

## Tárgytematika / Course Description Engineering Maintenance

EKNB\_SETA033

**Tárgyfelelős neve /**

**Teacher's name:** Dr. Kegyes-Brassai Orsolya Katalin

**Félév / Semester:** 2024/25/1

**Beszámolási forma /**

**Assesment:** Folyamatos számonkérés

**Tárgy heti óraszám /**

**Teaching hours(week):** 2/1/0

**Tárgy féléves óraszám /**

**Teaching hours(sem.):** 0/0/0

### OKTATÁS CÉLJA / AIM OF THE COURSE

#### *Goals of the course*

The lectures discuss the operation and maintenance tasks of buildings, roads, railways and bridges, and the applied management systems. Aim is to demonstrate the technical and economic significance of the implementation of the appropriate maintenance and renovation programs.

### TANTÁRGY TARTALMA / DESCRIPTION

#### *Course description*

Week 1 Introduction - Infrastructure Management System (IMS) , maintenance strategies Lifetime - cost model. Maintenance, renovation. Preparatory planning. Maintenance strategies and software. Measurement and evaluation technique.

Week 2 Facility management of buildings, Legal framework for facility management. Improve efficiency in operation. Energy management and sustainability. Decision model. Cost types. Risk management.

Week 3 The concept of infrastructure and the elements of the infrastructure. Infrastructure management system. The service life of the railway track and the affecting factors

Week 4 Maintenance and renovation decision support system called PATER.

Week 5 Deterioration of the railway track, railway track diagnostics

Week 6 Road planning, construction, quality control and maintenance subsystems.

Week 7 Test 1

Week 8 Pathway recovery system, deterioration, behavioral model, lifetime.

Week 9 The concept, elements and goals of pavement management system. Road Data Bank.

Week 10 Bridge management systems - elements (bridge elements, unit costs, decay models).

Week 11 Bridge management

Week 12 Student Scientific Conference - no teaching

Week 13 Test 2

Week 14 Project work presentation

### *Assessment methods*

Students are expected to attend all classes. The requirement for obtaining signature at the end of the semester is a participation in at least 70% of the classes (10 out of 14 weeks).

All of them have to

- take two mid-term tests (2×50) and
- prepare a group project related to maintenance and operation (85)
- and there is also an optional assignment (15).

#### **Evaluation** - mid-semester assessment

Available scores in partial performance evaluation:

- |  |         |
|--|---------|
| <input type="checkbox"/> two tests   | 2× 0-50 |
| <input type="checkbox"/> project work, compulsory consultation, presentation | 0-85    |
| <input type="checkbox"/> optional assignment                                 | 0-15    |

Students can choose on their preferences if they want to hand in the optional assignment or not. However handling in the project work and taking equal part in preparing is the minimum requirement for obtaining signature.

However in case on late submission the maximum obtainable score is the 80 % of the total. Deadlines are available on the Moodle-site of the course: <https://szelearning.sze.hu/course/view.php?id=373>

Test should be written and minimum 50% of the score should be obtained.

Marking intervals				
...-99 failed	100 - 119 passed	120 - 139 satisfactory	140 - 159 good	160- excellent

So far assignments have to be accomplished until the exam period there is no possibility to hand in assignment in exam period. Latest possibility to hand in an assignment is the Friday of the first week of exam period until midnight. Later assignments will not be taken into account at marking.

If one of the test were not successful there is a possibility to try again in exam period only once by signing up for an exam. Both test cannot be rewritten in exam period, this case would mean automatic failure. The time for exams will be given on Neptun.

Consultation is available within the time of the class and in another time agreed upon by a prior email.

All information concerning the course and all teaching materials are available on Moodle-site of the course. Official communication is through this site.

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## **KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL**

### ***Reading***

Mohamed Ben-Daya, Uday Kumar, D. N. Prabhakar Murthy: Introduction to Maintenance Engineering: Modelling, Optimization and Management Publisher: Wiley-Blackwell Print ISBN: 9781118487198, 1118487192 eText ISBN: 9781119214601, 1119214602 Edition: 1st, 2016

#### Recommended reading

Bernard T. Lewis: Facility Manager's Maintenance Handbook Publisher: McGraw-Hill Education  
Print ISBN: 9780071477864, 0071477861  
eText ISBN: 9780071511001, 0071511008 Edition: 2nd 2007

Facilities Management Handbook, Fourth Edition 4th Edition  
by Frank Booty (Editor)  
Publisher : Butterworth-Heinemann; 4th edition (May 20, 2009)  
ISBN-13 : 978-0750689779

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## **AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL**