Department of Railway Transport
Chair of Railway Transport Management

UNIVERSITY OF ZAGREB
FACULTY OF TRANSPORT AND TRAFFIC SCIENCES

GRADUATE STUDY: TRANSPORT

SEMESTER (I)

Syllabus

Academic year 2021/2022

Course:	**Railway Freight Transport**				
Head of course: Assoc. Prof. **Borna Abramović,** Ph.D.					
Co-lecturers: **Denis Šipuš**, Ph.D.					
Semester: **I**	Course code: **118252**	Lectures: **45**	Auditory exercises: **20**	Seminars: **10**	ECTS credits: **7**
Group for lectures: **20 students**			Group for auditory exercises and seminars: **20 students**		

Objective of the course:

- Familiarize students with the principles of railway freight transport.
- Then the marketing concepts in the transport of goods, to explain the technology and the organization of railway freight transport, to present innovative technologies of railway freight transport, elaborates technological process of working with hardware and explain and apply the statistics of railway transport.

Learning outcomes:

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

1. Define the basic terms in the field of market services in the railway freight transport.
2. Calculate the total number of tracks and utilization for railway freight transport; size the size of warehouse and the carriage ramp in freight transport.
3. Explain connecting road and rail traffic in the freight transport.
4. Know how to apply the proper principles in the railway freight transport.
5. Solve simple problems set in the railway freight transport.
6. Analyse the performance of the freight with an emphasis on wagon loads and key customers.
7. Make diagrams of the technological process of working with freight.
8. Outline the optimal type of freight transportation.
9. Make conclusions based on calculation in freight transport.

LECTURES, EXERCISES and SEMINARS

Week	Syllabus	Form of classes	Performed by	Lessons	Remark
1.	▪ Introduction of a new required course Railway Freight Transport	L	Borna Abramović	5	
2.	▪ The concept of marketing in the railway freight transport	L	Borna Abramović	5	
3.	▪ Elements of the technology of railway freight transport ▪ Technical resources	L	Borna Abramović	5	
4.	▪ Railway stations (terminals)	L	Borna Abramović	5	
5.	▪ Key users ▪ Industrial tracks	L	Borna Abramović	5	
6.	▪ Wagon and single wagon loads	L	Borna Abramović	5	
7.	▪ Innovative transport technology in the railway freight transport	L	Borna Abramović	5	

8.	▪ The technological process of working with freight	L	Borna Abramović	5	
9.	▪ Freight statistics	L	Borna Abramović	5	
10.	▪ Determining the optimum number and track use ▪ Sizing of warehouses and ramps	AE	Denis Šipuš	5	
11.	▪ Linking road to rail transport ▪ Technology working with pallets and containers	AE	Denis Šipuš	5	
12.	▪ HRT (Croatian national tariffs) ▪ International tariffs	AE	Denis Šipuš	5	
13.	▪ Transportation problem in the transport of goods	AE	Denis Šipuš	5	
14.	▪ Case study of the organization and technology of the freight transport I	S	Denis Šipuš	5	
15.	▪ Case study of the organization and technology of the freight transport II	S	Denis Šipuš	5	

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

STUDENT OBLIGATIONS AND EXAMS

Conditions for obtaining signatures:

Attendance is mandatory. Only external students are required to attend at least 50% of the classes and make seminar „Organization and technology of the freight transport".
At the end of the course students are required to write and present their seminar paper and to pass an oral examination.

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. Bogović, B.: Prijevozi u željezničkom prometu, Fakultet prometnih znanosti, Sveučilišta u Zagrebu, Zagreb, 2006.
2. Abramović, B.: Modeliranje potražnje u funkciji prijevoza željeznicom, Fakultet prometnih znanosti, Sveučilišta u Zagrebu, Zagreb, 2010.
3. Abramović, B., Brnjac, N., Petrović, M.: Inženjersko - tehnološki proračuni u željezničkom prometu, Fakultet prometnih znanosti Sveučilišta u Zagrebu, Zagreb, 2009.

b) Recommended literature:

1. Berndet, T.: Eisenbahngüterverkehr, Teubner, Stuttgart-Leipzig-Wiesbaden, 2001.
2. Heinisch, R. et al.: Liberalisierung und Harmonisierung der Eisenbahnen in Europa, Hestra-Verlag, Darmstadt, 2003.
3. Eisenbahnreformen in Europa - Eine Standortbestimmung, Eurailpress Tetzlaff-Hestra, Hamburg, 2005.

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 freight technology.

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 of the organization and technology of the freight transport.

1. DOCUMENTATION

Attendance list is signed by students prior to every lecture.

2. ECTS CREDITS

Activity	ECTS credits
Class attendance	3
Oral exam	2
Written exam	2
In total:	**7**

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.