATION</b>			
<b>YEAR</b>	1		
<b>TERM (SEMESTER)</b>	1° semester		
<b>ATTENDANCE</b>	Not mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<b>GRECO CARLO</b> Monday 10:00 13:00 Studio 138 Dipartimento Saaf Wednesday 10:00 13:00 Studio 138 Dipartimento Saaf Thursday 10:00 13:00 Studio 138 Dipartimento Saaf		

DOCENTE: Prof. CARLO GRECO

<b>PREREQUISITES</b>	Basics of Agricultural mechanics.
<b>LEARNING OUTCOMES</b>	<p>Knowledge and understanding Knowledge of principles of machineries for livestock farm. Students will be able to use terminology specific of Agricultural Engineering.</p> <p>Applying knowledge and understanding Students will be able to solve practical problems involving choice of machineries in livestock farming and agro-industry.</p> <p>Making judgements Students will be able to choose among different solutions for livestock farm mechanization.</p> <p>Communication Students will be able to work as part of a team and to present the results in a professional way to other experts in the field of Agricultural Engineering.</p> <p>Lifelong learning skills Students will be able to attend specialist courses in the field of Agricultural Engineering, to keep u-to-date by examining the scientific literature of the specific sector and attending post-graduate courses.</p>
<b>ASSESSMENT METHODS</b>	<p>The oral exam is finalised to verify the disciplinary skills and knowledge included in the syllabus; the assessment is expressed into thirty out of thirty. The minimum number of questions is three and aims to verify the gained knowledge, the elaboration abilities, as well as the possess of an adequate speaking ability. The threshold for sufficiency (18/30) will be gained when the student shows knowledge and understanding of topics, at least in their guidelines, and has minimum levels of applied skills concerning the solution of specific case studies; he should be in possess of talking abilities and of a correct use of language for the specificity of the course. Below this threshold the exam will be assessed as insufficient. The more the student shows argumentative and talking capacities, besides knowledge going into details of the discipline, the more his assessment will be positive till the grade of excellence (30/30 cum laude).</p>
<b>EDUCATIONAL OBJECTIVES</b>	<p>The course aims to provide basic knowledge, theoretical and practical, on the management and evaluation of the machines used in livestock farms.</p> <p>The course consists of lectures in the classroom which illustrates the components of the animal husbandry machinery and plant, the selection criteria according to business characteristics, the principles for the proper management and maintenance of machines and plants.</p> <p>For example, classes are associated exercises in the classroom and in the laboratory concerning the selection and evaluation of machines and installations used in livestock farms, the assessment of the requirements for a use which meets the safety criteria, the laboratory tests to verify the equipment machine safety. Guided tours to construction companies and livestock farms can be programmed.</p>
<b>TEACHING METHODS</b>	The course includes frontal lessons, practical exercises and guided educational visits.
<b>SUGGESTED BIBLIOGRAPHY</b>	<p>In aggiunta al materiale fornito dal docente si consiglia la consultazione dei seguenti testi:</p> <p>Per approfondimenti possono essere consultati i seguenti testi:</p> <p>L. Bodria, G. Pellizzi, P. Piccarolo - Meccanica Agraria - Edagricole</p> <p>A. Guidobono Cavalchini - La mungitura. Tecnologie, scelta e gestione degli impianti - Edagricole</p> <p>A. K. Srivastava, C. E. Goering, R. P. Rohrbach - Engineeering principles of agricultural machinery - ASAE</p> <p>Siti web:</p> <p><a href="http://www.ruminantia.it/">http://www.ruminantia.it/</a></p> <p><a href="http://www.informatorezootecnico.it/">http://www.informatorezootecnico.it/</a></p> <p><a href="http://www.suinicoltura.it/">http://www.suinicoltura.it/</a></p> <p><a href="http://www.iszsicilia.gov.it/">http://www.iszsicilia.gov.it/</a></p> <p><a href="http://www.istat.it/it/archivio/zootecnica">http://www.istat.it/it/archivio/zootecnica</a></p>

## SYLLABUS

Hrs	Frontal teaching
4	GENERALITY. Short description of the course and the program. The procurement of teaching materials and the recommended texts. The main physical quantities and their units used in the description of machinery and interest in plants.
6	THE TRACTOR AND MACHINES THE FARM LIVESTOCK. The main machines of interest in company livestock. The tractor-machines connection. Power outlet. hydraulic lift.
6	THE SAFETY OF THE MACHINES. Requirements of the operating machines safety. The operation of the machines, working and operational capacity times.
6	MACHINES FOR CUTTING AND HAY. Cutting machines: a blade mowers, rotary mowers. Tedding equipment: tedders, rakes. Machines for harvesting forage. Harvesting machines of pressed forage: Packing plunger, round baler, packing giant. Machines for the pressed forage management.

## SYLLABUS

Hrs	Frontal teaching
4	MACHINES FOR THE COLLECTION OF GRAIN. Mower-shredder-loaders. Conventional combines and axial flow.
8	MACHINERY AND EQUIPMENT FOR THE PREPARATION, STORAGE AND DISTRIBUTION OF FOOD. Equipment for drying fodder. Plants for silage fodder. The grinding of food. Machines for the preparation of food, feed mixers. Machines for the distribution of food.
6	MACHINERY AND EQUIPMENT FOR THE MILKING. Milking parlor. Milking machines. Milking robot. Refrigeration and storage of milk.
5	Machinery and systems for the management of livestock waste. Management and agronomic practices to reduce nitrogen emissions to water. Environmental conditioning in the stables. Precision animal husbandry. Animal welfare. Notes on the BDN.
Hrs	Practice
5	Exercises on the topics covered.
Hrs	Others
10	TECHNICAL VISITS TO ENTERPRISES LIVESTOCK