



## GRADUATE STUDY: **TRAFFIC AND TRANSPORT, RAILWAY TRANSPORT**

### Syllabus

Academic year 2023/2024

Course:		<b>Railway Traffic Organizing</b>			
Head of course: Assoc. Prof. <b>Borna Abramović</b> , Ph.D.					
Co-lecturers: <b>Denis Šipuš</b> , Ph.D.					
Semester: <b>5</b>	Course code: <b>62818</b>	Lectures: <b>45</b>	Auditory exercises: <b>20</b>	Seminars: <b>10</b>	ECTS credits: <b>6</b>
Group for lectures: <b>20 students</b>			Group for auditory exercises and seminars: <b>20 students</b>		

#### Objective of the course:

- Familiarize students with the principles of organization of railway transport.
- Elaborate exploitation indicators in railway transport.
- Define and analyse the qualitative and quantitative indicators.
- Elaborate the indicators for towing and towed resources.
- Establish principles of harmonization of towing and towed vehicles. Develop a plan of transportation.

#### Learning outcomes:

After the completion of the course the students will be able to:

1. Define the basic terms in the field of organization of railway transport
2. Calculate the exploitation indicators for traction and towed vehicles
3. Know how to apply calculating methods of exploitation indicators
4. Solve the given numerical problems of exploitation.
5. Analyse the impact of certain qualitative and quantitative indicators on the exploitation of railway transport,
6. Write a transportation plan for a period of one month.
7. Make conclusions based on the calculation of transportation plan.



## LECTURES, EXERCISES and SEMINARS

Week	Syllabus	Form of classes	Performed by	Lessons	Remark
1.	<ul style="list-style-type: none"><li>Introductory lecture (introduction to the course content, learning outcomes, obligations of students and literature)</li><li>Organization of Railway transport</li></ul>	L	Borna Abramović	5	
2.	<ul style="list-style-type: none"><li>Organization of Railway transport</li><li>Railway Technical resources</li></ul>	L	Borna Abramović	5	
3.	<ul style="list-style-type: none"><li>Exploitation indicators of towing vehicles</li></ul>	L	Borna Abramović	5	
4.	<ul style="list-style-type: none"><li>Operation of wagons</li><li>The quantitative indicators</li></ul>	L	Borna Abramović	5	
5.	<ul style="list-style-type: none"><li>The qualitative indicators</li><li>Turnover of wagons – one member equation</li></ul>	L	Borna Abramović	5	
6.	<ul style="list-style-type: none"><li>Turnover of wagons – three member equation</li></ul>	L	Borna Abramović	5	
7.	<ul style="list-style-type: none"><li>Turnover of wagons – five member equation</li><li>Daily running, working during the day and the productivity of freight wagons</li></ul>	L	Borna Abramović	5	
8.	<ul style="list-style-type: none"><li>The schedule of operating park of wagons on the network with respect to network capacity</li></ul>	L	Borna Abramović	5	



9.	<ul style="list-style-type: none"><li>Alignment of wagon and locomotive operating parks</li></ul>	L	Borna Abramović	5	
10.	<ul style="list-style-type: none"><li>Static and dynamic load of wagons Kommercial and technical train speed</li><li>Turnover of wagons, daily running, daily work and operating locomotive park</li></ul>	AE	Denis Šipuš	5	
11.	<ul style="list-style-type: none"><li>Operation of wagons</li><li>Turnover of wagons – one and three member equation</li></ul>	AE	Denis Šipuš	5	
12.	<ul style="list-style-type: none"><li>Turnover of wagons – five member equation</li><li>The schedule of operating park of wagons on the network with respect to network capacity</li></ul>	AE	Denis Šipuš	5	
13.	<ul style="list-style-type: none"><li>Daily running, working during the day and the productivity of freight wagons</li><li>Alignment of wagon and locomotive operating parks</li></ul>	AE	Denis Šipuš	5	
14.	<ul style="list-style-type: none"><li>Transportation plan I</li></ul>	S	Denis Šipuš	5	PC LAB
15.	<ul style="list-style-type: none"><li>Transportation plan II</li></ul>	S	Denis Šipuš	5	PC LAB

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



## STUDENT OBLIGATIONS AND EXAMS

### Conditions for obtaining signatures:

Attendance is mandatory, and students are required to attend at least 50% of the classes. During the semester shall be prepared seminar assignment "Transportation plan"

After the lectures and successfully defended the case study, the necessary conditions for obtaining signatures.

### Written exam:

During the semester, conducted two tests, first short exam is numerically and the other is the theory. In case he does not pass both tests the student goes to the written part of the exam.

### Oral exam:

In order to attend oral exam student must pass written exam.

## LITERATURE

### a) Obligatory literature:

1. Badanjak, D., Bogović, B., Jenić, V.: Organizacija željezničkog prometa, Fakultet prometnih znanosti Sveučilišta u Zagrebu, Zagreb, 2006.
2. Abramović, B., Brnjac, N., Petrović, M.: Inženjersko - tehnološki proračuni u željezničkom prometu, Fakultet prometnih znanosti Sveučilišta u Zagrebu, Zagreb, 2009.

### b) Recommended literature:

1. Eisenbahnreforme in Europa – Eine Standortbestimmung, EuRailPress, Hamburg, 2005.
2. Reforming Europe's Railways – Learning from Experience, EuRailPress, Hamburg, 2011.





## **METHODOLOGY OF THE IMPLEMENTATION OF THE COURSE PLAN**

### **1. LECTURES**

In the course of the lectures the theoretical framework of the curriculum is presented and followed by practical examples. To this end Power Point presentations are used.

### **2. AUDITORIAL EXERCISES**

In the course of exercises students are required to practice diverse calculations solving challenges in order to define all necessary parameters for a railway transport system.

### **3. SEMINARS**

The seminar was conducted by the interaction with the students, so it is essential to active participation of students in order to successfully solve the problem





## 1. DOCUMENTATION

Attendance list is signed by students prior to every lecture.

## 2. ECTS CREDITS

Activity	ECTS credits
Class attendance	2
Oral exam	2
Written exam	2
<b>In total:</b>	<b>6</b>

## METHODS OF MONITORING QUALITY THAT ENSURE ACQUISITION OF EXIT COMPETENCES

The student's attendance record is kept during the semester. At the end of the semester an evaluation of the quality and efficiency of the course and the lecturers will be carried out. Information on the achievement of learning outcomes and student progress will be used by teachers for self-evaluation and improvement of teaching methods.

