



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Human reliability in aviation

Course

Field of study

Aerospace Engineering

Area of study (specialization)

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

compulsory

Number of hours

Lecture

30

Laboratory classes

15

Other (e.g. online)

0

Tutorials

15

Projects/seminars

0

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

Adrian Gill

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Faculty of Civil and Transport Engineering

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Responsible for the course/lecturer:

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Prerequisites

Knowledge: Basic knowledge of transport safety, basic knowledge of air transport

Skills: the ability to solve research problems using scientific methods, the ability to find cause and effect relationships based on the acquired knowledge

Social competences: the ability to precisely formulate questions; the ability to define priorities important in solving the tasks set for him; ability to formulate a research problem and search for its solution, independence in problem-solving, ability to cooperate in a group

Course objective

Learning and acquiring the ability to apply models, characteristics, methods of analyzing the reliability of



elements of anthropotechnical systems as well as analyzing and mapping safety systems in air transport. Discussion of basic concepts in the field of human factor influence on the safety of air transport. To familiarize students with the possibilities and limitations of the pilot, in particular the existing diseases, illusions, elements of physiognomy. Improving students' skills in defining and solving research problems

Course-related learning outcomes

Knowledge

1. Has extended knowledge necessary to understand the profiled subjects as well as specialist knowledge on construction, operation, air traffic management, safety systems, economic, social and environmental impact in the field of aviation and space - [K1A_W01]
2. Has detailed knowledge related to selected issues in the field of human capabilities and limitations in aviation and aerospace - [K1A_W16]
3. Has a structured, theoretically founded general knowledge covering key issues in the field of flight safety and risk assessment - [K1A_W22]
4. Has basic knowledge necessary to understand social, economic, legal and other non-technical determinants of engineering activity [K2A_W24]

Skills

1. Has the ability to self-educate with the use of modern didactic tools, such as remote lectures, websites and databases, didactic programs, electronic books [K2A_U03]
2. Can obtain information from literature, the Internet, databases and other sources. Is able to integrate the obtained information, interpret and draw conclusions from it, and create and justify opinions [K2A_U04]
3. Can prepare and present a short verbal and multimedia presentation devoted to the results of an engineering task [K2A_U08]
4. Can plan and carry out a research experiment using measuring equipment, computer simulations, can perform measurements such as temperature measurements with liquid, thermistor, thermocouple thermometers, speed and flow rate using turbine, laser and ultrasonic flow meters, interpret the results and draw conclusions [K1A_U10]

Social competences

1. Understands the need for lifelong learning; can inspire and organize the learning process of other people [K1A_K01]
2. Is ready to critically evaluate the knowledge and content received, recognize the importance of knowledge in solving cognitive and practical problems, and consult experts in the event of difficulties in solving the problem on its own [K1A_K02]
3. Is able to interact and work in a group, assuming different roles in it [K1A_K04]



4. Is aware of the social role of a technical university graduate, and especially understands the need to formulate and transmit to the society, in particular through the mass media, information and opinions on technological achievements and other aspects of engineering activities; makes efforts to provide such information and opinions in a generally comprehensible manner [K1A_K08]

Methods for verifying learning outcomes and assessment criteria

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 the student's activity in class, preparation and assessment of student reports after each class

Programme content

Classification and quantitative structure of errors made by a 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 of physiology.

Selected issues in psychology.

Psychophysical burden at workplaces.

Psychosocial risk related to the profession.

Theories of aviation accidents.

Pilot errors, taxonometry of errors, examples of events caused by pilot errors.

Methodology of examining the psychophysical state of a pilot.

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)

Laboratory (experiment) method (students independently conduct experiments)

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., Kustron 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

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	4,0
Classes requiring direct contact with the teacher	65	3,0
Student's own work (literature studies, preparation for laboratory classes and exercises, preparation for colloquiums (exercises) and exam (lecture) ¹	35	1,0

¹ delete or add other activities as appropriate