



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Human factor in aviation

### Course

Field of study

Aerospace Engineering

Area of study (specialization)

Air transport

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

polish

Requirements

elective

### Number of hours

Lecture

45

Laboratory classes

30

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

6

### Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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### Prerequisites

Basic knowledge of transport safety, basic knowledge of air transport, the ability to solve research problems using scientific methods, the ability to find cause and effect relationships based on knowledge, the ability to precisely formulate questions; ability to set priorities important in solving the tasks set before him; ability to formulate a research problem and search for its solution, independence in solving problems, ability to cooperate in a group.

### Course objective

To familiarize students with the basic concepts of the impact of the human factor on the safety of air transport, with the possibilities and limitations of the pilot, in particular occurring diseases, illusions, elements of physiognomy. To familiarize students with methods and means for testing the



psychophysical abilities of pilots, in particular flight simulators, response time meters, electroencephalograph, etc. Indication of the essence of human predisposition to perform functions in air transport: pilot, aircraft crew, cabin personnel. To familiarize students with the principles of human resource management. Methods of selecting staff for positions taking into account their competences and skills. Acquaintance with the planning of staffing needs.

### Course-related learning outcomes

#### Knowledge

1. has ordered, theoretically founded general knowledge covering key issues in the field of on-board equipment, as well as on-board and ground electronic communication systems - [[K1A\_W09]]
2. has ordered, theoretically founded general knowledge covering key flight safety issues and risk assessment - [[K1A\_W12]]
3. has detailed knowledge related to selected issues in the field of human capabilities and restrictions when operating an aircraft in flight, as well as the capabilities and limitations of the air ambulance system - [[K1A\_W15]]

#### Skills

1. has the ability to self-study using modern teaching tools, such as remote lectures, websites and databases, teaching programs, e-books - [[K1A\_U03]]
2. is able to obtain information from literature, the Internet, databases and other sources. Is able to integrate the information obtained, interpret and draw conclusions from them as well as create and justify opinions - [[K1A\_U04]]
3. is able to plan and conduct a research experiment using measuring equipment, computer simulations, is able to perform measurements such as temperature measurements using liquid thermistors, thermistor, thermocouples, velocities and flow rates using turbine, laser and ultrasonic flow meters, and interpret results and draw conclusions - [[K1A\_U11]]

#### Social competences

1. is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the associated responsibility for the decisions taken - [[K1A\_K02]]
2. is able to interact and work in a group, taking on various roles in it - [[K1A\_K03]]
3. can think and act in an entrepreneurial manner - [[K1A\_K06]]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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



Laboratory: Current assessment of student activity in class, preparation and evaluation of student reports after each class

### Programme content

#### LECTURE:

Introduction to the issues of Human Resources Management (basic concepts). Planning personal needs. Qualitative and quantitative aspect of human resource planning. Making personnel processes more flexible. Personnel recruitment - recruitment and selection. Internal and external recruitment system. Leadership and people management. Work motivation system. Pay policy and remuneration systems. Staff training and improvement. Employee evaluation tools and methods. Typology and choice of personnel strategy. Classification and quantitative structure of errors made by human / operator / pilot. Analysis of selected sources of threats as factors escalating human errors in air transport systems. Methodology of human reliability analysis (HRA) description of methods with examples. Selected issues in physiology; Selected issues in psychology; Psychophysical burdens at workplaces; Psychosocial risk associated with the occupation;

#### LAB:

Self-presentation, preparation for job interviews, employee motivation methods, CRM - Crew Resource Management, crew working time planning, theories of aviation accidents, pilot errors, taxonometry of error, examples of events caused by pilot errors. Methodology for testing the pilot's psychophysical state.

### Teaching methods

Informative (conventional) lecture (systematic transfer of information) - through multimedia presentations.

Laboratory (experiment) method (students conduct experiments independently)

### Bibliography

Basic

1. Lozia Z., Symulatory jazdy samochodem, WKŁ, Warszawa 2008
2. Makarowski R., Smolicz T., Czynniki ludzkie w operacjach lotniczych, ADRIANA AVIATION, Kosowizna, 2012
3. Lewitowicz J., Kustroń K., Podstawy eksploatacji statków powietrznych, Własności i właściwości eksploatacyjne statku powietrznego, Wyd. ITWL, Warszawa, 2003
4. Zagdański Z., Stany awaryjne statków powietrznych, Wyd. ITWL, Warszawa, 1995
5. Pochtowski A., Zarządzanie Zasobami Ludzkimi. Strategie - Procesy ? Metody, Wydawnictwo PEW, Warszawa 2006



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	150	6,0
Classes requiring direct contact with the teacher	75	3,0
Student's own work (literature studies, preparation for laboratory classes, preparation for the exam, reports preparation) <sup>1</sup>	75	3,0

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