

SYLLABUS

1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Faculty of Constructions
1.3	Department	Civil engineering and management
1.4	Field of study	Civil Engineering
1.5	Cycle of study	Bachelor of Science
1.6	Program of study/Qualification	CE
1.7	Form of education	Full time
1.8	Subject code	41.00

2. Data about the subject

2.1	Subject name				Timber structures						
2.2	Subject area				Engineering sciences						
2.3	Course responsible/lecturer				Şef lucr. Dr. ing. MSc Dârmon Ruxandra ruxandra.darmon@ccm.utcluj.ro						
2.4	Teachers in charge of seminars				Şef lucr. Dr. ing. MSc Dârmon Ruxandra ruxandra.darmon@ccm.utcluj.ro						
2.5	Year of study	3	2.6	Semester	1	2.7	Assessment	C	2.8	Subject category	DD/DI

3. Estimated total time

3.1	Number of hours per week	3	3.2	of which, course:	2	3.3	applications:	1
3.4	Total hours in the curriculum	42	3.5	of which, course:	28	3.6	applications:	14
Individual study								hours
Manual, lecture material and notes, bibliography								14
Supplementary study in the library, online and in the field								7
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								10
Tutoring								-
Exams and tests								2
Other activities								-
3.7	Total hours of individual study	33						
3.8	Total hours per semester	75						
3.9	Number of credit points	3						

4. Pre-requisites (where appropriate)

4.1	Curriculum	Mechanics (I, II), Strength of Materials (I,II), Statics (I, II), Basis of Design
4.2	Competence	

5. Requirements (where appropriate)

5.1	For the course	N/A
5.2	For the applications	N/A

6. Specific competences

Professional competences	<p>C5.1 Identification, selection of the specific terminology, concepts and design methods for timber structures</p> <p>C5.2 The use and application of the specific timber design methods</p> <p>C5.3 Predimensioning and verification of timber structures design elements.</p> <p>C5.4 Application of the design and quality standards for timber structural design.</p> <p>C5.5 The elaboration of the specific documentation and safety assessments for timber design, in line with the modern criteria and code requirements.</p>
Cross competences	<p>CT1 The application of the work place strategy in agreement with the norms and professional ethics code.</p> <p>CT2 The application of the team working strategy based on the professional hierarchy.</p> <p>CT3 Research of the latest technical advances and Continual personal development.</p>

7. Discipline objectives (as results from the *key competences gained*)

7.1	General objective	<p>By the end of the course, the student should know:</p> <ul style="list-style-type: none"> • The evaluation of the loads on the timber structures • The application of the specific standards for dimensioning the timber structure • The physical and mechanical properties of the wood • To recognize different types of timber structures
7.2	Specific objectives	<ul style="list-style-type: none"> • The knowledge and the application of the specific standard regulations for timber structures; • The application of the specific design principles and methods; • The capacity to elaborate, to present and to analyse the technical documents related to a timber structural design project. • Team work skills.

8. Contents

8.1. Lecture (syllabus)	Teaching methods	Notes
<p>INTRODUCTION.</p> <p>Advantages and disadvantages of wood construction.</p> <p>Classification of timber structures.</p> <p>Physical and mechanical properties and the factors that influence these properties.</p> <p>Classification of wooden materials.</p> <p>Wood defects and strength classes.</p> <p>Decay control, fungus control and fire control of elements for timber structures</p>	Oral presentation with a video projector	
STRUCTURAL WOOD ELEMENTS WITH SIMPLE CROSS SECTION.		
DESIGN OF ELEMENTS WITH SIMPLE CROSS SECTION ACCORDING TO SR EN 1995-1-1		



CONNECTIONS USED IN WOOD CONSTRUCTIONS. Types of fasteners. Classification of timber connectors Design and calculation of carpentry joints		
DESIGN OF ELEMENTS WITH BUILT-UP SECTION. Connectors and metallic elements used in jointures.		
CONSTRUCTIONS FROM PLANE ELEMENTS. BEAMS – design and calculation		
CONSTRUCTIONS FROM PLANE ELEMENTS. TRUSSES – design and calculation		
CONSTRUCTIONS FROM PLANE ELEMENTS. FRAMES – design and calculation		
CONSTRUCTIONS FROM PLANE ELEMENTS. ARCHES – design and calculation		
BRACING STRUCTURES FOR PLANE ELEMENTS		
TRIDIMENSIONAL CONSTRUCTIONS. FOLDED SURFACES. DOMES. VAULTS - design and calculation		
WOOD natural degradation _ Preservation methods		
REVIEW – Carpentry joint design		
Bibliography 1. Porteous J., Kermani A. – Structural Timber Design to Eurocode 5, 2nd. Edition, Wiley-Blackwell, 2013. 2. Mc Kenzie W.M.C, Zhang B., - Design of structural timber to Eurocode 5, 2nd. Edition, London, New York: Palgrave Macmillan, 2007 3. Natterer, J., ș.a. – <i>CONSTRUCTION EN BOIS</i> , Laussane, Elveția		
8.2. Applications/Seminars	Teaching methods	Notes
Structural design of a wood roof framing plan - assignment	Blackboard and oral presentation	
Assignment 1: Actions on the structure Evaluation of the Snow and Wind Loads		
Assignment 2: Design of framing elements – BATTENS Ultimate Limit States Design and Serviceability Limit States		
Assignment 3: Design of framing elements – RAFTERS Ultimate Limit States Design and Serviceability Limit States		
Assignment 4: Design of framing elements – PURLINS Ultimate Limit States Design and Serviceability Limit States		
Assignment 5: Design of framing elements – POSTS Ultimate Limit States Design and Serviceability Limit States		
Bibliography 1. Andreica H.-A., Berindean A.-D., Darmon R. M. – STRUCTURI DIN LEMN, Ed. U.T.PRESS 2. 1. Porteous J., Kermani A. – Structural Timber Design to Eurocode 5, 2nd. Edition, Wiley-Blackwell, 2013. 3. Standards, Norms, Specific Technical Regulations (SR EN 1995-1-1-2005, SR EN 338-2004, SR EN 1990-2004, SR EN 1991-1-1-2004, SR EN 1991-1-3-2005, SR EN 1991-1-4-2006)		

9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

The achieved competences will be required for the employees working for consulting companies and contractors (site and supplying)

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Multiple choice test	Written paper with theory and problems	100%
10.5 Applications	Roof desing project	Oral presentation	Pass/fail
10.6 Minimum standard of performance			

Date of filling in:		Title Surname Name	Signature
11.10.2020	Lecturer	Şef lucr. Dr. ing. MSc DÂRMON Ruxandra	
	Teachers in charge of application	Şef lucr. Dr. ing. MSc DÂRMON Ruxandra	

Date of approval in the department	Head of department Conf.dr.ing. ACIU Claudiu

Date of approval in the faculty	Dean Conf.dr.ing. CHIRA Nicolae
