Railway Design - BMEEOUVA-E2

I. Tantárgyleírás

1. Alapadatok

1.1 Tantárgy neve

RAILWAY DESIGN

1.2 Azonosító (tantárgykód)

BMEEOUVA-E2

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

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1.7 Tárgyfelelős

név	Dr. Liegner Nándor
beosztás	Egyetemi docens
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-E2
https://edu.epito.bme.hu/course/view.php?id=3624

1.10 Az oktatás nyelve

angol

1.11 Tantárgy típusa

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1.12 Előkövetelmények

1.13 Tantárgyleírás érvényessége

2023. szeptember 1.

2. Célkitűzések és tanulási eredmények

2.1 Célkitűzések

The aim of the course is to provide the student with the theoretical and practical requirements of railway line design.

Know the characteristics of movement, to be able to calculate the details of the geometry of transition curves, to the application of cant transition geometry.

Be able to determine the necessecity of the construction of transition curves and of cant.

Be familiar with the theory required to turnouts, and to the detailed geometrical calculation of the switch section, the intermediate section and the crossing, and the structural design of the turnouts.

Be able to design any individual track connections.

Know the basic concepts of station design.

2.2 Tanulási eredmények

A tantárgy sikeres teljesítése utána a hallgató

A. Tudás

1. knows the movement characteristics,

2. knows the theory of the geometry of transition curves,

3. knows the geometry of cant transition,

4. knows the theoretical basis for the calculation of geometry of turnouts,

5. is familiar with the structural design of turnouts,

6. knowledge of the theory of calculation of individual track connections,

7. knowledge of the principles of station design.

B. Képesség

1. is able to calculate movement characteristics,

2. is able to compute the geometry of the detail points of any transition curve geometry,

3. is able to calculate the details of the geometry of cant transition,

4. be able to determine the need of the application of transition curve and cant,

5. be able to calculate the detailed geometry of turnouts,

6. be able to calculate any individual track connections,

7. design small stations.

C. Attitűd

1. collaborate with the instructor and fellow students in the development of knowledge,

2. expands his/her knowledge through continuous learning,

3. is open to use of information technology tools,

4. strives to learn and routinely use the tools needed to solve problems,

5. strives for accurate and error-free problem solving.

D. Önállóság és felelősség

1. carries out considerations and designs of railway planning tasks and problem solving independently and on the basis of given resources

2. is open to accept well-founded critical comments,

3. collaborates with fellow students in solving problems in certain situations,

4. applies a systematic approach to thinking and problem solving.

2.3 Oktatási módszertan

1, Lectures, computing exercises, written and oral communication, use of IT tools and techniques,

optional independent tasks, work organisation techniques.

2.4 Részletes tárgyprogram

Week	**Topics of lectures and/or exercise classes**
1.	International railway networks and their connections in Hungary. International regulations and specifications. Regulations of interoperability. International networks and their domestic sections. Main features of the national rail network, line categories. Most important developments.
2.	Movement characteristics: acceleration, changing of acceleration, their practical calculation.
3.	Geometry of a transition curve between a straight and a circular curve.
4.	Geometry of a transition curve between two compound curves. Part 1.
5.	Geometry of a transition curve between reverse curves. Part 2. Calculation of length of transition curves.
6.	Cant and geometry of cant transition. Practical evaluation of curved and connecting track sections, Part 1.
7.	Practical evaluation of curved and connecting track sections, Part 2.

8.	Most important types of turnouts applied in the national railway network.
9.	Calculation of geometry of switch part of a turnout.
10.	Calculation of geometry of intermediate and crossing section of turnouts.
11.	Calculation of geometry of crossings and double slips. Structure of turnuots.
12.	Calculation of track connections, Part 1.
13.	Calculation of track connections, Part 2.
14.	Layout of railway stations, major rules of designing a railway station.

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

1. 1, Dr. Jenő Megyeri: Railway Track Geometry, Technical Publishing, Budapest, 1978.
2. Dr. Nándor Liegner: Railway Design, HEFOP/2004/3.3.1/0001.01

2.6 Egyéb tudnivalók

1, Attendance at contact hours of 70% is compulsory. A student who misses more classes may not receive credit for the course.

2.7 Konzultációs lehetőségek

1, As specified on the website of the Department

Jelen TAD az alábbi félévre érvényes:

Inactive courses

II. Tárgykövetelmények

3. A tanulmányi teljesítmény ellenőrzése és értékelése

3.1 Általános szabályok

1, The assessment of the learning outcomes detailed in Chapter 2.2. is based on two mid-term tests, the active participation in the practical exercises (partial assessment) and on one final exam.

3.2 Teljesítményértékelési módszerek

Evaluation form	Abbreviation	Assessed learning outcomes
1st mid-term test	MT1	A.1 - A.3; B.1 - B.4.
2nd mid-term test	MT2	A.4 - A.6; B.5 - B.6.
Written final exam	Exam	A.1 - A.7; B.1 - B.7;

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
MT1	15%
MT2	15%
Teaching period total	30%
Exam	70%
Sum	**100%**

Mid-term tests and the final exam are unsuccessful if they do not achieve 50% of the available marks.

An examination result below 50% of the available marks will result in a Fail mark.

3.4 Az aláírás megszerzésének feltétele, az aláírás érvényessége

To obtain a signature, 50% of the
total number of points must be obtained during the teaching period according to
point 3.3.

Mid-term results obtained in previously
semesters of the subject can be taken into account up to three (3) semesters for
the determination of final mark of the the exam.

3.5 Érdemjegy megállapítása

Grade	Points (P)
excellent (5)	87.5 <= P
good (4)	75 <= P < 87.5%
satisfactory (3)	62.5 <= P < 75%
passed (2)	50 <= P < 62.5%
failed (1)	P < 50%

3.6 Javítás és pótlás

1. By its nature, active participation cannot be replaced, corrected or otherwise replaced or substituted in any other way.

2. The two mid-term tests may be replaced or corrected free of charge for the first time. In the case of correction, the new result and the previous result shall be taken into account as the one which is more favourable to the student.

3. If the student fails the test according to a retake detailed in Paragraph 2, he or she can take a second attempt to correct the first unsuccessful substitution, subject to the payment of a fee specified in the regulations.

3.7 A tantárgy elvégzéséhez szükséges tanulmányi munka

Activity	**Hours/semester**
Participation at contact hours	14×2 = 28
Preparation for the contact hours	14×1 = 14
Preparation for the mid-term tests	2×6+2×3 = 18
Preparation for the exam	30
Sum	90

3.8 A tárgykövetelmények érvényessége

2023. szeptember 1.

Jelen TAD az alábbi félévre érvényes:

Inactive courses