DESCRIPTION OF A STUDY COURSE – SYLLABUS

<table>
<tr><td>Title of a course</td><td colspan="5">Railroad Transport Safety</td></tr>
<tr><td>Head of course</td><td colspan="5">PhD Saša Hirnig, Senior Lecturer</td></tr>
<tr><td>Study programme</td><td colspan="5">Professional undergraduate study Railroad Transport</td></tr>
<tr><td>Status of a course</td><td colspan="5">Obligatory</td></tr>
<tr><td>Year of study</td><td>3.</td><td>Semester</td><td>V</td><td>ECTS credits</td><td>4</td></tr>
<tr><td>Teaching plan
(L + E + S+ Pr)</td><td colspan="5">2+1+0+0</td></tr>
<tr><td colspan="6">Goals of a course</td></tr>
<tr><td colspan="6">Understanding railway safety issues and getting acquainted with the factors that affect them and emergency procedures.</td></tr>
<tr><td colspan="6">Conditions for enrolling course</td></tr>
<tr><td colspan="6">No conditions</td></tr>
<tr><td colspan="6">Learning outcomes on a level of a study programme which includes course</td></tr>
<tr><td colspan="6">Outcome 2: Apply legislation in the field of railroad transport.
Outcome 5: Evaluate railroad transport safety factors.
Outcome 14: Independently present professional content on oral, written and graphical basis using the usual tools in Croatian and/or foreign language.
Outcome 15: Participate in teamwork in solving complex railroad transport tasks.</td></tr>
<tr><td colspan="6">Expected learning outcomes on a level of a course</td></tr>
<tr><td colspan="6">1. Review the impact of individual railroad transport safety factors and substantiate the human factor as the most important one.
2. Compare the safety principles of different manners of securing railroad stations and the open track.
3. Recommend process automation options for improving transport safety.
4. Compare the types and causes of emergencies
5. Identify measures and procedures following an emergency</td></tr>
<tr><td colspan="6">Content of a course</td></tr>
<tr><td colspan="6">Safety factors in rail transport. Railway station protection. Protection of the open railway section. Protection of road level crossings. Automatic stopping of trains. Automation and centralization of a control process. The role of human factor in rail transport safety. Emergency case. Consequences of emergency cases. Emergency causes. Dealing with emergencies. Measures to be taken in order to establish the safe flow of traffic after an emergency. Equipment used for clearing the consequences of an emergency. Inspection, investigation and reconstruction of the emergency.</td></tr>
<tr><td>Teaching modes</td><td colspan="2">☒ lectures
☐ auditory exercises
☒ seminars and workshops
☐ distance learning
☐ field classes</td><td colspan="3">☒ individual assignments
☐ multimedia and network
☐ laboratory
☐ supervisor’s work
☐ other _____</td></tr>
<tr><td>Comments</td><td colspan="5"></td></tr>
<tr><td colspan="6">Students’ obligations</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="6">Grading, evaluation and monitoring of students’ work continuously during lectures and exams</td></tr>
<tr><td colspan="6">Grading is based upon evaluation of course’s learning outcomes’ adoption. Grading is performed continuously during lectures and/or during exam, in compliance with the provisions of Regulation on the assessment of students.</td></tr>
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Continuous check-up:

Outcomes	Pre-exam I	Pre-exam 2	Assignments	Field assignments	Threshold	Max
Outcome 1	5	5	10		10	20
Outcome 2	10	7		3	10	20
Outcome 3	9	6		5	10	20
Outcome 4		15	5		10	20
Outcome 5		12	8		10	20
Percentage of ECTS	1,6	1,6	0,5	0,3		
Total					50 %	100 %

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Exam term:

Outcomes	Written exam	Oral exam	Max
Outcome 1	**8**	**12**	**20**
Outcome 2	**15**	**5**	**20**
Outcome 3	**5**	**15**	**20**
Outcome 4	**15**	**5**	**20**
Outcome 5	**15**	**5**	**20**
Percentage of ECTS	**2**	**2**	
Total	**58**	**42**	**100 %**

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Grading:

A student has passed the exam if he has acquired at least 50% of anticipated credits of a specific learning outcome.

If a student has passed learning outcomes of all courses, the accomplished credits (percentages) of all passed learning outcomes are being added, while the final grade is defined upon following table:

Range of credits (percentages)	Numerical grade	ECTS grade
90,00 – 100,00	Excellent (5)	A
75,00 – 89,99	Very good (4)	B
60,00 – 74,99	Good (3)	C
50,00 – 59,99	Sufficient (2)	D
0,00 – 49,99	Insufficient (1)	F

Obligatory literature

1. Toš, Z.: Signalizacija u željezničkom prometu, FPZ, 2013.,
2. Hirnig, S: Osnove sigurnosti željezničkog prometa, skripta, Veleučilište u Rijeci, 2017.,
3. Stipetić A.: Infrastruktura željezničkog prometa, FPZ, Zagreb, 1999.,
4. Zakon o sigurnosti i interoperabilnosti željezničkog sustava

Additional literature

1. Kos V., Mlinarić T., Arhanić Lj.: Signalno-sigurnosni i telekomunikacijski uređaji u željezničkom prometu, FPZ, Zagreb, 1988.,
2. Pravilnici HŽ-a koji reguliraju sigurnost i izvanredne događaje