



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Human - performance and limitations 3 [S1Lot2-PSPL>CMiO3s5]

Course

Field of study

Aviation

Year/Semester

3/5

Area of study (specialization)

Aircraft Piloting

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

1,00

Coordinators

Karol Szymański

Lecturers

Prerequisites

A student starting this subject should have basic knowledge of general and aviation psychology, the nature and functioning of human cognitive, emotional and motivational processes. They should also have the ability to apply the scientific method in solving problems and be ready to cooperate within a team.

Course objective

Familiarizing students with the emotional and motivational processes of a person functioning in normal, difficult and extreme situations. Basic human cognitive processes - perception and attention and their importance in the process of managing information in the human - technical object system. Dynamics of small social groups and its application in the process of constructing effective task forces in aviation. Crew/team resource management (CRM).

Course-related learning outcomes

Knowledge:

1. has extended and in-depth knowledge of mathematics including algebra, analysis, theory of differential equations, probability, analytical geometry as well as physics including the basics of classical mechanics, optics, electricity and

magnetism, solid state physics, thermodynamics, useful for formulating and solving complex technical tasks related to aeronautical engineering and modeling

selected issues related to air transport, knows the basic techniques, methods and tools used in the process of solving tasks related to air transport, mainly of an engineering nature

3. has knowledge of the method of presenting research results in the form of a table and a graph, performing measurement uncertainty analysis

4. has basic knowledge of research methods and the method of preparing and conducting scientific research, and also knows the principles of writing a scientific paper

5. has basic knowledge of metallic, non-metallic and composite materials used in machine construction, in particular their structure, properties, methods of production, heat and thermochemical treatment and the influence of plastic processing on their strength as well as fuels, lubricants, technical gases, refrigerants, etc.

6. has basic knowledge of environmental protection in transport, is aware of the threats related to environmental protection and understands the specific impact of mainly air transport on the environment and the social, economic, legal and other non-technical conditions of engineering activities

7. has the ability to self-educate using modern teaching tools, such as remote lectures, websites and databases, teaching programs, e-books

Skills:

1. is able to obtain information from various sources, including literature and databases, both in Polish and English, integrate it properly, interpret and critically evaluate it, draw conclusions, and comprehensively justify the opinions he formulates
2. is able to appropriately use information and communication techniques, which are used at various stages of the implementation of aviation projects
3. is able to properly plan and perform experiments, including measurements and computer simulations, interpret the obtained results, and correctly draw conclusions drawn from them
4. is able to apply appropriately selected methods, including analytical, simulation or experimental methods, when formulating and solving tasks concerning civil aviation
5. is able to appropriately select materials for simple aircraft structures, indicate differences between fuels used in aviation
6. is able to communicate using various techniques in a professional environment and other environments using a formal construction record, technical drawing, concepts and definitions of the scope of the field of study studied
7. is able to design elements of means of transport using environmental protection data
8. the student is able to use theoretical probability distributions. The student is able to analyze and interpret statistical data. The student is able to apply methods and tools of mathematical statistics in engineering practice
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practice

12. is able to organize, cooperate and work in a group, assuming different roles in it and is able to determine priorities for the implementation of a task defined by himself or others

13. is able to plan and implement the process of his own permanent learning and knows the possibilities of further

education (second and third cycle studies, postgraduate studies, courses and exams conducted by universities, companies and professional organizations)

Social competences:

1. understands that in technology, knowledge and skills become outdated very quickly

2. is aware of the importance of knowledge in solving engineering problems and knows examples and understands the causes of malfunctioning engineering projects that led to serious financial and social losses or

to serious loss of health or even life

3. is aware of the social role of a graduate of a technical university, in particular understands the need to formulate and communicate to the public, in an appropriate form, information and opinions on engineering activities, technical achievements, as well as the achievements and traditions of the engineering profession

4. correctly identifies and resolves dilemmas related to the performance of the profession of an aviation and astronautics engineer

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: - assessment of knowledge and skills demonstrated in the written test - 1.5 hours

Programme content

Lecture: semester 5:

Human errors and reliability. Reliability of human behavior. Theory and model of human errors. Error generation.

Decision-making concepts. Avoiding and correcting errors: management in the flight deck. Sense of security.

Coordination of activities (multi-crew concepts). Human behavior. High level of automation in the flight deck.

Course topics

Discussion of the reliability of human behavior and human errors. Presentation of the theory and model of human

errors and discussion of the generation of errors and the concept of decision-making. Presentation of management

in the crew cabin, discussion of the sense of security and coordination of human actions and behaviors.

Teaching methods

Lecture: multimedia presentation, illustrated with examples given on the blackboard.

Bibliography

1. Szajnar S.: „Czynnik ludzki w obsłudze urządzeń technicznych”, Skrypt WAT, Warszawa 2010.

2. Janowska Z.: „Zarządzanie zasobami ludzkimi”, Polskie Wydawnictwo Ekonomiczne, 2010

3. Scott W. E., Cummings L. L.: “Zachowanie człowieka w organizacji”, Państwowe Wydawnictwo Naukowe, 1983

4. www.faa.gov

5. www.easa.europa.eu

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	0,50