I. Tantárgyleírás Content of Subject ROADS

1. Alapadatok

1.1 Tantárgy neve

ROADS

1.2 Azonosító (tantárgykód)

BMEEOUVAT42

1.3 Tantárgy jellege

Contact hours

1.4 Óraszámok

Type	Contact hours / (day)
Lecture (theory)	2

1.5 Tanulmányi teljesítményértékelés (minőségi értékelés) típusa

Mid-term grade

1.6 Kreditszám

2

1.7 Tárgyfelelős

név	Csaba, OROSZ (PhD)
beosztás	associate professor
email	orosz.csaba@emk.bme.hu

1.8 Tantárgyat gondozó oktatási szervezeti egység

Department of Highway and Railway Engineering

1.9 A tantárgy weblapja

https://epito.bme.hu/BMEEOUVAT42
https://edu.epito.bme.hu/course/view.php?id=458

1.10 Az oktatás nyelve

Hungarian and English

1.11 Tantárgy típusa

Compulsory in the BSc degree in Civil Engineering

1.12 Előkövetelmények

Strong prerequisites:
Railway Tracks (BMEEOUVAT41)

1.13 Tantárgyleírás érvényessége

2022. június 30.

2.Célkitűzések és tanulási eredmények

2.1 Célkitűzések

The objective of the subject is to present a general overview of the road design and road construction field including transportation systems, mobility and sustainable transportation. The processes of design and planning is discussed to understand how the idea becomes reality in case of roads. Basics of road dynamics with details and procedures of alignment and junction design is discussed here with typical solutions for junctions, crossings and intersections. The most important details of traffic engineering with traffic safety studies are parts of the subject as well as the most important chapters of urban transportation, pavement materials, requirement and design of pavement structures with dewatering systems, earthworks and maintenance technologies.

2.2 Tanulási eredmények

A tantárgy sikeres teljesítése utána a hallgató

A. Knowledge

1. learn the nomenclature of the road transportation branch,
2. learn the basic guidelines of transportation policies,
3. learn the design process and its elements,
4. learn the principles of road alignment design,
5. learn the types of intersections with the principles of their design,
6. learn the principles of road traffic signs,
7. learn the definitions, methods and phenomena describing road traffic,

8. learn the basics of traffic safety analysis,
9. learn the basic context and the elements of urban transportation,
10. learn the materials and types of pavement structures,
11. learn the basics of design of pavement structures,
12. learn the basic construction and maintenance technologies.

B. Ability

1. will be able to prepare a simplified authorization plan,
2. will be able to design the horizontal alignment based on his/her own choice of parameters,
3. will be able to design the vertical alignment based on the horizontal alignment,
4. will be able to design sample cross sections and cross sections based on the alignment,
5. will be able to draw the basic configurations of at-grade intersections and name the elements,
6. will be able to draw the basic configurations of multi-level intersections and name the elements,
7. will be able to do simple assessments of design problems,
8. will be able to design an asphalt pavement structure.

C. Attitude

1. cooperates with the lecturer and with fellow students,
2. is intent on understanding and learning the concept, the principles and the design of roads and transportation,
3. is intent on precise and error-free problem solving.

D. Independence and responsibility

1. is open to the new information and fact-based critics,
2. is aware of the relevance of deadlines, is intent to keep them,
3. is able to think in system.

2.3 Oktatási módszertan

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

2.4 Részletes tárgyprogram

Week	Topics of lectures and exercises
1.	Introduction. History of road transportation. Transportation systems, sus-tainable transportation. Planning and design process, phases. Functional design.
2.	Elements and design of cross-sections. Design patterns. Typical layers of pavements, drawing a sample cross-section.
3.	Elements and design of the horizontal alignment. Drawing of a curve with symmetrical transition curves.
4.	Elements and design of the vertical alignment. Spatial coordination, superelevation runoff.
5.	Application of superelevation transition in a transition curve. Drawing cross-sections. Finalization of the site plan and the long section.
6.	Parameters of road traffic: traffic volume, speed and density. Capacity calculations and considerations. Traffic safety analysis.
7.	Traffic management. Road signs and signalized intersections.
8.	Capacity calculations and requirements of intersections. At-grade junctions and their design.
9.	Roundabouts and multi-level intersections.
10.	Urban transportation. Pedestrians, cyclists, obstacle-free spaces. Public trans-portation, parking, traffic management of city centers.
11.	Materials, production and construction of asphalt pavements. Damages and maintenance of asphalt pavements.
12.	Design methods of asphalt pavement structures: design volume and courses of pavements. Load bearing capacity of earthworks. Standard pavement structures, reconstruction of existing pavement structures.
13.	Invited lecture 1: "The design process in a real road design project".
14.	Invited lecture 2: "CAD softwares – the same projects with enhanced tools".

Due to the holidays during the semester, the program is for information purposes only, the exact dates are included in the "Detailed semester schedule" available on the subject's website.

2.5 Tanulástámogató anyagok

Downloadable materials:
- lecture slides
- project guide including calculation samples
Literature: Adler, H (1992) : Cost Benefit Analysis. Examples. pp. 1-275.; Decision Making on Mega-Projects. Edward Elgar Publishing Ltd. (2008) pp. 1-342
2.6 Egyéb tudnivalók
2.7 Konzultációs lehetőségek
The instructors are available for consultation during their office hours, as advertised on the department website.
Jelen TAD az alábbi félévre érvényes:
2021/2022 II. semester

II. Tárgykövetelmények

3. A tanulmányi teljesítmény ellenőrzése és értékelése
3.1 Általános szabályok
The evaluation of the formulated learning outcomes is based on a mid-year written summary performance evaluation, as well as an independent partial performance evaluation (presentation of a case study in the framework of group work) and the activity demonstrated in the lectures.
3.2 Teljesítményértékelési módszerek

Teljesítményértékelés neve (típus)	Jele	Értékelt tanulási eredmények
Test1	T1	A.1-A.4, A.6-A.8; B.2-B.7; C.2-C.3
Test	PR1	A.5, A.9-A.12; B.6-B.8; C.2-C.3
Homework	HW1	A.3-A.6; B.1-B.4; C.1-C.3

The exact time of the evaluations held during the diligence period and the deadlines for the submission and submission of homework are included in the "Detailed semi-annual schedule", which is available on the website of the subject.
3.3 Teljesítményértékelések részaránya a minősítésben

Jele	Részarány
T1	45%
T2	45%
HW1	10%
Összesen	**100%**

3.4 Az aláírás megszerzésének feltétele, az aláírás érvényessége
Criterion for the signature is to collect at least 50% of the total points of the Tests plus 50% of the points of the project according to Section 3.3.
The previously acquired total points of the tests or the projects can be taken into account in the next 6 semesters.
3.5 Érdemjegy megállapítása

Érdemjegy	Points (P)
jeles (5)	87<=P
jó (4)	75<=P<86
közepes (3)	62<=P<74
elégséges (2)	50<=P<62
elégtelen (1)	P<50%

3.6 Javítás és pótlás
No single tests can be failed, since there is no minimum requirement for one test itself. However, the test performance (sum of the points of the four tests) must be at least 50 % as an average.
If the test performance calculated from the points collected on all tests is unsatisfactory (i.e. less than 50 %), then one of the tests can be retaken on week 15.
3.7 A tantárgy elvégzéséhez szükséges tanulmányi munka

Activity	Hours/semester
Contact hours	28
Preparation for the test	12

Homework	20
Total	**60**

3.8 A tárgykövetelmények érvényessége
2025. június 30, hétfő
Jelen TAD az alábbi félévre érvényes:
2021/2022 II. 30th June, 2025.