



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Risk management of aviation

### Course

Field of study

Aviation and cosmonautics

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other (e.g. online)

0

Tutorials

15

Projects/seminars

0

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

dr inż. Anna Kobaszyńska-Twardowska

email: anna.kobaszynska-

twardowska@put.poznan.pl

tel. 61-224 45 11

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

mjr dr inż. Sławomir Szrama

email: slawomir.szrama@put.poznan.pl

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### Prerequisites

Knowledge: The student understands the concept of a system and is able to define social systems, systems in transport. The student has basic knowledge of historians, has knowledge of the reliability of technical tools. The student is able to calculate entries to the path of elementary and preliminary steps. The student is fluent in a suite of computer office programs. The student understands the requirements for system testing. The student placed the competences at the disposal of the tasks indicated for implementation..



### Course objective

Getting to know the methods and acquiring practical skills in the field of risk management of threats identified in selected areas of analysis related to transport, in particular in aviation.

### Course-related learning outcomes

#### Knowledge

1. Student has a structured, theoretically founded general knowledge covering key issues in the field of flight safety and risk assessment
2. Student has extended knowledge necessary to understand the profile subjects and specialist knowledge about the construction, operation, air traffic management, safety systems, economic, social and environmental impact in the field of aviation and space
3. Student has detailed knowledge related to selected issues in the field of human capabilities and limitations in aviation and aerospace
4. Student has basic knowledge necessary to understand social, economic, legal and other non-technical conditions of engineering activity.

#### Skills

1. Student can develop a safety instruction for a simple and medium complex on-board device, machine or technical flying object under specific environmental conditions
2. Student is able to apply basic technical standards for unification and safety and recycling
3. Student Can use the language of mathematics (differential and integral calculus) to describe simple engineering problems

#### Social competences

1. Student understands the need for lifelong learning; can inspire and organize the learning process of other people
2. Student is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions made
3. Student is able to interact and work in a group, assuming various roles in it

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: on the basis of a written test.

Classes: based on the evaluation of the developed exercise reports.

### Programme content



Demand for security analysis. The concept of a safety management system (SMS). Risk management as an element of SMS in aviation. Aviation risk management levels and types of risk. Sources of threats, threats, undesirable events, risk of threats, identification of sources of threats and threats, characteristics of threats, activation of threats, levels of opportunities and levels of effects of activation of threats. Risk models, generalized risk model, risk models in known risk assessment methods, risk estimation. Valuation / valuation of risk risks - risk categories. Risk management - generally about models of security systems. Risk monitoring and risk communication. Exercises in applying risk management methods procedures in the areas of analysis related to transport, in particular in aviation.

### Teaching methods

Informative (conventional) lecture (providing information in a structured way) - may be of a course (introductory) or monographic (specialist) character

The exercise method (subject exercises, practice exercises) - in the form of auditorium exercises (application of acquired knowledge in practice - may take various forms: solving cognitive tasks or training psychomotor skills; transforming a conscious activity into a habit through repetition)

### Bibliography

#### Basic

1. Chruzik K., Inżynieria bezpieczeństwa w transporcie. Wyd. Politechniki Śląskiej, Gliwice, 2016.
2. Gill A., Warstwowe modele systemów bezpieczeństwa do zastosowań w transporcie kolejowym. Wydawnictwo Politechniki Poznańskiej, Poznań, 2018.
3. Klich E., Bezpieczeństwo lotów. Wyd. Naukowe Instytutu Technologii Eksploatacji - PIB, Radom, 2011.
4. Konieczny J., Zarządzanie w sytuacjach kryzysowych, wypadkach i katastrofach. Oficyna Wyd. GARMOND, Poznań - Warszawa, 2001.
5. Szymanek A., Bezpieczeństwo i ryzyko w technice. Wyd. Politechniki Radomskiej, Radom, 2006.
6. Szymanek A., Teoria i metodologia zarządzania ryzykiem w ruchu drogowym. Wyd. Politechniki Radomskiej, Radom, 2012.
7. 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.
8. Zintegrowany System Bezpieczeństwa Transportu. Tom 2. Uwarunkowania rozwoju integracji systemów bezpieczeństwa transportu. Redaktor pracy zbiorowej Krystek R., Politechnika Gdańska, Gdańsk 2009, WKŁ, Warszawa, 2009.

#### Additional

1. Chruzik K., Zarządzanie bezpieczeństwem w transporcie kolejowym. Wyd. Instytutu Technologii i Eksploatacji PIB w Radomiu, Radom, 2014.



2. Gucma L., Wytyczne do zarządzania ryzykiem morskim. Wyd. Naukowe Akademii Morskiej, Szczecin, 2009.
3. Jamroz K., Metoda zarządzania ryzykiem w inżynierii drogowej. Wyd. Politechniki Gdańskiej, Gdańsk, 2011.
4. Kadziński A., Studium wybranych aspektów niezawodności systemów oraz obiektów pojazdów szynowych. Wyd. Politechniki Poznańskiej, Poznań, 2013.
5. Krasodomska J., Zarządzanie ryzykiem operacyjnym w bankach. Polskie Wyd. Ekonomiczne, Warszawa, 2008.
6. Markowski A.S. (red.), Zapobieganie stratom w przemyśle. Część III. Zarządzanie bezpieczeństwem procesowym. Wyd. Politechniki Łódzkiej, Łódź, 2000.
7. Radkowski S., Podstawy bezpiecznej techniki. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2003.
8. Rak J.R., Tchórzewska-Cieślak B., Metody analizy i oceny ryzyka w systemie zaopatrzenia w wodę. Oficyna Wyd. Politechniki Rzeszowskiej, Rzeszów, 2005

#### Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	50	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	50	2,0

<sup>1</sup> delete or add other activities as appropriate