

Planning & Design of Transport Facilities

Code: MK3KOZ2S6SX17-EN

ECTS Credit Points: 6

Evaluation: exam

Year, Semester: 2nd year, 4th semester

Its prerequisite(s): Theory of Transportation & Basics in Urban Planning

Further courses are built on it: Yes/No

Number of teaching hours/week (lecture + practice): 4+2

Topics:

Basics of transportation. Road networks in Hungary. Categories of roads. Parameters of vehicles and highways. Geodesy. Geographical and geotechnical parameters. Dewatering of roads. Horizontal and vertical alignment. Intersections. Sight distances. Road safety. Public transport. Pavements and its materials. Production processes. Bicycle facilities. Sustainable transport modes. Parking facilities. Sustainable transport modes. Definition, energy consumption. Road control systems. Level of service. Classical methods and traffic calming. Traffic operation. Relationships among basic traffic parameters. Design and operational analysis.

Railway parameters. Gauge. Kinetic knowledge. Railway track and rolling stock. Traction and resistance. Transitional geometry in railway motions. Railway substructure elements. Road-rail crossings. Rail points and switches. Railway superstructure concepts. Rails and its production. Welding and rail jointing methods. Sleepers and its usage. Rail ballast. Urban rail superstructures. Rail stations and yards. Track maintenance and construction methods.

Literature:

Compulsory:

- Rogers M.: Highway Engineering, Blackwell, Oxford, 2003, ISBN 0-632-05993-1
- Chandra, Agrawal: Railway engineering, Oxford University Press, 2007, ISBN 978-0-19-568779-8

Schedule

1st week Registration week

2nd week:

Lecture: Basics of transportation. Road networks in Hungary.

Railway parameters. Gauge. Kinetic knowledge.

Practice: Contour-map, design parameters.

Handling and discussion of semester project work.

4th week:

Lecture: *Geodesy. Geographical and geotechnical parameters.*

Transitional geometry in railway motions.

Practice: Site plan. Curves, straights. Superelevation.

6th week:

Lecture: Intersections. Sight distances. Road safety.

Railway substructure elements. Road-rail crossings.

Practice: Longitudinal sections. Planning parameters.

3rd week:

Lecture: Categories of roads. Parameters of vehicles and highways.

Railway track and rolling stock. Traction and resistance.

Practice: Contour gradient. Filling, cutting. Cross-section.

5th week:

Lecture: Dewatering of roads. Horizontal and vertical alignment.

Practice: Calculation of horizontal curves. Consultation of homework.

7th week:

Lecture: Public transport. Facilities and operation.

Rail points and switches. Railway superstructure concepts. Computing design data.

	Practice: Discussion of semester project presentation. Signing for presentation dates.
8th week: 1st drawing week	
9th week: Lecture: Pavements and its materials. Production processes. Rails and its production. Welding and rail jointing methods. Practice: Consultation.	10th week: Lecture: Bicycle facilities. Sustainable transport modes. Design parameters. Sleepers and its usage. Practice: Vertical alignment. Consultation.
11th week: Lecture: Parking facilities. Design parameters and usage. Rail ballast. Complex examination. Practice: Handling of homework. Consultation and preparation presentation of semester project works.	12th week: Lecture: Sustainable transport modes. Definition, energy consumption. Urban rail superstructures. Practice: Presentation of semester project works.
13th week: Lecture: Road control systems. Level of service. Classical methods and traffic calming. Rail stations and yards. Practice: Presentation of semester project works.	14th week: Lecture: Traffic operation. Relationships among basic traffic parameters. Design and operational analysis. Track maintenance and construction methods. Practice: Post-handling of homework. Repetition possibility of semester project handling.
15th week: 2nd drawing week	

Requirements

Homework in in the topic of roads.

Homework: Maximum: **25 points** Minimum: **13 points**

Semester project work in the topic of railways.

Homework: Maximum: **25 points** Minimum: **13 points**

The signature is valid if the student reaches 26 points. No sign under 26 points.

The course ends with **an exam**. On the exam another 50 points can be achieved. Based on the summa points of the homework and the summa points of the exam, the grade is defined according to the following calculation:

Score	Grade
0 – 50 points:	fail (1)
51 – 62 points:	pass (2)
63 – 74 points:	satisfactory (3)
75 – 86 points:	good (4)
87 – 100points:	excellent (5)