SUBJECT DATASHEET

I. SUBJECT SPECIFICATION

1 BASIC DATA

1.1 Title

REINFORCED CONCRETE STRUCTURES

1.2 Code

BMEEOHSAT43

1.3 Type

Module with associated contact hours

1.4 Contact hours

type	hours/week
lectures	3

1.5 Evaluation

midterm grade

1.6 Credits

3

1.7 Coordinator

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1.8 Department

Department of Structural Engineering (www.hsz.epito.bme.hu)

1.9 Website

http://epito.bme.hu/BMEEOHSAT43?language=en

1.10 Language of instruction

Hungarian and/or English

1.11 Curriculum requirements

Compulsory in the (BSc) programme

1.12 Prerequisites

Required previous subjects (need to be completed to register)

Introduction to strength of materials BMEEOEMAT43

Basis of structural design (BMEEOEMAT43

Subjects from which previous midterm signature are required to register

Construction materials BMEEOEMAT43

1.13 Effective date

September 1, 2017.

2 OBJECTIVES AND LEARNING OUTCOMES

2.1 Objectives

The aim of the subject is to acquire the basis of the structural concrete design. Simple members and slabs subjected to simple and complex forces will be discussed in serviceability limit states and ultimate limit states.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge
   1. knows the terms and notation of the structural concrete design,
   2. knows the behaviour and modelling of the structural concrete material,
   3. knows the basic idea of the design of a reinforced concrete (RC) cross section (CS),
   4. knows the typical behaviour modes of a RC CS,
   5. knows the methods of check and design.

B. Skills
   1. the student is able to check and design simple RC member subjected to shear, bending, torsion, eccentric compression and to combination of them.
   2. the student is able to check and design one way slabs,
   3. the student is able to check and design simple members,
   4. the student is able to check and design simple members subjected to eccentric compression and combined forces.
   5. the student is able to analyse elements of complex structures,
   6. using his knowledge in informatics, the student is able to solve complex problems.
   7. the student is able to express his thought in written and oral form.

C. Attitudes
   1. the student shows interest in traditional and modern tools and methods.
   2. the student tries for getting acquainted with the methods for problem solving. The student tries getting accomplished.

D. Autonomy and responsibility
   1. The student uses system approach

2.3 Methods

Lectures and exercise classes. Communication in oral and written form, use of IT tools and methods. Project for single student (or for groups, optional).

2.4 Course outline

week:	Topics of lectures and/or exercise classes
1.	Deflection of RC members.
2.	Behaviour of RC CS subjected to bending (I and II. behaviour phase).
3-5.	Behaviour of RC CS subjected to bending III. behaviour phase; design, check, beams, slabs). + test
6-8.	Behaviour of RC CS subjected to shear (formulas, important parameters).
9-10.	Check of RC members subjected to combined forces (bending + shear, shift of bending moment diagram, check of end support, torsion). + test
11-12.	Check of CS-s and member subjected to eccentric compression.
13.	Basic idea of prestressing.
14.	Drawing technics + test

The above programme is tentative and subject to changes due to calendar variations and other reasons specific to the actual semester. Consult the effective detailed course schedule of the course on the subject website.

2.5 Study materials

a) Textbooks
b) Printed lecture notes
c) Online materials
    1. electronic notes: http://oktatas.epito.bme.hu/mod/folder/view.php?id=8396

2.6 Other information

1) Visit of contact classes is obligatory. Absence <30% is accepted.

2.7 Consultation

The instructors are available for consultation during their office hours, as advertised on the department website.

II. SUBJECT REQUIREMENTS

3 ASSESSEMENT AND EVALUATION OF THE LEARNING OUTCOMES

3.1 General rules

The assessment of the learning outcomes specified in clause 2.2. above and the evaluation of student performance occurs via tests and homework assignments.

3.2 Assesement methods

Evaluation form	abbrev.	**assessed learning outcomes**
1. midterm test (summary evaluation)	T1	A.1-A.5; B.1-B.2; B.7; C1-3; D1
2. midterm test (summary evaluation)	T2	A.1-A.5; B.2-B.3; B.7; C1-3; D1
3. midterm test (summary evaluation)	T3	A.1-A.5; B.4-B.5; B.7; C1-3; D1
1-3. homework	HW 1-3	A.1-A.5; B.4-B.5; B.7; C1-3; D1
attendance and activity	A	A.1-A.12; B.5; C.7; D.1-D.4

The dates of midterm tests and deadlines of assignments/homework can be found in the detailed course schedule on the subject's website.

3.3 Evaluation system

abbreviation	**score**
T1-3	82% (average of the best two tests)
HW1-3	3*6%
A	Bonus: 10% of the worst test (max 8points)
Sum	**100%**

Average of the best two theoretical part of the tests should be >40%.

Average of the best two tests should be >50%.

3.4 Requirements and validity of signature

The subject is passed if the student meets the requirements detailed in the part 3.3.

3.5 Grading system

If the subject is passed, the grade is calculated the following way:

There is no limit for the homework project.

grade	**points (P)**
excellent (5)	90<=P
good (4)	75<=P<90%
satisfactory (3)	60<=P<75%
passed (2)	45<=P<60%
failed (1)	P<45%

3.6 Retake and repeat

1) There is no minimum requirement for individual mid-term benchmarking, therefore retake of the tests is not possible.
2) No retake of attendance and activity is available.

3.7 Estimated workload

activity	**hours/semester**
contact hours	13×3=39
preparation for the courses	14×2=28
preparation for the tests (homework)	7+8+8=23
in total	**90**

3.8 Effective date

September 1, 2017.