Building Information Modelling - BMEEOFTMB51

I. Subject Specification

1. Basic Data

1.1 Title

Building Information Modelling

1.2 Code

BMEEOFTMB51

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	2

1.5 Evaluation

Midterm grade

1.6 Credits

3

1.7 Coordinator

name	Dr. Tamas Lovas
academic rank	Associate professor
email	lovas.tamas@emk.bme.hu

1.8 Department

Department of Photogrammetry and Geoinformatics

1.9 Website

https://epito.bme.hu/BMEEOFTMB51
https://fiek2.mywire.org/course/view.php?id=3563

1.10 Language of instruction

hungarian and english

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1.11 Curriculum requirements

Compulsory in the Construction Information Technology Engineering (MSc) programme

1.12 Prerequisites

1.13 Effective date

1 September 2022

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2. Objectives and learning outcomes

2.1 Objectives

The aim of the course is to provide a basic overview of BIM systems and their applications. Students will learn about the basics and history of the BIM approach, the actors involved in the BIM process, the information content of BIM models, and BIM standards. Lectures on use cases will give an overview of the current situation, limitations, and opportunities of BIM. The presentations will specifically discuss BIM applications in different design disciplines (e.g. sustainability and life cycle analysis, smart buildings and smart cities, building services engineering, building services electrical engineering, disaster, and fire protection), as well as applications supporting construction and modern visualization (VR, AR). Students will learn about BIM application possibilities and development directions in the process of creating BIM models of existing buildings and supporting monitoring constructions.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. knows the context and motivation for the development of Building Information Modelling and Management (BIM),
2. knows the basic civil engineering aspects of the BIM approach,
3. has an overview of the main current and future applications of BIM technologies.
4. has an overview of the information content and domains of building information systems,
5. has an overview of BIM standards, and BIM standardization efforts,
6. knows the conditions and functioning of BIM-based work,
7. knows the conditions, constraints, potential, and workflow of BIM-based design,
8. knows the main applications and technologies, conditions, constraints, opportunities, and workflow of BIM-based visualization.
9. knows the BIM-based enterprise work organization and BIM terminology.
10. knows the BIM-based working conditions and operation.
11. understands the current limits and constraints of BIM applications and technologies.

B. Skills

1. understands the BIM processes and the role of the stakeholders,
2. communicate professionally using BIM terminology,
3. selects the software required for a given BIM process,
4. evaluates and selects other information communication tools required for BIM processes.
5. assesses the effectiveness of BIM processes and identifies their resource requirements.
6. understands the BIM applications and technologies required to complete a given construction task, the roles, and the responsibilities of the participants.
7. ability to carry out and present own BIM-related study

C. Attitudes

1. committed to the use of BIM systems in the construction industry,
2. committed to energy awareness and sustainability,
3. open to learning and applying new solutions.

D. Autonomy and Responsibility

1. monitors legislative, technical, technological, and administrative changes in the field,
2. open to professionally informed critical comments,
3. works independently on a study/topic of his/her choice.

2.3 Methods

Lectures, supporting materials, home assignment

2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	AEC industry digitalization
2.	BIM basics
3.	BIM applications
4.	BIM applications
5.	Life cycle analysis
6.	Dynamic simulations
7.	VR technologies
8.	Scan-to-BIM
9.	assessment
10.	BIM use cases
11.	BIM in construction
12.	Facility management, fire protection
13.	3D concrete printing
14.	assessment

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

Shared sources on the subject's site

2.6 Other information

2.7 Consultation

According to the consultation hours of lecturers or discussed via email

This Subject Datasheet is valid for:

2023/2024 semester I

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

The assessment of the learning outcomes set out in 2.2 is based on a test and a home assignment.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
1. test	T1	A.1-A.11; B.1-B.7; C.2-C.3; D.1
1. home assignment	H1	A.1-A.11; B.1-B.7; C.1-C.3; D.1-D.3

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
T1	50%
H1	50%
Sum	**100%**

3.4 Requirements and validity of signature

No signature can be obtained.

3.5 Grading system

Grade	Points (P)
excellent (5)	90<=P
good (4)	80<=P<90%
satisfactory (3)	70<=P<80%
passed (2)	50<=P<70%
failed (1)	P<50%

3.6 Retake and repeat

The test may be retaken free of charge for the first time during the make-up period. In case of correction, the new result will be taken into account.

The home assignment may be resubmitted one week after the deadline for submission for a make-up fee.

3.7 Estimated workload

Activity	Hours/semester
attending contact hours	14x2=28
creating the home assignment	20
preparing to classes	14x1=14
preparing to test	28
Sum	90

3.8 Effective date

1 September 2022

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2023/2024 semester I