BIM Modelling and Design - BMEEOFTMB52

I. Subject Specification

1. Basic Data

1.1 Title

BIM Modelling and Design

1.2 Code

BMEEOFTMB52

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lab	4

1.5 Evaluation

Midterm grade

1.6 Credits

5

1.7 Coordinator

name	Dr. Somogyi József Árpád
academic rank	Assistant professor
email	somogyi.arpad@emk.bme.hu

1.8 Department

Department of Photogrammetry and Geoinformatics

1.9 Website

https://epito.bme.hu/BMEEOFTMB52
https://edu.epito.bme.hu/course/view.php?id=3565

1.10 Language of instruction

english

1.11 Curriculum requirements

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1.12 Prerequisites

1.13 Effective date

1 January 2022

2. Objectives and learning outcomes

2.1 Objectives

The aim of the course is to provide a basic overview of the architecture of BIM systems and their applications. The exercises will provide students with the modelling solutions and associated commands that enable the creation of BIM systems. The course will specifically cover the publication of plans, the creation of consignments, the possibility of performing impact studies, energy calculations, time and space statements. The course will also introduce the application of BIM systems to various civil engineering tasks in the fields of structural design, infrastructure and geoinformatics. The aim of the course is to provide students with an understanding of the functions, capabilities and applications of BIM systems.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. Knowledge of the basic civil engineering aspects of building information modelling and management approaches.
2. Have an overview of the main applications of BIM systems.
3. Knowledge of the general design principles of BIM systems architecture.
4. Knowledge of the main modelling options for BIM environments.
5. Familiarity with the system of notations and notation available in BIM systems.
6. Knowledge of the publishing options of BIM systems.
7. Knowledge of the reporting options available in BIM systems.
8. Knowledge of the analysis functions available in BIM systems.
9. Understand the limits and constraints of BIM systems.

B. Skills

1. Ability to create civil engineering objects using basic modelling steps.
2. Ability to create simple parametric objects.
3. Ability to take information from different disciplines and incorporate it into a single model.
4. Ability to produce planar design materials.
5. Ability to see through BIM modelling tasks at project level.
6. Ability to work in a team to solve BIM tasks.

C. Attitudes

1. Strive to produce accurate edits and flawless models.
2. Open to learning the possibilities of BIM systems

D. Autonomy and Responsibility

1. Carry out independently the tasks assigned as class work.
2. In the case of criticism of his/her work, the teacher accepts well-founded critical comments and incorporates them into his/her further work.

2.3 Methods

Computer laboratory exercises, written and oral communication. Performance assessment through independent homework assessment in the context of continuous task presentation

2.4 Course outline

Week	**Topics of lectures and/or exercise classes**
1.	Description of the subject and requirements, general project approach based on the graphical interface, Spatial positioning of the project
2.	Presentation and possibilities of architectural elements ranging from simple solids to building structures
3.	Family element design and modelling with steel structures, connections
4.	Application of reinforced concrete structures, reinforcement, filters and detections (reinforcement collection)
5.	Publication preparation, writing, visualisations, detail drawings, renderings, 2D design documentation production, IFC output
6.	Collision analysis and animation.
7.	Quantity surveying, budgeting, time planning, spatial and temporal organisation.
8.	Parametric design
9.	BIM solutions in an architectural environment.
10.	BIM solutions in an architectural environment.
11.	BIM solutions in an architectural environment.
12.	BIM solutions in an architectural environment.
13.	BIM solutions in an architectural environment.
14.	Submission of assignment, presentation of work done in a presentation (EA).

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

2.6 Other information

You can use your own laptop for the exercises with the instructor's permission.

2.7 Consultation

As indicated on the websites of the departments concerned, or in advance by e-mail with the traineeship supervisors.

This Subject Datasheet is valid for:

2023/2024 semester II

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

The learning outcomes in 2.2 are assessed on the basis of four homework assignments.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
Homework 1 (partial assessment) - modelling	HW01	A.1-A.4; B.1-B.4; C.1-C.2; D.1-D.2
Homework 2 (partial assessment) - energetics	HW02	A.1-A.9; B.1-B.6; C.1-C.2; D.1-D.2
Homework 3 (partial assessment) - modelling	HW03	A.1-A.9; B.1-B.6; C.1-C.2; D.1-D.2
Homework 4 (partial assessment) documentation	HW04	A.1-A.9; B.1-B.6; 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
HW01	20%
HW02	20%
HW03	30%
HW04	30%
Sum	**100%**

3.4 Requirements and validity of signature

No signature can be obtained on the subject

3.5 Grading system

In order to receive a mark, the student must complete all the homework assignments and the lecture to be completed during the semester according to section 3.3. The final grade will be calculated according to the weighting of the marks according to point 3.3 as shown in the table below:

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

If the homework submitted by the deadlines specified in the detailed timetable does not reach the satisfactory level, the homework may be corrected by the correction date specified in the detailed timetable, subject to payment of a late fee.

3.7 Estimated workload

Activity	**Hours/semester**
participation in contact classes	14×4=56
preparation for the practices	14×1=14
homework	110
Sum	180

3.8 Effective date

1 January 2022

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