STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Safety in rail transport		**1010612231010625331**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**(brak)**	**2 / 3**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Railway Transport	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
Second-cycle studies	**full-time**

No. of hours				No. of credits
Lecture: **1**	Classes: **1**	Laboratory: **-**	Project/seminars: **-**	**1**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**1 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has knowledge of probability calculus and mathematical statistics. Student knows and understands ideas and conditions of processes of system safety management and hazard risk management generated in the same. Student knows and understands procedures of hazard identification process, knows most frequently used risk assessment methods and knows how to use the methods in order to estimate and value the risk of hazards. Student knows the procedures of hazard risk response
2	**Skills**	Student can apply basic models relating to probability calculus and mathematical statistics. Student uses correct terms relating to system safety. Student can identify hazards in areas of analysis connected with technical systems in transport and can estimate and value the risk of identified hazards. Student can use appropriate measures for the purposes of response to the risk of identified hazards. Student can edit reports with results of management procedures of the risk of identified hazard in selected areas of analyses. Student has fluent skills in computer office software.
3	**Social competencies**	Student thinks systemically and has teamwork skills. Student is convinced that a way to improve safety of technical facility systems goes through the application of safety management systems and implementation of appropriate safety policies. Student is aware of the need to build a compromise between systems and costs of functioning of the same. Student can manage his/her own time dedicated to performance of indicated tasks.

Assumptions and objectives of the course:

Learning the conditions, principles, methods, processes, procedures and models relating to safety problems in rail transport and acquisition of skills for their application.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Student knows and understands ideas and conditions of rail transport safety management processes and hazard risk management generated in the same. - [K2A_W16]

2. Student knows and understands hazard identification process procedures, knows most frequently used risk assessment methods and knows how to use the methods in order to estimate and value the risk of hazards and knows the procedures of hazard risk response in rail transport systems. - [K2A_W16]

Skills:

1. Student uses correct terms relating to rail transport system safety. - [K2A_U01, K2A_U02]

2. Student can identify hazards in areas of analysis connected with rail transport systems and can estimate and value the risk of identified hazards. - [K2A_U08, K2A_U11]

3. Student can use appropriate measures for the purpose of response to the risk of identified hazards in rail transport. - [K2A_U08, K2A_U11]

4. Student can edit reports on results of procedures of hazard risk management identified in the areas of analysis connected with rail transport. - [K2A_U08, K2A_U11, K2A_U17]

Social competencies:

1. Student understands the need acquire additional knowledge and is aware of educational opportunities relating to safety in rail transport. - [K2A_K01]

2. Student understands and is aware of the significance of non-technical aspects and effects of activity of an engineer functioning in rail transport (with respect to safety of the transport sector in particular). - [K2A_K02]

3. Student improves his/her teamwork skills and is able to accept the need to assume responsibility for tasks realized in teams. - [K2A_K04]

Assessment methods of study outcomes

Lecture: a oral examination.

Practical classes: credit based on prepared reports related to realization of practical problems.

Course description

A repertory of system safety problems in transport. Safety related organizational structures of rail transport in Poland vs. organizational structures of the European Union. Legal requirements of the EU relating to safety for facilities and projects in rail transport. Fulfillment of the EU legal requirements relating to safety for facilities and projects in rail transport. Risk management in rail transport systems on selected examples. Rail transport workstation risk management. Risk management of hazards connected with operating manuals of selected railway facilities. Practical classes relating to application of methods, processes, procedures and models connected with rail transport safety.

Basic bibliography:

1. Chrószcz B., Hansel J., Analiza i ocena ryzyka zawodowego. Wydawnictwa AGH, Rozprawy doktorskie, Monografie, Kraków, 2011.

2. Kadziński A., Bezpieczeństwo transportu szynowego. E-skrypt Politechniki Poznańskiej, 2013, niepublikowane.

3. Podejście systemowe. Przewodnik dotyczący opracowywania i wdrażania kolejowego systemu zarządzania bezpieczeństwem. Europejska Agencja Kolejowa. Autor: Anna Patacchini, wersja 1.0 z 13 grudnia 2010.

4. Zintegrowany System Bezpieczeństwa Transportu. I, II i III tom. Prace zbiorowe - red. R. Krystek, Politechnika Gdańska, WKŁ, I i II tom - Warszawa 2009, III tom ? Warszawa, 2010.

5. Zintegrowany System Zarządzania Bezpieczeństwem Transportu Kolejowego w Polsce. Tom 1. Żółta Księga / Yellow Book. Redakcja Sitarz M., Politechnika Śląska, Katedra Transportu Szynowego, Katowice, 2009 (tłumaczenie na język polski Yellow Book wydanego przez Rail Safety and Standards Boards).

Additional bibliography:

1. Bryła R., Bezpieczeństwo i higiena pracy. Wyd. ELAMED, Katowice, 2011.

2. Dyrektywa 2004/49/WE Parlamentu Europejskiego i Rady z dnia 29 kwietnia 2004 r. w sprawie bezpieczeństwa kolei wspólnotowych. Dziennik Urzędowy Unii Europejskiej L 164/44, 30.04.2004.

3. Dyrektywa 2006/42/WE Parlamentu Europejskiego i Rady z dnia 17 maja 2006 r. w sprawie maszyn. Dziennik Urzędowy Unii Europejskiej L 157/24, 09.06.2006.

4. Markowski A.S. (red.), Zapobieganie stratom w przemyśle, część 3, Zarządzanie bezpieczeństwem procesowym, Wyd. Politechniki Łódzkiej, Łódź, 2000.

5. PN-N-18002:2011, Systemy zarządzania bezpieczeństwem i higieną pracy. Ogólne wytyczne do oceny ryzyka zawodowego.

6. Szopa T., Niezawodność i bezpieczeństwo. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2009

7. Szymanek A., Bezpieczeństwo i ryzyko w technice. Wyd. Politechniki Radomskiej, Radom, 2006.

8. Witkowska M., Zasady funkcjonowania Unii Europejskiej. Wydawnictwa Akademickie i Profesjonalne, Warszawa, 2008, ISBN 978-83-60501-40-5.

9. Zarządzanie ryzykiem korporacyjnym - zintegrowana struktura ramowa. Tom I. COSO II - The Committee of Sponsoring Organizations of the Treadway Commission. Wyd. polskie Polski Instytut Kontroli Wewnętrznej, Warszawa, 2004.

Result of average student's workload

Activity	Time (working hours)

1. Preparation to the lecture	1
2. Participation in the lecture	15
3. Consolidation of the lecture content	2
4. Consultation about the lecture	1
5. Preparation to the exam	5
6. Participation in the exam	1
7. Preparation to the classes	1
8. Participation in the classes	15
9. Consolidation of the classes content	2
10. Consultation about the classes	1

Student's workload

Source of workload	hours	ECTS
Total workload	44	1
Contact hours	33	1
Practical activities	0	0