Transportation Modeling - BMEEOUVMU61

I. Subject Specification

1. Basic Data

1.1 Title

Transportation Modeling

1.2 Code

BMEEOUVMU61

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

2

1.7 Coordinator

name	Dr. János Juhász
academic rank	Associate professor
email	juhasz.janos@emk.bme.hu

1.8 Department

Department of Highway and Railway Engineering

1.9 Website

https://epito.bme.hu/BMEEOUVMU61
https://fiek2.mywire.org/course/view.php?id=3498

1.10 Language of instruction

english

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1.11 Curriculum requirements

Recommended elective in the Specialization in Highway and Railway 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 objective of the subject is that the students get familiarized with basic concepts of transportation modelling. The aim is to give students a comprehensive picture of the tools and possibilities of transport modelling, as well as the operation and limitations of the relevant main - mostly computational - procedures. This is important because although the field does not have civil engineering roots, our students in today's Master's Program, who use their knowledge in their profession, will certainly come into contact with the results of this science during their careers.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. learn the basic contexts of transport modelling,
2. learn the purpose and limitations of traffic models,
3. learn the workflows of a traffic model development,
4. understand what results can be expected using these models.

B. Skills

1. will be able to recognize and interpret the results of a complex traffic model,
2. will able to get to know the structure and peculiarities of a simple model with less guidance in such a way that it can make fundamental changes in it,
3. will be able to to participate in scenario analysis supported by traffic modelling (not on the model development side.

C. Attitudes

1. cooperates with the teachers, lecturers,
2. continuously extends his/her knowledge,
3. is open to get familiarized with the application of modern technical solutions,
4. is open to get familiarized with the application of ICT tools,
5. is intent on precise and error-free problem solving.

D. Autonomy and Responsibility

1. prepare for the lectures using the curriculum provided based on the instructor's preliminary instructions,
2. prepare responsibly for the successful completion of summary performance evaluations,
3. is able to autonomously thinking about a transportation problem with modelling.

2.3 Methods

Lectures, exercises, written and oral communications, assignments solved individually

2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	Basics of transportation planning and transportation modelling
2.	Introduction of the network model
3.	Transport demand modelling
4.	Mode choice modelling
5.	Traffic assignment models
6.	Data requirements of transport models
7.	Introduction of the PTV VISUM modelling software 1/2
8.	Introduction of the PTV VISUM modelling software 2/2
9.	Basics of microscopic modelling
10.	Analysis of the traffic flow
11.	Introduction of the PTV VISSIM modelling software 1/2
12.	Introduction of the PTV VISSIM modelling software 2/2
13.	Presentation of PC Crash software
14.	Overview of the lectures

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

Juan de Dios Ortúzar, Luis G. Willumsen: Modelling Transport

2.6 Other information

1. Attendance to 70% of lectures is compulsory. The signature and credits from the subject will be refused to students missing more than 5 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.

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: juhasz.janos@emk.bme.hu

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 specified in clause 2.2. above and the evaluation of student performance occurs via test and class work.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
written test	ZH	A.1-A.4; B.1-B.3; C.1-C.5; 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
ZH	100%
Sum	**100%**

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

3.4 Requirements and validity of signature

Not available / not relevant.

3.5 Grading system

Grade	Points (P)
excellent (5)	80 <= P
good (4)	70 <= P < 80 %
satisfactory (3)	60 <= P < 70 %
passed (2)5	50 <= P < 60 %
failed (1)	P < 50 %

3.6 Retake and repeat

Repetition of the written test is allowed.

3.7 Estimated workload

Activity	Hours/semester
contact hours	14×2=28
preparation for the courses	8
preparation for the tests	24
Sum	**60**

3.8 Effective date

1 September 2022

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