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 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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statistical data. The student is able to apply the methods and tools of mathematical statistics in engineering 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

Basic:
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Additional:
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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