

| General Information   |  |
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| Academic subject      | Integrated Course Engineering of Rural Areas<br>Module: Agricultural Buildings |
| Degree course         | Agricultural Science and Technology  |
| Curriculum            |  |
| ECTS credits          | 6 ECTS   |
| Compulsory attendance | No   |
| Language              | Italian  |

| Subject teacher | Name Surname     | Mail address              | SSD    |
|-----------------|------------------|---------------------------|--------|
|                 | Evelia Schettini | evelia.schettini@uniba.it | AGR/10 |

| ECTS credits details |                        |                               |  |
|----------------------|------------------------|-------------------------------|--|
| 4                    | 4 ECTS Lectures<br>[L] | 2 ECT Lab & field cl [L&Fcs]) |  |

| Class schedule |                    |
|----------------|--------------------|
| Period         | I semester         |
| Year           | III year           |
| Type of class  | Lecture- workshops |

| Time management          |     |
|--------------------------|-----|
| Hours                    | 150 |
| In-class study hours     | 60  |
| Out-of-class study hours | 90  |

| Academic calendar |                               |
|-------------------|-------------------------------|
| Class begins      | 2 <sup>nd</sup> october 2017  |
| Class ends        | 26 <sup>th</sup> january 2018 |

| Syllabus   |  |
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| Prerequisites/requirements   | Knowledge of principles of Mathematics<br>Knowledge of principles of Physics: Principles of Heat Transmission.   |
| Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS) | <p><i>Knowledge and understanding</i></p> <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 rural buildings</li> <li>• Basics of using Autocad 2-D CAD software</li> </ul> <p><i>Applying knowledge and understanding</i></p> <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 rural buildings</li> <li>• Design of a rural building using AUTOCAD</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>• Ability to plan an integrated sustainable design of a rural 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 rural building</li> </ul> |

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|  | <ul style="list-style-type: none"> <li>• Ability to propose sustainable solutions for the management of manure and waste due to livestock production</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>• Ability to use informatics (drawing, simulation, graphic representation, and so on)</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>• Ability to continue learning by consulting books, papers and computerized catalogs.</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>   |
| Contents   | <ul style="list-style-type: none"> <li>• Tasks, competences and responsibility of the designer. Designing of rural structures and administrative duties.</li> <li>• The design and the stability verification of a structure.</li> <li>• Tensile, compressive and bending stress. Stresses simple and composed of a rectilinear axis structures.</li> <li>• Construction materials: steel, reinforced concrete, prestressed concrete, wood, stone materials.</li> <li>• Selection criteria, use and methods of construction of: foundations, walls, flat roofs and curved roofs, beams and pillars.</li> <li>• The design of farm houses. Importance of monitoring of microclimate conditions inside livestock buildings.</li> <li>• Criteria for the design of livestock buildings: dairy cows, calves, beef cattle, pigs, poultry and sheep.</li> <li>• Management of manure.</li> <li>• AUTOCAD. Plan of a rural house or a livestock building.</li> </ul> |
| Course program   |   |
| Bibliography   | <ul style="list-style-type: none"> <li>• Notes of the lectures and tables distributed during the course</li> <li>• Lindley J.A., Whitaker J.H. (1996) "Agricultural Buildings and Structures". ASAE. St Joseph, Mi, USA</li> </ul>  |
| Notes  |   |
| Teaching methods   | <p>The teacher will use PowerPoint presentations. Sample materials of building materials will be shown during lessons.</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>   |
| Assessment methods (indicate at least the type written, oral, other) | <p>A project of a rural building is assigned and students must develop it using CAD software. The elaboration of the project can be individual or in group and takes place during the course of lessons.</p> <p>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.</p>   |

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|  | <p>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.</p> <p>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.</p> <p>The oral examinations are public.</p> <p>For foreign, the exam can be done in English</p>  |
| <p>Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are.</p> | <p><i>Knowledge and understanding skills</i></p> <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 a rural building</li> <li>• Knowledge and understanding skills of the design criteria for a rural building</li> <li>• Knowledge and understanding skills of two-dimensional CAD Autocad software</li> </ul> <p><i>Knowledge and understanding skills applied</i></p> <ul style="list-style-type: none"> <li>• Designing a rural building using AUTOCAD by choosing the different structural elements</li> </ul> <p><i>Autonomy of judgment</i></p> <ul style="list-style-type: none"> <li>• design of a rural building in relation to different types of structures, materials and equipment</li> <li>• Ability to analyze the possible environmental hazards due to the management of manure and waste</li> </ul> <p><i>Communicative Skills</i></p> <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> <p><i>Ability to learn</i></p> <ul style="list-style-type: none"> <li>• Ability to learn and deepen in a self-directed and autonomous way</li> </ul> |
| <p>Further information</p>   |  |