

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2022 SEMESTER 01

<i>Course title</i>	<i>Essentials of Structural Design</i>
<i>Course Code</i>	SZB094-AN
<i>Hours/Week: le/pr/lab</i>	0/2/0
<i>Credits</i>	2
<i>Degree Programme</i>	Civil Engineering BSc
<i>Study Mode</i>	
<i>Requirements</i>	semester grade
<i>Teaching Period</i>	22/23 fall
<i>Prerequisites</i>	--
<i>Department(s)</i>	Department of Civil Engineering
<i>Course Director</i>	Vanda Olimpia Pomezanski Dr
<i>Teaching Staff</i>	Tamás Juhász

COURSE DESCRIPTION

The class aims to summarise the principals of mechanics and mathematics and finite element modelling methods that are crucial for designing complex load bearing engineering structures.

SYLLABUS

1. GOALS AND OBJECTIVES

Upon completion of this course, the student should be able to understand and analyse basic and complex structural systems both by manual and computing techniques.

2. COURSE CONTENT**TOPICS**

PRACTICE	TOPICS
	<ol style="list-style-type: none"> 1. <i>Statics of load bearing structures</i> 2. <i>Calculus</i> 3. <i>Structural analysis</i> 4. <i>Reinforced concrete structures</i>

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

PRACTICE, LABORATORY PRACTICE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	Forces and force systems, trusses	[1.] chp 3.		
2.	Calculus, derivatives and integrals of functions	[2.] chp Appendix		
3.	Internal force functions, NTM diagrams	[1.] chp 3, 4.		
4.	Cross section properties	[2.] chp 2, Appendix.	TH Test 1	
5.	Mechanics of flexural concrete sections	[1.] chp 3.		TH Test 1
6.	Stability problems	[2.] chp 13.		
7.	Beam analysis	[4.] chp 5.	TH Test 2	
8.	Stress states	[4.] chp 5.		TH Test 2
9.	Semester Break			
10.	Loads and load combinations in Axis VM	[5.], [6.]		
11.	Load and load combinations	[5.], [6.]		
12.	Work and Energy Theorems, deformations	[1.] chp 9.	TH Test 3	
13.	Basics of structural analysis	[1.] chp Appendix.	TH Test 4	TH Test 3
14.	FEM modelling of structures	[5.], [6.]		TH Test 4
15.	FEM modelling of structures	[5.], [6.]		

3. ASSESSMENT AND EVALUATION

There will be four take home test (TH Test) assignments during the semester. Assignments are due at the beginning of class on engineering computation paper. No late work accepted. Anyone can miss one test throughout the semester.

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance (e.g.: attendance sheet / online test/register, etc.)

By attendance list.

ASSESSMENT

Course resulting in mid-term grade (PTE TVSz 40§(3))

Mid-term assessments, performance evaluation and their ratio in the final grade (The samples in the table to be deleted.)

Type	Assessment	Ratio in the final grade
TH Test 1	25 points	25 %
TH Test 2	25 points	25 %
TH Test 3	25 points	25 %
TH Test 4	25 points	25 %

Opportunity and procedure for re-takes (PTE TVSz 47§(4))

In the exam period there is a possibility to retake only one missing or unsuccessful assignment.

Requirements for the end-of-semester signature

Semester grade cannot be gained under 40% performance.

Calculation of the final grade based on aggregate performance in percentage.

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

- [1.] R.C. Hibbeler, *Structural Analysis*, ninth edition, 2015. ISBN-13: 978-0-13-394284-2
- [2.] R.C. Hibbeler, *Mechanics of materials*, ninth edition, 2014. ISBN-13: 978-0-13-325442-6
- [3.] R.C. Hibbeler, *Engineering Mechanics, Statics*, twelfth edition, ISBN-13: 978-0133918922
- [4.] Edward G. Nawy, *Reinforced Concrete, a Fundamental Approach*, fourth edition, ISBN 0-13-020592-3
- [5.] <https://www.youtube.com/watch?v=G3FgoNRNTGs>
- [6.] <https://axisvm.eu/support/#trainingmaterials>

RECOMMENDED LITERATURE AND AVAILABILITY