

General Information	
Academic subject	Integrated Course: Rural buildings and Energy efficiency
Degree course	Module: Rural and Forest buildings
Curriculum	
ECTS credits	6 ECTS
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Giacomo Scarascia-Mugnozza	giacomo.scarasciamugnozza@uniba.it	AGR/10

ECTS credits details			ETCs
Basic teaching activities	4 ECTS Lectures	2 ECTS Lab	6

Class schedule	
Period	I semester
Year	III year
Type of class	Lectures, laboratories, workshops

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

Academic calendar	
Class begins	28/09/2020
Class ends	22/01/2021

Syllabus	
Prerequisites/requirements	Fundamentals of Mathematics, Fundamentals of Physics
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>Knowledge and understanding</p> <ul style="list-style-type: none"> ○ Knowledge and understanding of stresses and of design and verification method of structural parts ○ Knowledge and understanding of loaded statically determinate beams ○ Knowledge and understanding of materials, structural elements and systems environmental sustainability for rural building ○ Knowledge and understanding of the design criteria of the structural, construction and functional aspects of agricultural and forestry buildings ○ Knowledge and understanding of CAD software for agricultural and forestry building design <p>Applying knowledge and understanding</p> <ul style="list-style-type: none"> ○ Resolution, stress calculus, design and verification of statically determinate beams ○ Capacity to identify sustainable materials, structural elements and construction systems of rural building ○ Capacity to identify techniques for the project drawing or for the survey of agricultural and forest buildings ○ Capacity of CAD software design use <p>Making informed judgements and choices</p> <ul style="list-style-type: none"> ○ Expertise of rural building materials and construction types classification ○ Expertise to evaluate sustainable reuse of existing rural buildings ○ Expertise to design agricultural and forestry buildings

	<p>Communicating knowledge and understanding</p> <ul style="list-style-type: none"> ○ Ability to communicate information, ideas, problems and solutions regarding agricultural and forestry buildings to both specialist and non-specialist audiences ○ Ability to communicate information, ideas, problems and solutions regarding the sustainable design of agricultural and forestry buildings to both specialist and non-specialist audiences ○ Ability of CAD software techniques for the project drawing or for the survey of agricultural and forest buildings <p>Capacities to continue learning</p> <ul style="list-style-type: none"> ○ Capacity to continue learning future development of rural building new and sustainable materials, structural elements and systems <p>The results of the expected learning, in term of knowledge and ability, are listed in the Annex A of the Didactic Regulation of the Bachelor Course (expressed by the European descriptors of the study title).</p>
Contents	<p>Fundamentals of Strength of Materials. Stress-strain relation. Design and verification method. Compression and tensile stress, bending stress, shearing stress, combined compressive and bending stress. Statically determinate beams: resolution, design and verification. Short account of redundant beams. Fundamentals of Buildings construction. Materials: masonry, wood, steel, concrete, reinforced concrete. Floors. Supporting structures: wall and frame structures. Loading analysis. Foundations. Retaining walls. Fundamentals of Architectural Engineering. Lintels, arches, vaults and trusses. Roof trusses. Waterproofing. Underground walls. Design criteria for rural houses. Project drawings and administrative documents.</p>
Course program	
Bibliography	<ul style="list-style-type: none"> ○ Notes of the lectures on PDF format and tables distributed during the course ○ Ormea G.B. "Teoria e pratica nelle costruzioni" Hoepli ○ Chiumenti R. "Costruzioni rurali" Edagricole ○ Petrignani A. "Tecnologie dell'Architettura" Gorlich ○ Belluzzi O. "Scienza delle costruzioni" Vol. I, Zanichelli ○ Agricultural Buildings and Structure - The American Society of Agricultural and Biological Engineers (ASABE). MI-USA, 1996 ○ www.architetto-online.it / com ○ www.edilportale.com/ ○ http://www.aiia.info/ ○ http://www.eurageng.net/ ○ http://www.asabe.org/
Notes	
Teaching methods	<p>Lectures will take place by means of Power Point presentations.</p> <p>Practical exercises will concern construction materials specimen and examples of resolution, stress calculus, design and verification of statically determinate beams.</p> <p>Practical exercises will concern also the use of Autocad two-dimensional CAD software, carried out in the multimedia classroom organized into groups of students.</p> <p>According to the student, the project drawing of a new rural building or the survey of an existing one, of special architectural and spatial interest, is recommended. Student assistance will be provided during the drafting of the</p>

	<p>project drawing or survey. Students are advised to install the CAD software on their own PC by downloading the student version from https://www.autodesk.it/education/country-gateway.</p>
<p>Assessment methods (indicate at least the type written, oral, other)</p>	<p>The final exam consists on an oral test with questions related to the course programme lectures and practical exercises. The final grade is expressed in thirtieths. The exam is passed if the grade is at least 18/30.</p> <p>The presentation and discussion during the exam of the project drawing, by means of Autocad two-dimensional CAD software, of a new rural building or the survey of an existing one, of special architectural and spatial interest, is recommended.</p> <p>A partial test after the first part of the lectures will take place. The partial exam will consist on a written test regarding the fundamentals of Strength of Materials and the resolution, stress calculus, design and verification of statically determinate beams. The partial test grade is expressed in thirtieths. The partial test is passed if the grade is at least 18/30.</p> <p>Foreign students can take the exam in English language.</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>Knowledge and comprehension ability</p> <ul style="list-style-type: none"> ○ Knowledge and understanding of stresses and of design and verification method of structural parts ○ Knowledge and understanding of loaded statically determinate beams ○ Knowledge and understanding of materials, structural elements and systems environmental sustainability for rural building ○ Knowledge and understanding of the design criteria of the structural, construction and functional aspects of agricultural and forestry buildings <p>Knowledge and applied comprehension ability</p> <ul style="list-style-type: none"> ○ Resolution, stress calculus, design and verification of statically determinate beams ○ Capacity to identify sustainable materials, structural elements and construction systems of rural building ○ Capacity to identify techniques for the project drawing or for the survey of agricultural and forest buildings <p>Autonomy of judgement</p> <ul style="list-style-type: none"> ○ Expertise of rural building materials and construction types classification ○ Expertise to evaluate different solutions of agricultural and forestry buildings design ○ Expertise to evaluate different solutions of sustainable reuse of existing rural buildings <p>Communication skills</p> <ul style="list-style-type: none"> ○ Ability to communicate information, ideas, problems and solutions regarding agricultural and forestry buildings ○ Ability to communicate information, ideas, problems and solutions regarding the sustainable design of agricultural and forestry buildings <p>Learning ability</p> <ul style="list-style-type: none"> ○ Learning ability and overall correlation among various issues of the lectures ○ Self follow-up learning ability of future rural building development

Further information	Visiting hours: Tuesday, Thursday and Friday from 11.30am to 13.30; other days by appointment to be defined by email
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