

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2023-2024 SEMESTER I.

<i>Course title</i>	<i>Road and Railway Design 1.</i>
<i>Course Code</i>	<i>MSB231ANEP</i>
<i>Hours/Week: le/pr/lab</i>	<i>2/1/0</i>
<i>Credits</i>	<i>4</i>
<i>Degree Programme</i>	<i>Civil engineering BSc</i>
<i>Study Mode (TVSZ-ben training schedule)</i>	<i>full time</i>
<i>Requirements</i>	<i>mid-term mark</i>
<i>Teaching Period</i>	<i>autumn</i>
<i>Prerequisites</i>	<i>-</i>
<i>Department(s)</i>	<i>Civil Engineering</i>
<i>Course Director</i>	
<i>Teaching Staff</i>	<i>Balázs Eller</i>
<i>Hours/Week: le/pr/lab</i>	<i>2/1/0</i>

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).

Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

The Course is dealing mainly with road engineering, being a discipline branching from Civil Engineering, that involves the planning, design, construction and maintenance of roads, aiming to ensure safe and effective transport of people and goods. Its objective is to provide appropriate knowledge concerning: (i) basic principles of planning and design of road infrastructure; (ii) locate the alignment of a road and its adaptation to the requirements of environmental protection and safety; (iii) technologies of road construction and maintenance.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.

Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

The aim of the course is to provide students with an understanding of basic road concepts as well as fundamentals of design.

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

TOPICS

LECTURE	TOPICS
	<ol style="list-style-type: none"> 1. <i>Topic names:</i> 2. <i>History of Roads and Road Transport</i> 3. <i>Vehicle's Motion on the Road - Resistances - Sight Distances & Geometric Elements</i> 4. <i>Elements and Co-ordination of Horizontal & Vertical Alignment</i> 5. <i>Junctions, Intersections & Interchanges</i> 6. <i>Road Signs, Signals & Pavement Markings</i> 7. <i>Traffic Flow Analysis - Capacity & Level of Service</i> 8. <i>Road Traffic Accidents</i> 9. <i>Materials of Asphalt Mixtures & Quality Control</i> 10. <i>Flexible & Rigid Pavements – Drainage Systems</i> 11. <i>Pavement Design and Dimensioning</i>

12. Road Construction Technologies
13. Road Maintenance and Pavement Management

PRACTICE

Solving at Home (individually) the Numerical Examples related to Lectures No. 2, 3, 5. Typical numerical examples with suggested solutions will be made downloadable using the same link given above. Following each Lecture, an appropriate consultation period is available to seek for guidance, aiming to overcome eventual difficulties encountered when students are looking for solution of these numerical examples at home

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	History of Roads and Road Transport	PPT Nr. 1.		
2.	Vehicle's Motion on the Road - Resistances - Sight Distances & Geometric Elements	PPT Nr. 2.		
3.	Elements and Co-ordination of Horizontal & Vertical Alignment	PPT Nr. 3.		
4.	Junctions, Intersections & Interchanges	PPT Nr. 4.		
5.	Road Signs, Signals & Pavement Markings	PPT Nr. 5.		
6.	Traffic Flow Analysis - Capacity & Level of Service	PPT Nr. 6.		
7.	Road Traffic Accidents	PPT Nr. 7.		
8.	Materials of Asphalt Mixtures & Quality Control	PPT Nr. 8.		
9.	Flexible & Rigid Pavements – Drainage Systems	PPT Nr. 9.		
10.	TEST		TEST	
11.	Pavement Design and Dimensioning	PPT Nr. 10.		
12.	Road Construction Technologies	PPT Nr. 11.		
13.	Road Maintenance and Pavement Management	PPT Nr. 12.		

PRACTICE, LABORATORY PRACTICE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.				
2.	Design Fundamentals I.			
3.	Design Fundamentals II.			
4.	Geometry Design I.			
5.	Geometry Design II.			
6.	Geometry Design III.			
7.	Traffic Design I.			HW1
8.	Traffic Design II.			
9.	Traffic Design III.			
10.	TEST			
11.	Consultation			HW2
12.	Consultation			
13.				

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance (e.g.: attendance sheet / online test/ register, etc.)

Attendance sheet.

ASSESSMENT

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course-unit with final examination

Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam

(The samples in the table to be deleted.)

Type	Assessment	Weighting as a proportion of the pre-requisite for taking the exam
1. Test 1	max. 20 points	40 %
2. Test 2	max. 20 points	40 %
3. Home assignment (project documentation)	max. 5 points	10 %
4. Home assignment (project documentation)	max. 5 points	10 %

Requirements for the end-of-semester signature

(Eg.: mid-term assessment of 40%)

mid-term assessment of 40%

Re-takes for the end-of-semester signature (PTE TVSz 50§(2))

The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

All the assignments can be fixed once, all the tests can be retaken.

Type of examination (written, oral):written

The exam is successful if the result is minimum 40 %. (The minimum cannot exceed 40%.)

Calculation of the grade (TVSz 47§ (3))

The mid-term performance accounts for **50 %**, the performance at the exam accounts for **50 %** in the calculation of the final grade.

Calculation of the final grade based on aggregate performance in percentage.

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

[1.] Lecture notes (can be found in TEAMS)

RECOMMENDED LITERATURE AND AVAILABILITY

[1.] Daniel J Findley, Bastian Schroeder, Christopher Cunningham, Tom Brown: Highway Engineering: Planning, Design and Operations. Elsevier Inc. (2016)

[2.] Design Manual for Roads and Bridges (UK)
<http://www.standardsforhighways.co.uk/ha/standards/dmrb/index.htm>

[3.] Highways England: Guidance - Standards for Highways online resources
<https://www.gov.uk/guidance/standards-for-highways-online-resources>

[4.] New York State Department of Transportation (USA): Highway Design Manual
<https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm>

[5] Transportation Research Board (TRB): Highway Capacity Manual (Online Edition 2010)

[6] Lecture notes

