GRADUATE STUDY: TRANSPORT

SEMESTER (I)

Syllabus

Academic year 2021/2022

Course:	**Railway Traffic Technology I**				
Head of course: Prof. **Tomislav Josip Mlinarić**, Ph. D.					
Co-lecturers: Asst. Prof. **Marjana Petrović**, Ph.D. **Matea Mikulčić**, MSc Traff. Eng.					
Semester: **I**	Course code: **47731**	Lectures: **30**	Auditory exercises: **30**	Seminars:	ECTS credits: **7**
Group for lectures: **10 students**			Group for auditory and laboratory exercises: **10 students**		

Objective of the course:

- Solving problems of availability of stations infrastructure and coordination between technology processes in stations and timetable
- Adapting and understanding the methodology for calculating performance indicators
- Optimize processes of railway stations

Learning outcomes:

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

1. Define basic terms and describe technology processes in rail stations
2. Apply optimization methods in technology processes in rail stations
3. Analyse process in rail stations
4. Write a seminar using one of the methods for train composing
5. Assess the level of coordination between different part of the railway stations

LECTURES and EXERCISES

Week	Syllabus	Form of classes	Performed by	Lessons	Remark
1.	▪ Introduction with the content of the course and defining basic principles	L	Tomislav Josip Mlinarić	3	
	▪ Explaining student responsibilities, examination and seminar ▪ Introduction with the content of the course	AE	Matea Mikulčić	2	
2.	▪ Technology of work for local wagons	L	Tomislav Josip Mlinarić	3	
	▪ Technology of work for local wagons	AE	Matea Mikulčić	2	
3.	▪ Methods for freight trains formation	L	Tomislav Josip Mlinarić	3	
	▪ Freight train formation using Futtner's method	AE	Marjana Petrović	2	
4.	▪ Methods for freight trains formation	L	Tomislav Josip Mlinarić	3	
	▪ Simultaneous formation of freight trains	AE	Matea Mikulčić	2	
5.	▪ Organizing of stations work	L	Tomislav Josip Mlinarić	3	

	• Simultaneous formation of freight trains	AE	Matea Mikulčić	2	
6.	▪ Performance indicators for railway stations	L	Tomislav Josip Mlinarić	3	
	▪ Calculation of performance indicators for railway stations	AE	Marjana Petrović	2	
7.	▪ Performance indicators for railway stations	L	Tomislav Josip Mlinarić	3	
	▪ Calculation of performance indicators for railway stations	AE	Marjana Petrović	2	
8.	▪ Performance indicators for railway stations	L	Tomislav Josip Mlinarić	3	
	▪ 1st short exam	AE	Matea Mikulčić	2	
9.	▪ Coordination of technology processes in railway stations	L	Tomislav Josip Mlinarić	3	
	▪ Discussion with students about the exam ▪ Coordination of technology processes in railway stations	AE	Marjana Petrović	2	
10.	▪ Coordination of technology processes in railway stations	L	Tomislav Josip Mlinarić	3	
	• Coordination of technology processes in railway stations	AE	Marjana Petrović	2	

11.	▪ Coordination of technology processes in railway stations	L	Tomislav Josip Mlinarić	3	
	▪ Coordination of technology processes in railway stations	AE	Marjana Petrović	2	
12.	▪ Organization of technology processes in railway stations	L	Tomislav Josip Mlinarić	3	
	• Coordination of technology processes in railway stations	AE	Marjana Petrović	2	
13.	▪ Organization of technology processes in railway stations	L	Tomislav Josip Mlinarić	3	
	• Railway station optimization	AE	Marjana Petrović	2	
14.	▪ Railway stations optimization	L	Tomislav Josip Mlinarić	3	
	• Railway station optimization	AE	Marjana Petrović	2	
15.	▪ Railway stations optimization	L	Tomislav Josip Mlinarić	3	
	▪ 2nd short exam	AE	Matea Mikulčić	2	

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 and make Seminar.

Written exam:

There are two ways of passing the exam:

a) **Student can attend two short written exams**, the 1st one in the middle of the semester and the 2nd one at the end. At each exam is possible to gain 10 points. Only those students that achieve minimum of 5 points on 1st exam can attend 2nd exam. In order to pass the written exam it is necessary to achieve minimum of 5 points on each short exam. Correlation between number of points and mark is shown in the table on the end of this document.

b) **Student can attend one written exam after the end of the semester** on which is possible to gain 10 points. All students who met necessary conditions for obtaining signatures can attend this exam.

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

LITERATURE

a) Obligatory literature:

1. presentations from the lectures and exercise

b) Recommended literature:

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 the practicum students are required to practice diverse calculations and encouraged for the discussion.

3. DOCUMENTATION

Attendance list is signed by students prior to every lecture.

4. SCORING SYSTEM

Activity		ECTS points	
Lectures + practicum		**2**	
1. short exam	= written exam	**1**	**2**
2. short exam		**1**	
Oral exam		**1**	
Seminar		**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.