Advanced construction materials - BMEEOEMDT84

I. Subject Specification

1. Basic Data

1.1 Title

Advanced construction materials

1.2 Code

BMEEOEMDT84

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	2

1.5 Evaluation

Exam

1.6 Credits

3

1.7 Coordinator

name	Dr. Balázs L. György
academic rank	Professor
email	balazs.gyorgy@emk.bme.hu

1.8 Department

Department of Construction Materials and Technologies

1.9 Website

https://epito.bme.hu/BMEEOEMDT84
https://fiek2.mywire.org/course/view.php?id=2519

1.10 Language of instruction

english

1.11 Curriculum requirements

Ph.D.

1.12 Prerequisites

There are no prerequisites for PhD students.

1.13 Effective date

1 September 2022

Advanced construction materials - BMEEOEMDT84

2. Objectives and learning outcomes

2.1 Objectives

The main objective of the subject is to impart up-to-date knowledge about new construction materials that are the results of recent developments and the goals of further research.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. Able to understand the role and purpose of application of the advanced construction materials in the system of the well-known materials.
2. Able to understand the micro- and macrostructural behaviour of the advanced construction materials by the physical and chemical explanations.
3. Able to understand how the application of advanced materials will influence the service life of structures.

B. Skills

1. Able to recognize and identify the advantages of advanced construction materials.
2. Able to compare the service life of the structures made of ordinary or advanced materials.

C. Attitudes

1. Continuously expands his/her knowledge.
2. Strives for accurate and error-free problem recognition and evaluation.

D. Autonomy and Responsibility

1. Able to work independently.
2. Accepts critical comments.

2.3 Methods

Lectures, individual learning

2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	Introduction. Why and how can construction materials and technologies be further developed? / Dr. Balázs L. György
2.	Strengthening Materials and Methods I. / Dr. Balázs L. György
3.	Strengthening Materials and Methods II. / Dr. Sólyom Sándor
4.	Micromechanics of FRP and its constituents I.-II. / Dr. Balázs L. György
5.	Fire - advanced materials I. / Dr. Lublóy Éva
6.	Fire - advanced materials II. / Dr. Lublóy Éva
7.	Advanced Materials – LWAC, Recycling in Concrete I. / Dr. Nemes Rita
8.	Advanced Materials – LWAC, Recycling in Concrete II. / Dr. Nemes Rita
9.	Advanced glass materials in construction / Dr. Nehme Kinga
10.	Concrete as radiation protection / Dr. Nehme Salem
11.	Zero cement concrete / Dr. Kopecskó Katalin
12.	Advanced materials in road construction / Dr. Fenyvesi Olivér
13.	Shape Memory Alloys / Dr. Balázs L. György
14.	3D-printed concrete in construction / Dr. Sólyom Sándor - Dr. Balázs L. György

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

- pdf versions of the Lectures.
- Literature is provided for the preparation of the exam as well as for the classes.
- (Uploaded in the moodle system.)

2.6 Other information

2.7 Consultation

At a pre-arranged time (via e-mail): balazs.gyorgy@emk.bme.hu

This Subject Datasheet is valid for:

Inactive courses

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
Exam, oral	E	A.1-A.3; B.1-B.2; C.1-C.2; D.1-D.2;

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
E	100%
Sum	**100%**

3.4 Requirements and validity of signature

Active presence during the semester.

3.5 Grading system

Grade	Points (P)
excellent (5)	85-100
good (4)	74-84
satisfactory (3)	62-73
passed (2)	50-61
failed (1)	0-49

3.6 Retake and repeat

Possible during the examination period.

3.7 Estimated workload

Activity	Hours/semester
Lectures	28
Individual learning	62
Sum	**90**

3.8 Effective date

1 September 2022

Advanced construction materials - BMEEOEMDT84

This Subject Datasheet is valid for:

Inactive courses