



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Human factor [S1Lot1-BSPL>CzynL]

### Course

Field of study

Aviation

Year/Semester

3/6

Area of study (specialization)

Unmanned Aerial Vehicles

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

15

Other (e.g. online)

0

Tutorials

15

Projects/seminars

0

### Number of credit points

4,00

### Coordinators

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### Lecturers

### Prerequisites

Basic knowledge of human reliability in aviation obtained at an earlier stage of studies.

### Course objective

Expanding knowledge in the field of aviation safety. Learning and training skills related to aviation safety management. The ability to assess the role of man in flight safety. Defining the principles of selecting personnel for the organization's tasks.

### Course-related learning outcomes

Knowledge:

1. the student has knowledge of aviation safety and management. The student knows the concept of the human factor and methods of assessing human reliability, has detailed knowledge related to selected issues in the field of human capabilities and limitations during aircraft operation in flight, its impact on health and the ability to perform air operations, as well as the possibility of improving physical condition

[L1\_W14]

2. has the ability to self-educate with the use of modern didactic tools, such as remote lectures, internet websites and databases, didactic programs, electronic books [L1\_W22]
3. has basic knowledge of the mechanisms and laws governing human behavior and psyche [L1\_W23]
4. has basic knowledge of aviation law, organizations operating in civil aviation and knows the basic principles of state aviation functioning, has basic knowledge of key issues in the functioning of civil aviation [L1\_W24]

Skills:

1. is able to obtain information from various sources, including literature and databases, both in Polish and in English, integrate them properly, interpret and critically evaluate them, draw conclusions and exhaustively justify their opinions [L\_U01]
2. can properly use information and communication techniques, applicable at various stages of the implementation of aviation projects [L\_U02]
3. can properly plan and perform experiments, including measurements and computer simulations, interpret the results obtained, and correctly draw conclusions from them [L\_U03]
4. can, when formulating and solving tasks related to civil aviation, apply appropriately selected methods, including analytical, simulation or experimental methods [L\_U04].

Social competences:

1. understands that in technology, knowledge and skills very quickly become obsolete [L\_K01]
2. is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning engineering projects that have led to serious financial and social losses, or to a serious loss of health and even life [L\_K02].
3. correctly identifies and resolves dilemmas related to the profession of an aerospace engineer [L\_K05].

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

LECTURE: Assessment of knowledge and skills in a written or oral exam based on the explanation of selected issues.

TUTORIALS: Final test covering the issues discussed during the exercises

LABORATORY: Current assessment of student's activity in class, preparation and evaluation of student reports after each class.

## Programme content

1. Personality as the main component of the causes of air accidents 16h (W10, CI2, Lab4): personality (personality tests), pilot-in-command + decision-making concepts + decision game, gender and work in aviation, ego in aviation competitions, authority in aviation + negotiation game, communication and assertiveness at work in the aviation environment.
2. Work hygiene in aviation 18h (W10, CI4h, Lab4): sleep hygiene + biological rhythm + crew working time stress, PTSD, questionnaires, GAS, overload, task overload, stimulants and psychoactive substances + drugs taken, the influence of coffee, alcohol on pilot's work, fatigue of flight crews.
3. Information as a key factor in preventing human errors 13h (W5, CI4, Lab 4): information processing (attention processes, perception, top-down and bottom-up processing, memory), information acquisition (conditioning, instrumental, mnemonics) + behavior + motivation literalization (perceptiveness games).
4. The use of modern science in minimizing the events caused by the human factor 13h (W5, CI4, Lab4): gamification, studies of air traffic controllers, student pilots, stands for examining the psychophysical state of aviation operators.

## Course topics

The lecture program covers the following topics:

1. The personality of the flight crew and air accidents
2. Occupational hygiene in aviation
3. Flight crew working time
4. Drugs and their impact on the functioning of crews

5. Information processing, perceptiveness
6. Psychophysical condition of aviation operators

The exercise program covers the following topics:

1. Personality tests
2. Negotiation games
3. Task overload, surveys, GAS
4. Literalization, top-down and bottom-up perception
5. Mnemonics

The laboratory program covers the following topics:

1. Air traffic controller research
2. Gamification
3. Research on student pilots
4. Simulator research related to the psychophysical condition of aviation operators
5. Using test stands to assess predispositions

## Teaching methods

Informative (conventional) lecture (providing information in a structured manner) - 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)

Laboratory (experiment) method (students independently conduct experiments)

## Bibliography

Basic

1. Makarowski R., Smolicz T., Czynniki ludzkie w operacjach lotniczych, ADRIANA AVIATION, Kosowizna, 2012
2. Lewitowicz J., Kustroń K., Podstawy eksploatacji statków powietrznych, Własności i właściwości eksploatacyjne statku powietrznego, Wyd. ITWL, Warszawa, 2003
3. Zagdański Z., Stany awaryjne statków powietrznych, Wyd. ITWL, Warszawa, 1995
4. Bartnik R., Grenda B., Galej P., Symulatory lotu oraz symulatory kontroli ruchu lotniczego w szkoleniu lotniczym, Wyd. Akademii Obrony Narodowej, Warszawa
5. Kearns S., Marvin T., Hodge S.: Competency-Based Education in Aviation: Exploring Alternate Training Pathways, 2016
6. Peter A. Hancock, Dennis A. Vincenzi, John A. Wise, Mustapha Mouloua: Human Factors in Simulation and Training
7. Makarowski R., Ryzyko i stres w lotnictwie sportowym, Wyd. Difin, Warszawa, 2010
8. Balcerzak A., Woźniak J., Szkoleniowe metody symulacyjne, Wyd. GWP, Sopot 2014
9. Bednarek H., Czy piloci ulegają złudzeniom percepcyjnym? Poznawcze uwarunkowania dezorientacji przestrzennej, Wyd. AWP, Sopot 2011
10. Tokarczyk E. (red.) Psychologiczne badania kierujących pojazdami. Vademecum psychologa transportu, Wyd. ITWL, Warszawa 2012

Additional

1. Podręcznik zarządzania bezpieczeństwem, Doc 9859 ICAO Organizacja Międzynarodowego Lotnictwa Cywilnego, wydanie pierwsze 2006
2. Romanowska-Słomka I., Słomka A., Zarządzanie ryzykiem zawodowym. Wydawnictwo Tarbonus, Tarnobrzeg, 2005
3. Lewitowicz J. (red.) Podstawy eksploatacji statków powietrznych, Badania eksploatacyjne statków powietrznych, Wyd. ITWL, Warszawa, 2007
4. Domicz J., Szutowski L., Podręcznik pilota samolotowego, Wyd. Technika/Aerotechnika, Poznań 2008
5. Szutowski L., Poradnik pilota samolotowego, Wyd. Avia-test, Poznań 2007

## Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	62	2,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	38	1,50