Infrastructure CAD Course - BMEEOUVAI45

I. Subject Specification

1. Basic Data

1.1 Title

Infrastructure CAD Course

1.2 Code

BMEEOUVAI45

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lab	2

1.5 Evaluation

Midterm grade

1.6 Credits

1

1.7 Coordinator

name	Dr. Kollár Attila
academic rank	Assistant professor
email	kollar.attila@emk.bme.hu

1.8 Department

Department of Highway and Railway Engineering

1.9 Website

https://epito.bme.hu/BMEEOUVAI45
https://edu.epito.bme.hu/course/view.php?id=3528

1.10 Language of instruction

english

1.11 Curriculum requirements

Compulsory in the Specialization in Infrastructure Engineering (BSc) programme

1.12 Prerequisites

Required previous subjects (need to be completed to register)

- Railway Tracks (BMEEOUVAT41)
- Public Works 1 (BMEEOVKAT42)
- Civil Engineering Informatics (BMEEOFTAT42)

1.13 Effective date

1 September 2023

2. Objectives and learning outcomes

2.1 Objectives

The objective of the subject is to present a general overview and introduction of public works and road design with the help of AutoCAD and AutoCAD Civil 3D.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. will learn the steps of road design (using AutoCAD),
2. will learn the alignment (horizontal and vertical) and complex 3D (cross-section, corridor modelling) design of a road,
3. will learn the main features of AutoCAD/Civil 3D in road design.
4. will learn grading tools
5. will learn catchment area features
6. will learn storm and sanitary analysis features
7. will learn pipe network feature
8. will learn the basics of VBA programming

B. Skills

1. will be able to understand the principles of 3D design and plan a road,
2. will be able to use the basic commands of AutoCAD and the features of Civil 3D version,
3. will be able to understand the outcome of the program and use it to prepare the plan documentation.
4. will be able to use grading tools
5. catchment area featureswill be abel to use
6. wil be able to use storm and sanitary analysis features
7. will be able to create pipe networks
8. will be able to use VBA programming

C. Attitudes

1. continuously extends his/her knowledge,

2. is open to get familiarized with the application of modern technical solutions,

3. is intent on precise and error-free problem solving,

4. cooperates with the lecturers and with fellow students.

D. Autonomy and Responsibility

1. is aware of the relevance of deadlines, is intent to keep them,

2. is able to autonomously solve the homework.

3. is open to the new information and fact-based critics.

2.3 Methods

Lectures, exercises, application of IT tools and oral communications, assignments solved individually.

2.4 Course outline

Week	**Topics of lectures and/or exercise classes**
1.	Public Works: Grading tools.
2.	Public Works: Pipe networks
3.	Public Works: Catchment areas
4.	Public Works: Storm and sanitary analysis 1.
5.	Public Works: Storm and sanitary analysis 2.
6.	Public Works: VBA programming
7.	Road design: Surface modelling.
8.	Road design: Alignment design (horizontal axis). Profile design (vertical axis). Superelevation, Design speed
9.	Road design: Typical/sample cross sections (subassembly composer). Corridor modelling.
10.	Road design: Sample lines. Cross sections.
11.	Road design: Corridor targets. Materials and quantities.
12.	Road design: Plan production and documentation. Tips & Tricks. Common practice.
13.	Consultation
14.	Midterm test

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

Study-aids, guidelines and downloadable materials as specified in the class, technical specifications. Online materials. AutoCAD Civil 3D Online Help.

2.6 Other information

1. Computer and AutoCAD software access is available during classes.
2. Students are evaluated based on their actual individual performance. Students are required to show evidence of their own knowledge and skills. Submitting a work of others, obtaining or giving unauthorized help (e.g. during an exam or test) cheating and plagiarism in any form is unacceptable. Whoever violate the respective Regulations of the University will be given a failing grade (1), without the possibility of retake and repeat, and will be reported to the Dean's Office.
3. Attendance of lectures is compulsory. The credits from the subject will be refused to students missing more than four times.

2.7 Consultation

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

- Public Works: Marcell KNOLMÁR PhD. - knolmar.marcell@emk.bme.hu
- Road design: Szabolcs BARNA - barna.szabolcs@emk.bme.hu

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 assessment of the learning outcomes specified in clause 2.2. above and the evaluation of student performance occurs via one midterm test.

The midterm test has two parts (Public Works and Road design).

Criterion for completion of the subject is to collect at least 50% of the total points of each parts.

The student must be present at least 70% of the classes (10 times).

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
1. midterm test	MT	A.1-A.8; B.1-B.8; C.1-C.4; 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
MT - Public Works	50%
MT - Road design	50%
Sum	**100%**

3.4 Requirements and validity of signature

Signature cannot be obtained.

3.5 Grading system

Grade	Result
excellent (5)	90<=P
good (4)	80<=P<90%
satisfactory (3)	67.5<=P<80%
passed (2)	50<=P<67.5%
failed (1)	P<50%

3.6 Retake and repeat

1. The midterm test can be repeated –without fee – at a previously determined date given in the course schedule. The midterm test can be repeated twice by paying a previously defined fee. It is enough to repeat the failed part.
2. The new result of the repeated test overwrites the former result only if that is the better.

3.7 Estimated workload

Activity	**Hours/semester**
contact hours	14×2=28
preparation for the tests	2
Sum	30

3.8 Effective date

1 September 2023

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