COURSE SYLLABUS AND COURSE REQUIREMENTS
ACADEMIC YEAR 22/23 SEMESTER FALL

Course title	*Reinforced Concrete Structures I.*
Course Code	MSB382AN
Hours/Week: le/pr/lab	2/2/0
Credits	4
Degree Programme	Civil Engineer BSc undergraduate
Study Mode	*Face to face*
Requirements	Exam grade
Teaching Period	22/23 Fall
Prerequisites	Strength of Materials
Department(s)	Department of Civil Engineering
Course Director	Tamas Juhasz
Teaching Staff	*Tamas Juhasz*
Schedule	*Lecture, Th 11:15 a.m. – 12:45 p.m., Practice Th 1:15 – 2:45 p.m.*
Classroom	*A216 MIK Campus*

COURSE DESCRIPTION

In this course, students examine the principles of structural concrete design. During the semester simple reinforced concrete structures are discussed under complex load systems i.e., bending, shear, compression, and tension. The course demonstrates manual calculation methods in different stress stages. The student is also introduced to the application of EC2 design codes.

SYLLABUS

1. GOALS AND OBJECTIVES

Specific, measurable student behavioral learning objectives.
Students should acquire an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
Upon completion of the course, the student must be able to,

- analyze and design reinforced structures
- design simple beams and one-way slabs for combined actions
- apply the Eurocode 2 design standard
- draw reinforcement plans

2. COURSE CONTENT

	TOPICS
LECTURE	1. *topic Historical review of reinforced concrete structures* 2. *topic Material models* 3. *topic Analysis of flexural concrete beams* 4. *topic Limit state design of simple concrete structures*
PRACTICE	1. *topic Determination of bending stresses in flexural reinforced concrete beams.* 2. *topic Determination of required reinforcement for complex loadings.* 3. *topic Engineering drawing*

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	**Topic**	**Compulsory reading; page number (from … to …)**	**Required tasks (assignments, tests, etc.)**	**Completion date, due date**
1st	Historical Review	…	…	…
2nd	Material properties and models of concrete and reinforcing steel	[2] Chapter 2-3		
3rd	Stress stages of RC sections			
4th	Cracking moment			
5th	Design of RC beam sections for bending I.	[1] Chapter 4		
6th	Design of RC beam sections for bending II.	[1] Chapter 4		
7th	Biaxial bending I	[1] Chapter 5 [2] Chapter 9		
8th	Biaxial bending II	[1] Chapter 5 [2] Chapter 9		
9th	SEMESTER BREAK			
10th	Shear design	[1] Chapter 4 [2] Chapter 6		
11th	Design for complex loading of bending and shear	[1] Chapter 10		
12th	Engineering drawings of concrete structures			
13th	Serviceability limit states I	[2] Chapter 8		
14th	Serviceability limit states II	[2] Chapter 8		
15th	Re-take and make-up test			

PRACTICE, LABORATORY PRACTICE

week	**Topic**	**Compulsory reading; page number (from … to …)**	**Required tasks (assignments, tests, etc.)**	**Completion date, due date**
1st	Registration			
2nd	Cross section properties of inhomogeneous beams			
3rd	Calculating cracking moments			
4th	Determination of moment bearing capacity			
5th	Cross section design with and without constraints I			
6th	Cross section design with and without constraints II		Sending out the home assignments.	
7th	1st Test		Manual calculation test.	90-minute test, due at the end of the class. Submission on engineering paper.
8th	Determination of load-bearing capacity under eccentrical compression.			
9th	SEMESTER BREAK			
10th	Calculating shear capacity			
11th	Interaction of shear and bending in simple concrete beams.			
12th	Approximate calculations of beam deflection.			
13th	Crack-width calculation.			
14th	2nd Test		Manual calculation test.	90-minute test, due at the end of the class. Submission on engineering paper.
15th	Re-take and make-up test			Collecting home assignments.

3. ASSESSMENT AND EVALUATION

ATTENDANCE

By 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

Attendance will be monitored by attendance lists.

Course-unit with a final examination

Mid-term assessments, performance evaluation, and their weighting as a pre-requisite for taking the final exam

Type	Assessment	*Weighting as a proportion of the pre-requisite for taking the exam*
Test 1	*30 points*	*40 %*
Test 2	*30 points*	*40%*
Home assignment	*15 points*	*20 %*

Requirements for the end-of-semester signature

Mid-term assessment of 40%)

Re-takes for the end-of-semester signature

All tests can be repeated or improved once during the 15th week.

Type of examination*: exam interview*

The exam is successful if the result is a minimum of 40 %.

Calculation of the grade

The mid-term performance accounts for ***60*** %, and the performance at the exam accounts for ***40*** % in the calculation of the final grade.

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

COMPULSORY READING AND AVAILABILITY

[1.] A J Bond et al, How to Design Concrete Structures using Eurocode 2 ISBN 1-984818-47-1

[2.] Edward G. Nawy, Reinforced Concrete, A Fundamental Approach 4th ed. ISBN 0-13-020592-3