Pavement Management Systems - BMEEOUVMU-3 - 2024/25/2

I. Subject Specification

1. Basic Data

1.1 Title

PAVEMENT MANAGEMENT SYSTEMS

1.2 Code

BMEEOUVMU-3

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

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1.8 Department

Department of Highway and Railway Engineering

1.9 Website

https://epito.bme.hu/BMEEOUVMU-3
https://edu.epito.bme.hu/course/view.php?id=3531

1.10 Language of instruction

hungarian and english

1.11 Curriculum requirements

Compulsory in the Highway and Railway Engineering (MSc) programme

1.12 Prerequisites

1.13 Effective date

1 September 2022

2. Objectives and learning outcomes

2.1 Objectives

During the course, the student learns the structure of road and rail track management systems, functioning and applicability. The student gains insight into road and rail track structure diagnostics the principle of operation of the equipment and the course of the measurements, the means of evaluating them, as well as the use of data obtained during the measurements in the preparation of track management strategies.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. You are familiar with the diagnostic tools of the railway and road track structure and the data they providestructure and reliability.
2. You are familiar with the concept of life cycle analysis, the steps and the means of its preparation.
3. He knows the tasks and role of road management.
4. You are familiar with the current bridge and road management systems, the structure of the road databank, structure and main tasks of the institutional system.
5. He knows the needs and tasks of road operation and maintenance, he knows the most important concepts, he knows the vegetation care tasks.
6. You know the possible forms and timing of the resources needed to perform road management tasks.
7. You are familiar with the degradation models of track structures and the levels of intervention.
8. You are familiar with the related regulations and standards.
9. He knows the purpose and essence of road property management.

B. Skills

1. You can select a diagnostic tool to detect a specific error.
2. It is able to evaluate a raw data series for track diagnostic measurement.
3. It is able to deduce the condition of the track based on track diagnostic measurements.
4. Know what data is required for PMS (Pavement Management System) systems running.
5. It is capable of visually recording the casing.

C. Attitudes

1. It strives for accurate and error-free task resolution.
2. In the course of his manifestations, he strives for a precise, professional formulation.
3. In its written performance evaluations, it strives to ensure an orderly, engineering-grade and to prepare external documentation.

D. Autonomy and Responsibility

1. Prepare responsibly to successfully complete summary benchmarks.
2. In his thinking, he takes a systematic approach.
3. He is open to critical comments that he is working on in his duties.

2.3 Methods

Lectures with presentation, self-prepared home design task, communication in writing and orally (During performance evaluation and examination).

2.4 Course outline

The adaptation of PMS and some major PMS system. PMS practical applicability.

Week	**Topics of lectures and/or exercise classes**
1.	Current issues of hungarian

	road management. Basic concepts.
2.	Concept and relationship between road management and road maintenance.
3.	General tasks of road operation, information on road management system (levels, network, etc)
4.	Road surface condition assessment, visual status assessment, categorization of errors of the surface.
5.	The adaptation of PMS and some major PMS system. PMS practical applicability.
6.	Definition of road maintenance needs. The importance of facility level.
7.	Public-private enterprise associations (PPP), role in development
8.	Cladding status assessment, combined indices.
9.	Diagnostics of the road substructure. Life cycle cost analyses
10.	Bridge management.

	The most important features of PONTIS, the characteristics of domestic bridge management.
11.	Methods, importance and importance of railway track diagnostics areas and assets.
12.	Manual for geometric measurement of the railway superstructure devices and measuring trains, the equipment they provide data. Track diagnostic specifications, Standards.
13.	Use of railway diagnostic results, rating methods. Size limits.
14.	The railway substructure diagnostics. Life cycle cost analysis.

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

a) Textbooks:

1. Gáspár L : Útgazdálkodás, Budapest: Akadémiai Kiadó, 361 p.
2. Gáspár L, Horvát F, Lublóy L (Szerk.: Gáspár L.): Közlekedési létesítmények élettartama, Győr:Universitas-Győr Kht., 324 p.

b) Standards and regulations:

1. e-UT 08.00.21 TÚ. 7. Utak üzemeltetése és fenntartása
2. e-UT 08.01.71 (TÚ. 19) Helyi közutak kezelése
3. e-UT 08.02.31 (ÚT 2-2.125:2007) Betonburkolatok fenntartási technológiái
4. e-UT 08.01.71 (TÚ. 19.) Helyi közutak kezelése
5. e-UT 08.02.11 (ÚT 2-2.103.2007) Aszfaltburkolatok fenntartása

6. e-UT 08.03.22 TÚ. 17. Hófúvás ellen védő növénysávok
7. D.54. sz. „Építési és Pályafenntartási Műszaki Adatok, Előírások” I. kötet

2.6 Other information

Participation in the lectures is 70% mandatory. A student who is missing five or more sessions is not you can get your course credits.

2.7 Consultation

Consultation options: As stated on the department's website.

This Subject Datasheet is valid for:

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

The evaluation of the learning outcomes set out in point 2.2 is an interim written assessment performance evaluation and a standalone partial performance evaluation (home task), active performance participation and the oral examination.

3.2 Assessment methods

Evaluation form	Abbrev.	Assessed learning outcomes
		A.1-A.9; B.1-B.5; 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

3.4 Requirements and validity of signature

The condition for obtaining a signature is that the score that can be obtained during the working period in accordance with point 3.3 at least 50% of the student, both for each individual benchmark and for the score. In addition, participation in 70% of lectures and exercises is mandatory.

3.5 Grading system

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

3.6 Retake and repeat

In addition to paying the fee specified in the rules, the tasks at home are delayed by the "Detailed semester schedule".

3.7 Estimated workload

3.8 Effective date

1 September 2022

This Subject Datasheet is valid for: