COURSE DESCRIPTION CARD - SYLLABUS

Course name
Human - performance and limitations 2 [S1Lot2-PSPL>CMiO2]

Course

Field of study
Aviation

Year/Semester
2/3

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
15

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. the student has knowledge of aviation safety and management. The student knows the concept of the human factor and the methods of assessing human reliability
2. has a basic knowledge of environmental protection in transport, is aware of the risks associated with environmental protection and understands the specificity of the impact of mainly air transport on the

environment
3. has a basic knowledge of the mechanisms and laws governing human behavior and psyche

Skills:
1. is able to organize, cooperate and work in a group, assuming various roles in it, and is able to properly define priorities for the implementation of a specific task

Social competences:
1. correctly identifies and resolves dilemmas related to the profession of an aerospace 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 a written test - 1.5 hour exam Exercises:
- knowledge acquired during the exercises is verified by two 45-minute tests conducted during classes 3 and 7

Programme content

- Basics of aviation physiology - The impact of aviation conditions on the human body, adaptive mechanisms and physiological reactions to changes in altitude.
- Respiratory and circulatory systems - Functioning of systems in aviation conditions, the impact of atmospheric pressure and hypoxia on the body.
- Hypertension and hypotension - The effects of changes in blood pressure on pilots and the impact of flights on the cardiovascular system.
- Coronary heart disease - The risk and consequences of heart disease in aviation, principles of prevention and assessment of the health of pilots.
- Hypoxia - Causes and symptoms of hypoxia at high altitudes, methods of prevention and treatment in the event of hypoxia.
- Hyperventilation - Mechanisms of excessive ventilation, its impact on the efficiency of the pilot and methods of controlling breathing.
- Decompression sickness - Causes of gas formation in the body at high altitudes, symptoms and methods of treatment.
- High altitude environment - The impact of low pressure, temperature and cosmic radiation on the human body.
- Man and the environment: the emotional system - The impact of stress, fatigue and emotions on the psychophysical abilities of pilots.
- Health hazards for pilots - Risk factors in aviation, including fatigue, noise, cosmic radiation and cockpit ergonomics.

Exercises:
Radiation. Humidity. Senses. Central, peripheral and autonomic nervous system. Vision. Hearing. Sense of balance. Health and hygiene.

Course topics

Fundamentals of aviation physiology. Respiratory and circulatory systems. Hypertension and hypotension. Coronary heart disease. Hypoxia. Hyperventilation. Decompression sickness. High-altitude environment. Man and the environment: the emotional system. Health hazards for pilots.

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples given on the board. 2. Exercises: examples given on the board and performing tasks given by the instructor - practical exercises.

Bibliography

Basic:
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

Additional:
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Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	0	0,00