I. Tantárgyleírás

1. Alapadatok

1.1 Tantárgy neve

ROADS

1.2 Azonosító (tantárgykód)

BMEEOUVAT42

1.3 Tantárgy jellege

Kontaktórás tanegység

1.4 Óraszámok

Típus	Óraszám / (nap)
Előadás (elmélet)	2

1.5 Tanulmányi teljesítményértékelés (minőségi értékelés) típusa

Félévközi érdemjegy

1.6 Kreditszám

2

1.7 Tárgyfelelős

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beosztás	Egyetemi docens
email	schuchmann.gabor@emk.bme.hu

1.8 Tantárgyat gondozó oktatási szervezeti egység

Út és Vasútépítési Tanszék

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

magyar és angol

1.11 Tantárgy típusa

Kötelező az építőmérnöki (BSc) szakon

1.12 Előkövetelmények

Strong prerequisites:

- Railway Tracks (BMEEOUVAT41)

1.13 Tantárgyleírás érvényessége

2022. február 2.

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. Tudás

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. Képesség

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. Attitűd

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. Önállóság és felelősség

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/or exercise classes

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".

A félév közbeni munkaszüneti napok miatt a program csak tájékoztató jellegű, a pontos időpontokat a tárgy honlapján elérhető "Részletes féléves ütemterv" tartalmazza.

2.5 Tanulástámogató anyagok

Downloadable materials:
- lecture slides
- project guide including calculation samples

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:

II. Tárgykövetelmények

3. A tanulmányi teljesítmény ellenőrzése és értékelése

3.1 Általános szabályok

The assessment of the learning outcomes specified in clause 2.2. above and the evaluation of student performance occurs via tests and projects.

3.2 Teljesítményértékelési módszerek

Evaluation form	Abbrev.	Assessed learning outcomes
midterm test 1	T1	A.1-A.4, A.6-A.8; B.2-B.7; C.2-C.3
midterm test 2	T2	A.5, A.9-A.12; B.6-B.8; C.2-C.3
project 1	P1	A.3-A.6; B.1-B.4; C.1-C.3; D.1-D.3

A szorgalmi időszakban tartott értékelések pontos idejét, a házi feladatok ki- és beadási határidejét a "Részletes féléves ütemterv" tartalmazza, mely elérhető a tárgy honlapján.

3.3 Teljesítményértékelések részaránya a minősítésben

Abbreviation	Score
T1-2	2x35%
P1	30%
Sum	**100%**

Criterion for completion of the subject is to collect at least 50% of the total points of the Tests plus 50% of the total points of the porjects. Unsatisfactory performance during the tests or the projects will lead to a final mark 'failed' (1) independently of the results of the Test and Assignment.

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

Grade	Points (P)
excellent (5)	86<=P
good (4)	74<=P<86%
satisfactory (3)	62<=P<74%
passed (2)	50<=P<62%
failed (1)	P<50%

3.6 Javítás és pótlás

1. 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.
2. 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	14×2=28
preparation for the tests	4×3=12
home studying of the written material	2×10=20
Sum	**60**

3.8 A tárgykövetelmények érvényessége

2022. február 2.

Jelen TAD az alábbi félévre érvényes: