Construction Technology - BMEEOHSA-K1

I. Subject Specification

1. Basic Data

1.1 Title

Construction Technology

1.2 Code

BMEEOHSA-K1

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	1
Seminar	1

1.5 Evaluation

Midterm grade

1.6 Credits

3

1.7 Coordinator

name	Dr. Horváth László István
academic rank	Associate professor
email	horvath.laszlo@emk.bme.hu

1.8 Department

Department of Structural Engineering

1.9 Website

https://epito.bme.hu/BMEEOHSA-K1
https://fiek2.mywire.org/course/view.php?id=1377

1.10 Language of instruction

hungarian and english

1.11 Curriculum requirements

-

-

-

1.12 Prerequisites

Strong prerequisites:

- Steel and Composite Structures (BMEEOHSAS47)
- RC and Masonry Structures (BMEEOHSAS42)

1.13 Effective date

5 February 2020

2. Objectives and learning outcomes

2.1 Objectives

The aim of the subject is to teach the recent technological questions of the fabrication and erection of steel- and reinforced concrete structures, including the influence of the constructional technologies on the structures. Within the scope of the subject the basics of welding technology and special steel material aspects: brittle fracture and selection of the appropriate material for steel structures are discussed. Further the subject will give knowledge about the modern connecting elements and fasteners, and in situ, prestressed and special RC constructional technologies and formworks.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. Knows the most important electric arc welding technologies and its influence on the load-bearing steel structure,
2. knows the applicable structural steels and its material properties,
3. knows the special technological problems of the steel material: brittle fracture, fatigue, weldability,
4. knows the recent fastening techniques and methods,
5. knows the design of formworks and the basis of their analysis,
6. knows about special formworks, climbing and sliding formworks, and about their application possibilities,
7. knows about waterproof fluid retaining reinforced concrete containers, tanks and about their connections,
8. knows the shotcrete technology.

B. Skills

1. Is able to choose the appropriate steel material grade and subgrade for the structure,
2. is able to recognize the basic design or workmanship mistakes,
3. is able to choose the best applicable fastening method,
4. is able to identify the most important technological problems of the fabrication and erection of steel and RF concrete structures; to explore the necessary theoretical and practical background; and finally – based on the gained knowledge – to develop the method to solve it,
5. is able to recognize the specialities of waterproof concrete structures and is able to give solution to them,
6. is able to choose adequately the formwork technology to given RC structures,
7. is able to communicate his/her technical ideas in written and in oral.

C. Attitudes

1. The student cooperates with the lecturer,

2. the student is open to the use of IT tools,
3. opened to gain new knowledge, increase their knowledge by continuous learning,
4. the student makes an effort to get to know and daily use the tools needed for the problem solving,
5. the student makes an effort to accurate and error-free task solving.
6. the student makes an effort to put forward the principle of energy efficiency and environmental awareness.

D. Autonomy and Responsibility

1. Independently performs the task of thinking and solving tasks and problems related to the fabrication, erection of structures, material testing based on given source literature,
2. welcomes the well-founded critical remarks,
3. uses the systematic approach in its thinking.

2.3 Methods

Lectures, exercise classes, written and oral communication, use of IT tools and techniques, independent homeworks.

2.4 Course outline

Week	**Topics of lectures and/or exercise classes**
1.	Structural steel classes and subclasses, fabrication technologies, mechanical properties and chemical content of steels.
2.	Choosing of appropriate steel material - examples.
3.	Basics of welding technology, special aspects of the design and construction of welded steel structures.
4.	Welding practice in the Lab.
5.	Corrosion protection methods of metal structures.
6.	Prestressed and self-screwing bolted connections – design and construction.
7.	Application and technology of Shotcrete.
8.	Modern anchoring systems.
9.	Special construction technologies of in-situ concrete: climbing and sliding formworks.
10.	Analysis of formworks and falseworks.
11.	Problematics of analysis and configuration of liquid retaining structures.
12.	Analysis of opened and closed liquid tanks.
13.	Design and construction mistakes, case studies.
14.	Summary and Conclusions.

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

Bohnart: Welding – principles and practices, McGraw-Hill, 2012.

Electronic Lecture Notes from the webpage of the subject

2.6 Other information

Attendance to lectures and exercise classes is compulsory. The signature and credits from the subject will be refused to students attending less than 70% of the classes.

2.7 Consultation

The teachers are available for consultation during their office hours, as advertised on the department website. Special appointments can be requested via e-mail.

This Subject Datasheet is valid for:

Inactive courses

II. Subject requirements

Assessment 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 midterm test and 2 homework assignments.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
1. midterm test	ZH	A.1-A.8; B.1-B.6
1. homework	1.HW	A.1-A.3; B.1-B.3; C.1-C.6; D.1-D.3
2. homework	2.HW	A.4-A.7; B.4-B.7; C.1-C.6; D.1-D.3

The midterm test is successful if it reaches minimum 50% of the obtainable maximum points.
Both homeworks are obligatory, and they are successful if each gets minimum 25% of the obtainable maximum points.
The dates of deadlines of assignments/homework can be found in the detailed course schedule on the subject's website.

3.3 Evaluation system

Abbreviation	Score
ZH	80%
1. HW	10%
2. HW	10%
Sum	**100%**

3.4 Requirements and validity of signature

No signature can be obtained from the subject.

3.5 Grading system

Grade	Points (P)
Excellent (5)	80% <= P
Good (4)	70% <= P < 80%
Satisfactory (3)	60% <= P < 70%
Passed (2)	50% <= P < 60%
Failed (1)	P < 50%

3.6 Retake and repeat

1) The re-submit of the homework may be done till the first day of the exam period (Monday) till 12:00 paying the extra charge.
2) The retake or the repeat of the midterm tests overwrite the original results.
3) In case the Student cannot have valid midterm test using the retake during the semester they may extra retake one of the midterm test in the repetition period with paying the extra charge.
4) All the valid collected results have to gain in one semester.

3.7 Estimated workload

Construction Technology - BMEEOHSA-K1

Activity	**Hours/semester**
contact hours	14×2=28
preparation for the exercise courses	7×1=7
preparation for the tests	28
homework	2×10=20
home studying of the written material	7
Sum	**90**

3.8 Effective date

5 February 2020

This Subject Datasheet is valid for:

Inactive courses