Department of Road Transport
Chair of Road Transport Technology

UNIVERSITY OF ZAGREB
FACULTY OF TRANSPORT AND TRAFFIC SCIENCES

UNDERGRADUATE STUDY: TRANSPORT

SEMESTER (IV)

Syllabus

Academic year 2025/2026

Course: **Passenger and Freight Transportation Technology in Road Traffic**						
Head of course: Assoc. Prof. **Predrag Brlek**, Ph. D.						
Co-lecturers: **Nikola Kožul**, univ. mag. traff. ing.						
Semester: **S**	Course code: **283282**	Lectures: **45**	Auditory exercises: **16**	Laboratory exercises: **0**	Seminars: **14**	ECTS credits: **6**
Group for lectures: **45 students**			Group for auditory and laboratory exercises: **25 AE/ 25S**			

Objective of the course:

- To familiarize students with the process of management in the process of production of transport services in passenger and freight road transport.

Course enrolment requirements:

- Evaluate technical and technological processes in the field of traffic and transport engineering
- Identify problems in the field of traffic and transportation engineering
- Apply engineering methods independently or as a part of a professional team to solve problems in traffic and transportation engineering while observing ethical and social responsibilities
- Analyse traffic systems and processes
- Select methods for calculating transport system indicators
- Evaluate different solutions to traffic problems, taking into account the economic, organizational, safety and social aspects of their application and the impact on environment
- Plan transportation capacities
- Design solutios of less complex technological and technical problems in the process of production of transport services in freight and passenger road transport

Learning outcomes:

1. Relate relevant elements of road freight and passenger transport systems in the process of production of transport services.
2. Select methods for calculating transport system indicators as part of the temporal and spatial analysis of the technological process of production of

transport services in freight transport, static and dynamic utilization of transport and manipulation vehicles in freight road transport.

3. Select methods for calculating transport system indicators as part of the temporal and spatial analysis of the technological process of production of transport services in passenger transport, static and dynamic utilization of transport and manipulation vehicles in passenger road transport.
4. Solve less complex technological and technical transport problems in process of production of transport services in freight and passenger road transport.
5. Determine basic elements of road transport system in technology of road freight transport in accordance with the logistic concept, transport demand and characteristic of type of substrate.
6. Determine basic elements of road transport system in technology of road passenger transport in accordance with the transport demand, purpose and average length of transport route

LECTURES, EXERCISES and SEMINARS

Week	Syllabus	Form of classes	Performed by	Lessons	Remark
1.	▪ Professional and scientific content of technology of road transport and traffic	L	Predrag Brlek		
	▪ Stages of transport process in the technology of freight and passenger transport	AE	Nikola Kožul		
	▪ Analysis of the freight transport efficiency in road traffic	S	Predrag Brlek		
2.	▪ Holistic approach, structure, and features of technology of road traffic and transport	L	Predrag Brlek		
	▪ Operational indicators as a part of the temporal and spatial analysis of the technological process of production of transport services in freight and passenger transport	AE	Nikola Kožul		
	▪ Analysis of the passenger transport efficiency in road traffic	S	Predrag Brlek		
3.	▪ Logistic concept of the transport process, optimization of transport chain	L	Predrag Brlek		
	▪ Coefficients of static and dynamic utilization of transport vehicles in road freight and passenger transport	AE	Nikola Kožul		
	▪ Analysis of the freight transport fleet structure in road traffic	S	Predrag Brlek		

4.	▪ Demand for transport services in freight and passenger transport	L	Predrag Brlek		
	▪ Comparison of basic itineraries features in vehicle turn	AE	Nikola Kožul		
	▪ Analysis of the passenger transport fleet structure in road traffic	S	Predrag Brlek		
5.	▪ Distribution model based on transport substrate in road transport	L	Predrag Brlek		
	▪ Quantification of transport demand to determine optimal capacity and volume of road transport vehicle	AE	Nikola Kožul		
	▪ Coefficient of roadworthiness of the vehicle fleet	S	Predrag Brlek		
6.	▪ Road freight transport and structure of transported substrates	L	Predrag Brlek		
	▪ Selection of road transport vehicle and determination of the optimal itinerary in accordance to type of substrate/passenger	AE	Nikola Kožul		
	▪ Management in a road freight transport company	S	Predrag Brlek		
7.	▪ Road passenger transport and its distribution	L	Predrag Brlek		

	▪ Calculation of coefficients achieved transport efficiency and basic time indicators while preforming road passenger transport: time of boarding, transport and deboarding	AE	Nikola Kožul		
	▪ Management of a road passenger transport company	S	Predrag Brlek		
8.	▪ Operating parameters of road transport vehicles	L	Predrag Brlek		
	▪ Indicators, coefficients of quantitative-capacitive efficiency and evaluation of transport vehicle efficiency	AE	Nikola Kožul		
9.	▪ Structure and features of road transport vehicles in freight transport	L	Predrag Brlek		
	▪				
10.	▪ Structure and features of road transport vehicles in passenger transport	L	Predrag Brlek		
	▪				
11.	▪ Transport devices, packages, palette and palletization, containers, and containerization	L	Predrag Brlek		
	▪				
12.	▪ Manipulation devices in road freight transport	L	Predrag Brlek		

	▪				
13.	▪ Create an organizational scheme for passenger and freight road transport	L	Predrag Brlek		
	▪				
14.	▪ Usage of tachograph in analysis of operational parameters of road transport vehicles	L	Predrag Brlek		
	▪				
15.	▪ Optimization and management of traffic processes	L	Predrag Brlek		
	▪				

L = Lectures; **AE** = Auditory Exercises; **LE** = Laboratory Exercises; S = Seminars

STUDENT OBLIGATIONS AND EXAMS

Conditions for obtaining signatures:

In order to achieve the status of completed course the student must meet the following requirements:
attend 70% of lectures,
attend 70% of exercises,
Have a positive grade seminar paper.
By fulfilling these requirements, the student fulfills the conditions for taking the exam.

Written Examination:

There are two ways of passing the exam:

Through two colloquia: during the semester, a written exam is held through colloquia and students who achieve at least 60% in each of the colloquia have the right to be exempted from the written part of the exam.
The grade of the written part of the exam, in the case of passing the written part by colloquium, is determined as the arithmetic means of the results on the colloquia. In addition, during the exam periods, students who passed through the colloquium take only the oral part of the exam.
Through the written part of the exam: the written part of the exam is taken by the students who did not meet the required number of points through the colloquium and students who were not satisfied with their success thought the colloquium. By achieving at least 60% of the total number of points on the written part of exam, students gain the right to take the oral part of exam.

Oral examination:

Scoring criteria for the colloquium and written exam are:

- 60% - 69% - sufficient (2)
- 70% - 79% - good (3)
- 80% - 89% - very good (4)
- 90% - 100% - excellent (5)

The oral part of the exam is mandatory for all students.

LITERATURE

a) Obligatory literature:

1. Rajsman M. Osnove tehnologije prometa – gradski promet, skripta, Fakultet prometnih znanosti, Sveučilište u Zagrebu, Zagreb; 2012.
2. Rajsman M. Tehnologija cestovnog prometa, skripta, Fakultet prometnih znanosti, Sveučilište u Zagrebu, Zagreb, 2012.
3. PPT presentations from lectures

b) Recommended literature:

1. Županović I. Tehnologija cestovnog prijevoza, Fakultet prometnih znanosti, Zagreb, 2002.
2. Rajsman M. Poslovna logistika, Zagreb, skripta, Visoka poslovna škola Libertas, 2009.

METHODOLOGY OF THE IMPLEMENTATION OF THE COURSE PLAN

1. LECTURES

The lectures follow the material presented in the authorized lectures (teaching material) and mandatory literature and are conducted with the use of Power Point presentations and whiteboards. Video presentations are used for some units. During the lecture, discussion is encouraged from the issues being taught.

2. AUDITORY EXERCISES

Practical exercises are carried out in such a way that numerical tasks are solved in order for students to be trained to plan, implement and evaluate the passenger transport process and to adopt approaches, methods and procedures for the efficient and effective exploitation of the passenger transport technology system in road transport.

3. SEMINAR

Seminars are conducted in such a way as to analyze specific cases of bus operation in order to train students to detect the special features of certain technological elements, as well as to adopt procedures for adapting the technological system to changed transport requirements.

Note: Individual and/or group viewing negative written test

Individual viewing of negative written test is possible after each colloquium and/or final written exam, during teacher consultation hours (of teacher who held the exams) or during designated period which is published with the results of the colloquium and/or final written exam.

4. DOCUMENTATION

Records of attendance at lectures, seminars and exercises, successfully completed seminar papers and homework are kept.

5. SCORING SYSTEM

Table 1 The scoring system for the monitoring of students and explained credit values in ECTS credits

no	Segment:		Required credits to be achieved:		Remark:	ECTS credits
			Min.	Max.		
1.	Presence at the lectures		5	5	During the semester three absences are allowed, i.e. 20% of all forms of classes (lectures and exercises).	**1**
2.	Presence at the exercises (auditory and laboratory)		5	5		**1**
3.	Seminar		15	25	Students must successfully defend the seminar	**0,6**
4.	First colloquium	= Written exam	8	15	Students must pass both colloquiums or min 50% on written final exam.	**0,9**
5.	Second colloquium		8	15		**0,9**
6.	Oral exam		16	30	At the final exam, a final grade is formed based on the written examination and oral examination. The final grade is than entered in the ISVU system.	**1,6**
Σ	*Overall points:*		57	85	*Overall ECTS points:*	**6,0**

*During the course the student is evaluated based on the sum of the internal points earned through participating in class (lectures and exercises) and grading the seminar work. The student, in order to realize the condition "courses requirements achieved", must achieve a minimum of 30 points.

Table 2 - Explanation of the credit values in evaluations

CREDITS:	The final score [6 ECTS]:
57-64	Sufficient (2)
65-72	Good (3)
73-79	Very good (4)
80-85	Excellent (5)

Information for students (scoring system, implementation plan, learning outcomes, syllabus, literature, consulting teachers, announcement of results of examinations or colloquium, and all other information):

- **https://moodle.srce.hr/2025-2026/ (https://merlin.srce.hr)**
- **http://www.fpz.unizg.hr/isvu/2025-en/**

Student assistants: