Durability of construction materials - BMEEOEMDT82

I. Subject Specification

1. Basic Data

1.1 Title

Durability of construction materials

1.2 Code

BMEEOEMDT82

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. György L. BALÁZS
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/BMEEOEMDT82
https://fiek2.mywire.org/course/view.php?id=2521

1.10 Language of instruction

english

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1.11 Curriculum requirements

Ph.D.

1.12 Prerequisites

1.13 Effective date

1 September 2022

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2. Objectives and learning outcomes

2.1 Objectives

Durability is the resistance to degradation of products, materials, buildings and other built assets over time. This can be a difficult property to assess - whilst a tough material may be hard to the touch but it may also be non-durable if it decomposes or is eroded in a relatively short period of time.
The subject focuses on durability properties from the point of view of materials.
With the transferred knowledge, the student is able to understand and analyse the known and expected durability properties of the material systems. The knowledge can be used in estimating the service life of the materials and structures.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. Able to understand the physical and chemical causes of the durability phenomenon
2. Able to understand how the degradation of materials will influence the service life of structures

B. Skills

1. Able to recognize and identify the different durability phenomena
2. Able to predict what happen due to the different environmental conditions

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 independently evaluate durability issues
2. Accepts critical comments

2.3 Methods

Lectures

2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	Introductory lecture and organizational aspects
2.	Service Life Design-I. (SLD-I) - Prof. Balázs
3.	Service Life Design-II. (SLD-II) - Prof. Balázs
4.	Nonmetallic reinforcements-I. - Prof. Balázs
5.	Nonmetallic reinforcements-II. - Prof. Balázs
6.	Maintain durability-I. - Prof. Balázs
7.	Maintain durability-II. - Prof. Balázs
8.	Deterioration processes of cementitious materials-I. Physical - Assoc. Prof. Katalin Kopecskó
9.	Deterioration processes of cementitious materials-II. Chemical - Assoc. Prof. Katalin Kopecskó
10.	Deterioration processes of cementitious materials-III. Biological - Assoc. Prof. Katalin Kopecskó
11.	Chloride induced corrosion and chloride transport in cementitious materials - Assoc. Prof. Katalin Kopecskó
12.	Other types of reinforcements, glass, polymer and natural fibres; glass corrosion - Assoc. Prof. Katalin Kopecskó
13.	Other durability issues-I. - Assoc. Prof. Salem Nehme
14.	Other durability issues-II. - Assoc. Prof. Salem Nehme

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

Lectures (pdf) uploaded here in the moodle system.

Sources uploaded here in the moodle system.

2.6 Other information

2.7 Consultation

At a pre-arranged time (via e-mail):

balazs.gyorgy@emk.bme.hu

kopecsko.katalin@emk.bme.hu

nehme.salem@emk.bme.hu

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This Subject Datasheet is valid for:

Inactive courses

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

The learning outcomes stated in paragraph 2.2 are evaluated on the basis of an oral exam.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
Exam	E	A.1-A.2; 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

3.5 Grading system

Grade	Points (P)
excellent (5)	85 % <= E
good (4)	74 % <= E < 85%
satisfactory (3)	63 % <= E <74%
passed (2)	50 % <= E < 63%
failed (1)	E < 50 %

3.6 Retake and repeat

In the examination period.

3.7 Estimated workload

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

3.8 Effective date

1 September 2022

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