

COURSE SYLLABUS

1. Data about the program of study

1.1 Institution	The Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Civil Engineering
1.3 Department	Mecanica constructiilor
1.4 Field of study	Civil Engineering
1.5 Cycle of study	Bachelor of Science
1.6 Program of study/Qualification	Civil, Industrial and Agricultural Buildings /Engineer (English language)
1.7 Form of education	Full time
1.8 Subject code	32.20

2. Data about the subject

2.1 Subject name	Engineering Structures Bridges						
2.2 Aria de conținut	Arie teoretică, arie metodologică, arie de analiză						
2.3 Course responsible/lecturer	SL. dr. ing. Vladimir Marusceac – vladimir.marusceac@cfdp.utcluj.ro						
2.4 Teachers in charge of seminars	SL. dr. ing. Vladimir Marusceac – vladimir.marusceac@cfdp.utcluj.ro						
2.5 Year of study	II	2.6 Semester	2	2.7 Assessment	C	2.8 Subject category	DID DO

3. Estimated total time

3.1 Number of hours per week	3	Of which: 3.2 course	2	3.3 applications	1
3.4 Total hours in the curriculum	42	Of which: 3.5 course	28	3.6 applications	14
Individual study					ore
Manual, lecture material and notes, bibliography					9
Supplementary study in the library, online and in the field					7
Preparation for seminars/laboratory works, homework, reports, portfolios, essays					7
Tutoring					3
Exams and tests					4
Other activities					3
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	Not necessary
4.2 Competence	Not necessary

5. Requirements (where appropriate)

5.1. For the course	equipment: blackboard, projector, flipchart
5.2. For the applications	Terms and deadlines are commonly set; • Delays are only acceptable based on solid, justified reasons.

6. Specific competences

Professional competences	<p>Theoretical knowledge acquired by the students:</p> <ul style="list-style-type: none"> • the constructive composition of engineering art works; • loads on bridges; • bridges, footbridges and other crossing superstructures. <p>The students will be able to:</p> <ul style="list-style-type: none"> • To do the preliminary design of a bridge superstructure; • To work with Eurocode 1 for the representation of bridge loads on a footbridge superstructure • To work with moving loads.
Cross competences	<p>Teamwork activities.</p> <p>Completion of a small project.</p> <p>The draft and presentation of Calculation Method Summary Sheet.</p> <p>Discussing the solutions obtained in the working group.</p> <p>Dissemination of results.</p>

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

7.1 General objective	Developing abilities to identify, formulate and solve structural engineering problems from the bridge engineering field.
7.2 Specific objectives	Developing abilities to predesign a bridge superstructure. Theoretical knowledge about the composition of bridge superstructures.

8. Contents

8.1 Lecture (syllabus)	Teaching methods	Notes
Lecture presentation, structure, objectives, bibliography. History of bridges.	Lectures with discussions	Projector.
General terminology.		
Bridge infrastructure and superstructure		
Bridge classification: after the material, destination, angle of intersection of the bridge axis with the obstacle axis, route position, span, route features, mobility, stresses in the main resistance elements.		
Non structural bridge elements, bridge safety.		
Timber bridges .		
Reinforced concrete and prestressed concrete bridges.		
Steel bridges		
Truss bridges		
Arch bridges		
Cable stayed and suspension bridges		
Utility bridges		
Actions that should be taken into account for road and railway bridges		
Current Trends in the Construction of Civil Engineering Structures, Modern Technologies		
Bibliography In UTC-N Library : 1. MOGA, P., GUȚIU, Șt., MOGA C: Lucări de artă, Curs general de poduri, UTPRESS 2020 2. Euronorme de proiectare (SR EN)		

In others libraries and virtual learning materials: 1. BENNET, D.t.: The creation of bridges, Quintet Publishing Limited, London, 1999. 2. SUKHEN CHATTERJEE: The Design of modern steel bridges, Blackwell Science, 2003 3. ROBERT BENAİM: The design of prestressed concrete bridges: concepts and principles, Taylor&Francis, 2008. 4. DADIV, CI: Design guide for composite highway bridges, Taylor & Francis, 2006.		
8.2 Applications/Seminars	Teaching methods	Notes
Launching the assignment and establishing the work groups. Composition and calculation of a steel footbridge.	Discussions, design	Verification is carried out for each stage of the project.
Establishing the constitutive elements and the main dimensions		
Actions on footbridge		
Stress calculation		
Verifications at SLS and ULS		
Dynamic behavior assessment. Discussion about the drawings.		
Presenting and evaluation of the final project		
Bibliography 1. MOGA, P., GUȚIU, Șt., MOGA C: Lucări de artă, Curs general de poduri, UTPRESS 20202. GUȚIU, 2. MOGA, P., GUȚIU, Șt., Alexandra DANCUI: Pasarele pietonale.Manual de proiectare. UTPRESS, 2014 3. MOGA, P.: Pasarele pietonale. Baza de calcul. UTPRESS, 2014		

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

<p>The course content is aligned with the needs of employers in the field of civil engineering. In order to identify the needs and expectations of employers in this field, discussions were held with other faculty members, representatives of professional associations, and graduates of the study program to determine the course content.</p> <p>The content and complexity of the concepts taught are continuously correlated with those of related subjects in the curriculum and are adapted to the evolving knowledge required in the field of undergraduate studies.</p>

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Theoretical questions;	1 hr written examination	50%
10.5 Applications	Project evaluation	Project presentation 2 hr/group.	50%
10.6 Minimum standard of performance			
<ul style="list-style-type: none"> Minimum mark required for each step of the examination needs to the 5 (five) <p>(a) Eligibility requirement for taking the exam: attendance at a minimum of 5 (five) practical sessions and submission of the assignments (project) by the deadline. <i>Grade for assignments</i> (recorded in the electronic gradebook): (P): minimum 5 (five)</p> <p>(b) Grade for theoretical examination (T): minimum 5 (five).</p>			
Final grade formula:	E= [0.5 (T) +0.5 (P)] Note: When determining the final grade, the student's involvement throughout the semester will also be taken into account: participation in debates, scientific sessions, attendance, etc.		

--

Date of filling in:	Teaching staff	Title Surname Name	Signature
12.06.2025	Course	SL. dr. ing. Vladimir Marusceac	
	Applications	SL. dr. ing. Vladimir Marusceac	

Date of approval in the department Railways, Roads and Bridges <u>19.06.2025</u>	Head of department Assist. Prof. Mihai Liviu DRAGOMIR, eng. , PhD.
Date of approval in the faculty of Civil Engineering <u>25.06.2025</u>	Dean Prof. Daniela Lucia MANEA, eng. , PhD.