Road Design - BMEEOUVA-E1

I. Tantárgyleírás

1. Alapadatok

1.1 Tantárgy neve

ROAD DESIGN

1.2 Azonosító (tantárgykód)

BMEEOUVA-E1

1.3 Tantárgy jellege

Kontaktórás tanegység

1.4 Óraszámok

Típus	Óraszám / (nap)
Gyakorlat	2

1.5 Tanulmányi teljesítményértékelés (minőségi értékelés) típusa

Vizsga

1.6 Kreditszám

3

1.7 Tárgyfelelős

név	Dr. Liegner Nándor
beosztás	Egyetemi tanár
email	liegner.nandor@emk.bme.hu

1.8 Tantárgyat gondozó oktatási szervezeti egység

Út és Vasútépítési Tanszék

1.9 A tantárgy weblapja

https://epito.bme.hu/BMEEOUVA-E1
https://edu.epito.bme.hu/course/view.php?id=3623

1.10 Az oktatás nyelve

angol

1.11 Tantárgy típusa

Kötelező az építőmérnöki (BSc) szak Infrastruktúra-építőmérnöki ágazatán

1.12 Előkövetelmények

1. Transportation planning

1.13 Tantárgyleírás érvényessége

2023. szeptember 4.

2. Célkitűzések és tanulási eredmények

2.1 Célkitűzések

The aim of the course is to provide the student with the theoretical and practical basics of road design for external and internal areas: the design and coordination of site-planning and longitudinal-planning elements, the technical and technical aspects of each design phase the technical content of the design and the design timeframes, drainage design, environmental design, asphalt road structures design and reinforcement of asphalt pavements, the design of suburban junctions, the calculation of the environmental impact of road traffic, and the integrated planning projects involving several transport modes.

2.2 Tanulási eredmények

A tantárgy sikeres teljesítése utána a hallgató

A. Tudás

After successful completion of the course, the student

1. know the commonly used concepts of road design,

2. knows the structure and internal relationships of the design working parts,

3. knows the main relationships between design, geometric and dynamic parameters,

4. knowledge of alignment problems and their solutions,

5. know the relationships for the design of reinforcement of existing asphalt track structures,

6. know the basic relationships for the calculation of environmental effects,

7. knowledge of the basic types of toll collection systems and the basic context of their operation,

8. knowledge of the types of data required for environmental design and how they are processed.

B. Képesség

1. be able to prepare road construction work packages for road construction permit plans,

2. be able to calculate and analyse the environmental effects of a planned road,

3. be able to carry out geometric and traffic design of intersections,

4. be able to understand the environmental impact assessment process,

5. be able to analyse the operation of electronic toll systems from a road design point of view,

6. be able to express his/her ideas in an organised way, orally and in writing.

C. Attitűd

1. cooperates with the instructor in the development of knowledge,

2. is open to the professional use of information technology tools,

3. seeks to become familiar with the tools needed for road design problem solving and to use them routinely

4. strive to solve problems accurately and without errors,

5. strive to apply the principles of sustainability and environmental awareness in solving road design problems to apply sustainable and sustainable design

D. Önállóság és felelősség

1. independently carries out the analysis of road design tasks and problems and, on the basis of given resources, carries out the

solving the problem,

2. is open to well-founded critical comments,

3. applies a systematic approach to thinking.

2.3 Oktatási módszertan

Exercises, written and oral communication, use of IT tools and techniques

2.4 Részletes tárgyprogram

1. Planning timeframes, planning traffic, LOS. Plan phases and their parts. Content and work parts of tender and construction plans (layout plan, detailed size and quantity calculation, public utility impact, connections with plans of other disciplines: bridge, drainage)

2. Suburban planning, reconstruction (rural road section strengthening and one-sided widening of the drainage with system correction).

3. Outdoor planning spec. problems: Overtaking stages . The site plan and longitudinal section solutions of the cantilever run-out. Roadway widening in small-radius curves.

4. Different level nodes. Rest areas and service facilities, engineering plants. Parking.

5. Design of other roads (pedestrian path, bicycle path, dirt roads)

6. Urban design, reconstruction. Pavement wind geometry (waving), gate entrances, cycling and pedestrian traffic. Domestic nodes

7. Dewatering of surfaces. Track structure drainage

8. Network planning: Measurement of traffic characteristics. Capacities, performance capabilities. Traffic control/management.

9. Types and elements of expressway junctions. Basic principles, forms of application and details of the design of level junctions

10. Calculation of air pollution caused by road traffic, emission, immission, protection.

11. Calculation of road traffic noise, protection design tools, assessment.

12. Freeway intersections

13, Traffic safety aspects. Design process of an intersection.

14. Electronic toll collection: objectives, requirements, technical-legal-economic background, national and foreign examples, tools, control, methods of toll collection, cost-benefit cost/benefit ratio. Traffic management in suburban areas, intelligent toll collection basic functions of intelligent transport systems.

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

lecture slides on the subject website

2.6 Egyéb tudnivalók

Attendance at contact hours is 70% compulsory. A student who misses four or more practicals is not may not receive credit for the course.

2.7 Konzultációs lehetőségek

as indicated on the department's website

Jelen TAD az alábbi félévre érvényes:

Inactive courses

II. Tárgykövetelmények

3. A tanulmányi teljesítmény ellenőrzése és értékelése

3.1 Általános szabályok

learning outcomes are assessed on the basis of two homework assignments and a written exam at the end of the semester

3.2 Teljesítményértékelési módszerek

Evaluation form	Abbreviation	Assessed learning outcomes
Homework	Hw	
Exam	Ex	

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
Hw	50%
Ex	50%
Sum	**100%**

3.4 Az aláírás megszerzésének feltétele, az aláírás érvényessége

To obtain a signature, the total number of qualifications obtained during the period of study according to point 3.3. of the total number of points for the entire period of study.

The semester results in the subject previously obtained, which may be taken into account for the determination of the examination mark, are 3 may be accepted for a period of up to 3 semesters.

3.5 Érdemjegy megállapítása

Grade	Points (P)
excellent (5)	88-100
good (4)	75-87
satisfactory (3)	63-74
passed (2)	50-62
failed (1)	0-49

3.6 Javítás és pótlás

Homework can be accepted - after fulfilling payment of the declared late charge - on the week after deadline friday, 23:59 via electronic form.

Submitted homework can be corrected without charge if it is given a "correct and back" sign.

3.7 A tantárgy elvégzéséhez szükséges tanulmányi munka

Activity	Hours/semester
Lessons	14x2= 28
Preparing for classes	14x2=28
Homework	2x8= 16
Preparing for exam	18

Sum	90

3.8 A tárgykövetelmények érvényessége

2023. szeptember 1.

Jelen TAD az alábbi félévre érvényes:

Inactive courses