



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

part-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

polish

Requirements

elective

Number of hours

Lecture

36

Laboratory classes

18

Other (e.g. online)

0

Tutorials

18

Projects/seminars

0

Number of credit points

9

Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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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. 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 knowledge of the method of presenting test results in tabular and graph form, performing the analysis of measurement uncertainty [K2A_W29]

Skills

1. Can communicate with the use of various techniques in the professional environment and other environments, using the formal notation of the structure, technical drawing, concepts and definitions of the scope of the studied field of study [K2A_U02]

2. 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]

3. 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]

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 on a written or oral exam based on the explanation of selected issues

TUTORIALS: Assessment of knowledge and skills on the written test on the basis of solved tasks

LABORATORY: Assessment of knowledge and skills on the basis of reports from classes prepared by the student

Programme content

LECTURE:

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 in physiology; Selected issues in psychology; Psychophysical burdens at workplaces; Psychosocial risk related to the performed 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.

EXERCISES:

Classes provide an example of solving the task on the blackboard (from the scope presented in the lecture) along with the analysis of subsequent stages. The way students solve the problem on the blackboard is reviewed by the tutor.

LAB:

Introduction, organization, occupational health and safety, discussion of the topic of exercises, familiarization with the operation of the FNPT II flight simulator. Study of the impact of simulator training on reaction time - Piórkowski Camera. Study of the impact of simulator training on reaction time - Reaction Parameters Meter. Research on the impact of sudden changes in weather conditions on the safety of aviation operations - pulse oximeter. Study of the impact of sudden changes in atmospheric conditions on the safety of aviation operations - electroencephalograph. Working on a work simulator under stress, the influence of stress on the speed of decision making. Subjective methods of examining the pilot's condition - D2 test, SWAT, NASA TLX

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., 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

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	225	9,0
Classes requiring direct contact with the teacher	75	3,0
Student's own work (literature studies, preparation for laboratory classes and exercises, preparation for colloquiums (exercises) and exam (lecture) ¹	150	6,0

¹ delete or add other activities as appropriate