

General information	
Academic subject	<i>Integrated Course: Agro-industrial Buildings and Hydraulics</i> <b>Module of Livestock and Agro-industrial Buildings</b>
Degree course	<i>Agricultural Science and Technology (STA)</i>
Academic Year	<i>III</i>
European Credit Transfer and Accumulation System (ECTS)	6 ECTS
Language	<i>Italian</i>
Academic calendar (starting and ending date)	<i>I Semester 18/10/2021 - 28/01/2022</i>
Attendance	<i>No</i>

Professor/ Lecturer	
Name and Surname	Giovanni Russo
E-mail	giovanni.russo@uniba.it
Telephone	+39 3207980631
Department and address	Dip. DiSAAT University of Bari, Via G. Amendola 165 / a
Virtual headquarters	Old plexus, section of Rural Buildings, First floor, Second door on the right.
Tutoring (time and day)	Tuesday and Thursday from 9.00 to 11.00 at the university office and / or online with Microsoft Teams

Syllabus	
<b>Learning Objectives</b>	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li><i>Knowledge and understanding of the stability test of a straight-beam, subject to simple and composite solicitations</i></li> <li><i>Knowledge and understanding of materials and building elements used in rural buildings</i></li> <li><i>Knowledge and understanding of the design criteria of livestock and agro-industrial buildings</i></li> <li><i>Basics of using Autocad 2-D CAD software</i></li> </ul>
<b>Course prerequisites</b>	<i>Knowledge of principles of Mathematics; Knowledge of principles of Physics; Principles of Heat Transmission.</i>
<b>Contents</b>	<ul style="list-style-type: none"> <li><i>Tasks, competences and responsibility of the designer. Designing of rural structures and administrative duties.</i></li> <li><i>The design and the stability verification of a structure.</i></li> <li><i>Tensile, compressive and bending stress. Stresses simple and composed of a rectilinear axis structure.</i></li> <li><i>Construction materials: steel, reinforced concrete, prestressed concrete, wood, stone materials.</i></li> <li><i>Selection criteria use and methods of construction of: foundations, walls, flat roofs and curved roofs, beams and pillars.</i></li> <li><i>Importance of monitoring of microclimate conditions inside livestock and agro-industrial buildings.</i></li> <li><i>Criteria for the design of livestock buildings: dairy cows, calves, beef cattle, pigs, poultry and sheep.</i></li> <li><i>AUTOCAD. Plan of a livestock or agro-industrial building</i></li> </ul>
<b>Books and bibliography</b>	<ul style="list-style-type: none"> <li><i>Notes of the lectures and tables distributed during the course</i></li> <li><i>Lindley J.A., Whitaker J.H. (1996) "Agricultural Buildings and Structures". ASAE. St Joseph, Mi, USA</i></li> </ul> <p><i>the study texts are of reference, both for the theoretical and practical aspects</i></p>
<b>Additional materials</b>	

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
<b>Hours</b>			
148	32	16	90
<b>ECTS</b>			
17,25	4	2	11,25
Teaching strategy			
<p>The teacher will use PowerPoint presentations. Sample materials of building materials will be shown during lessons.</p> <p>Upon request, E-learning can be used with public platforms (eg Teams) and dedicated (Agridocast), such as learning facilities for students with disabilities and for working students, student athletes and students with children</p> <p>Practical exercises to explain the use of Autocad two-dimensional CAD software will be provided using the multimedia classroom and students will be divided into groups. Student assistance will be provided during the drafting of the project.</p> <p>Each student is advised to install the software on their own PC by downloading the student version from <a href="http://www.autodesk.it/education/country-gateway">http://www.autodesk.it/education/country-gateway</a></p>			
Expected learning outcomes			
<b>Knowledge and understanding on:</b>	<ul style="list-style-type: none"> <li>○ Knowledge and understanding of the stability test of a straight-beam, subject to simple and composite solicitations</li> <li>○ Knowledge and understanding of materials and building elements used in rural buildings</li> <li>○ Knowledge and understanding of the design criteria of livestock and agro-industrial buildings</li> <li>○ Basics of using Autocad 2-D CAD software</li> </ul>		
<b>Applying knowledge and understanding on:</b>	<ul style="list-style-type: none"> <li>○ Capacity to identify the most suitable structure, structural element and material for a rural building</li> <li>○ Capacity to identify the technical characteristics of the technological equipment for livestock and agro-industrial buildings</li> <li>○ Design of a livestock or agro-industrial building using CAD</li> </ul>		
<b>Soft skills</b>	<ul style="list-style-type: none"> <li>• <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> <li>○ Ability to plan an integrated sustainable design of a livestock and agro-industrial building in relation to the choice of structures, materials and equipment considering energy and production efficiency</li> <li>○ Ability to analyze all possible environmental hazards that can be produced from all the productive activities within a livestock and agro-industrial buildings</li> </ul> </li> <li>• <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> <li>○ Ability to use informatics (drawing, simulation, graphic representation, and so on)</li> </ul> </li> <li>• <i>Capacities to continue learning</i> <ul style="list-style-type: none"> <li>○ Ability to continue learning by consulting books, papers and computerized catalogues.</li> </ul> </li> </ul> <p>Expected learning outcomes in terms of knowledge and skills are listed in Annex A of the Study Guide Course Guidelines (expressed through the European Degree Program Title</p>		

Assessment and feedback	
Methods of assessment	<p><i>For students attending the course there will be a partial exam after the first part of the course. This partial exam consists of an oral test on the subjects developed during the hours of lecture and exercise. The outcome of this test contributes to the evaluation of the examination of profit and is valid for one academic year. The test is passed with a vote of at least 18/30. For students who have stood the first part of the exam, the final vote is expressed by the average of the votes obtained in the two oral tests.</i></p> <p><i>The exam consists of an oral exam on the topics developed during the course. During the oral exam the design work will be a topic of discussion. The test is passed with a vote of at least 18/30. The oral examinations are public. For foreign, the exam can be done in English</i></p>
Evaluation criteria	<ul style="list-style-type: none"> <li>• <i>Knowledge and understanding</i> <ul style="list-style-type: none"> <li>○ Knowledge and understanding of the theoretical concepts of rural construction illustrated during the course will constitute the elements for the basic evaluation of the student.</li> </ul> </li> <li>• <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> <li>○ Knowledge and understanding skills of the stability test of a straight-axis beam subject to simple and composite stresses.</li> <li>○ Knowledge and understanding skills of the structures and construction materials used for livestock and agro-industrial buildings.</li> <li>○ Knowledge and understanding skills of the design criteria for a livestock and agro-industrial buildings.</li> <li>○ Knowledge and understanding skills of two-dimensional CAD Autocad software</li> </ul> </li> <li>• <i>Autonomy of judgment</i> <ul style="list-style-type: none"> <li>○ design of a livestock and agro-industrial buildings in relation to different types of structures, materials and equipment</li> </ul> </li> <li>• <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> <li>○ Designing a livestock and agro-industrial buildings using AUTOCAD by choosing the different structural elements</li> </ul> </li> <li>• <i>Communication skills</i> <ul style="list-style-type: none"> <li>○ Ability to communicate clearly the knowledge to specialists and non specialists</li> <li>○ CAD design capabilities</li> </ul> </li> <li>• <i>Capacities to continue learning</i> <ul style="list-style-type: none"> <li>○ • Ability to learn and deepen in a self-directed and autonomous way.</li> <li>○ Ability to read and understand projects and technical sheets of plants and materials; building regulations; regulatory constraints on rural buildings</li> </ul> </li> </ul>
Criteria for assessment and attribution of the final mark	<p><i>The assessment of knowledge and understanding takes place through written and oral or oral exams during which questions are asked relating to the theoretical-practical aspects of the disciplines aimed at verifying the knowledge acquired and the ability to apply them to problems of a practical nature.</i></p> <p><i>The student has the opportunity to take intermediate assessment tests (so-called exemptions), for each course conducted in the same way as the exams. The evaluation of students' performance takes place on the basis of pre-established criteria which include: a) consistency with the topics of the program, b) the quality of the discussion, c) the ability to analyze, d) the level of structuring of the arguments. The measure of performance follows the scheme shown in the degree course program regulations</i></p>
Additional information	

Prerequisites	To take the exam, the Mathematics and Statistics and Physics exams must be passed.
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