UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali
ACADEMIC YEAR	2016/2017
BACHELOR'S DEGREE (BSC)	AGRICULTURAL ENGINEERING
SUBJECT	RURAL BUILDINGS
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50120-Discipline dell'ingegneria agraria, forestale e della rappresentazione
CODE	12554
SCIENTIFIC SECTOR(S)	AGR/10
HEAD PROFESSOR(S)	VALLONE MARIANGELA Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	8
INDIVIDUAL STUDY (Hrs)	136
COURSE ACTIVITY (Hrs)	64
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	3
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**VALLONE MARIANGELA** Thursday 10:00 12:00 Studio docente.Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4, ingresso E, 1° piano, settore Meccanica Agraria. stanza 133 Friday 10:00 12:00 Studio docente.Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4, ingresso E, 1° piano, settore Meccanica Agraria. stanza 133

DOCENTE: Prof.ssa MARIANGELA VALLONE

PREREQUISITES	Basic elements of mathematics and physics according to secondary level school
LEARNING OUTCOMES	Knowledge and understanding At the end of the course the student will acquire a good understanding and knowledge to be enable both to process and apply the notions he have learned and, therefore, to generate ideas and develop technical solutions useful to address and resolve situations related to Rural Buildings. He will be able to know the main aspects and key concepts of this discipline of the agricultural sector considering the latest achievements of technology and research. Knowledge and understanding will be acquired through different training activities provided during the course such as lectures and exercises. Applying knowledge and understanding Ability to organize independently technical design and documents related to Rural Buildings inside the different fields of rural engineering applying the acquired knowledge and understanding, adjusted using proper methods and professional tools to identify, formulate and solve issues related to the management of agricultural systems. Making judgements Collect and interpret the most relevant data for the resolution of a technical and professional issue related to Rural Buildings. Being able to assess the implications of the design choices performed both in terms of methodology and in terms of results obtained. Communication skills At the end the course, the student will be able to effectively transfer the knowledge acquired to all the different components operating in the agricultural sector (farmers, breeders, technical operators, etc.) exposing both selection and management criteria adopted also to a non-expert public. Learning skills Capability to update his knowledge with consultation the scientific publications of the Rural Buildings sector. Ability to follow, using the knowledge acquired in the course, both second-level master's degree, and in depth courses and specialized seminars.
ASSESSMENT METHODS	Written test about structural Machanics during the course. Prepare a paper project on a rural building chosen by the student among those scheduled. Oral exam covering the topics on the course. The student passes the three tests if he achieves the minimum score of 18/30 in each of them.
EDUCATIONAL OBJECTIVES	Tha main objective of the course is to provide the basic elements to address the first-level design of structures, works and buildings related to a farm. The insights will cover the basic principles of Structral Mechanics, the isostatic beams analysis, the static force analysis with the analytical method, the design of simple structures. The materials used in rural buildings construction, the principles of technological planning and the constituent parts of rural buildings will be studied. The study of the basic elements for the design of livestock and the main characteristics of the buildings destined to breeding will be addressed: stables for dairy cows, stables for bovine meat and fattening, pigsties, chicken coops. Also silos and manure pits will be described. The structural characteristics of the greenhouses will be illustrated. The earth pressure, Coulomb theory and different types of gravity retaining walls and their stability checks will be studied. Elements of engineering drawing will enable the students to carry out the preparation of a simple design drawn on rural construction buildings. At the end of the course the student will know the basic elements relating to technical and operational characteristics of the buildings in use in the agricultural production sector and acquire the solutions that contribute to the improvement of production, animal welfare, and wokers safety.
TEACHING METHODS	Lectures, classroom exercises.
SUGGESTED BIBLIOGRAPHY	R. Chiumenti – Costruzioni rurali – Calderini Edagricole Appunti e lezioni forniti dal docente

SYLLABUS

Hrs	Frontal teaching
2	Presentation of the course, objectives and role of Rural Buildings. Levels of design
4	The basic principles of Structral Mechanics
2	Isostatic beams analysis
2	Static force analysis with the analytical method
5	Materials used in rural buildings construction

SYLLABUS

Hrs	Frontal teaching
2	Principles of technological planning
2	Constituent parts of rural buildings
5	Stables for dairy cows and milking equipment
2	Stables for bovine meat and fattening
3	Pigsties, chicken coops
2	Silos and manure pits
2	Greenhouses structural characteristics
4	The earth pressure. Coulomb theory. Different types of gravity retaining walls

Hrs	Practice
4	Static force analysis with the analytical method
8	Design of simple structures. Static force analysis
2	Stability checks for retaining walls
2	Elements of engineering drawing
8	Structural Mechanics exercises
3	Paper project on a rural building