COURSE DESCRIPTION CARD - SYLLABUS

Course name
Life support systems

Course

Field of study
Aerospace Engineering

Year/Semester
1 / 2

Area of study (specialization)
Engineering and technical sciences

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars
15

Number of credit points

1

Lecturers

Responsible for the course/lecturer:
EngD Wojciech Prokopowicz

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Faculty of Environmental Engineering and Energy

ul. Piotrowo 3; 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge: Basic knowledge in the field of mechanics, airframe construction, metrology, strength of materials, environmental systems, life support systems, pilots and crew members limitations.

Skills: Student can apply the scientific method in solving problems, carrying out experiments and gain conclusions.

Social competencies: Student knows the limits of his knowledge and skills; can precisely formulate questions, understands the need for further education.

Course objective

Knowledge of the design, construction and operation of life support systems used on aircraft and space

Course-related learning outcomes

Knowledge

Student has extensive knowledge, necessary for understanding of profile subjects and specialist knowledge about construction, methods of construction, manufacturing, exploitation, air traffic management, security systems, impact on the economy, society and environment of the aviation and cosmonautics for selected specialties: aeronautical Engineering.

Student has detailed knowledge related to selected issues in the field of construction of manned and unmanned aircraft, in the field of on-board equipment, control systems, communication and registration systems, life support systems, automation of particular systems.

Skills

Student is able to communicate using various techniques in a professional environment and other environments using a formal record of construction, technical drawing, concepts and definition of the scope of the studied field of study.

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

Student can obtain information from literature, the Internet, databases and other sources. Can integrate the information obtained and interpret conclusions and create and justify opinions.

Social competences

Understands the need to learn throughout life; can inspire and organize the learning process of other people.

Is ready to critically assess your knowledge and content, recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in the event of difficulties in solving the problem yourself.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written test. Presenting description and principles of operation of the selected aircraft equipment / system. Written work on the description and principles of operation of the selected aircraft equipment / system.

Programme content

Human limitations in air and space. Ways of protecting man against the impact of the external environment - selected aspects of the construction of aircraft and space. Hermetic and air-conditioning systems for aircraft and space systems. Water production and treatment systems. Radiation protection covers. Training devices that ensure the proper condition of crews of aircraft and space ships. Systems design to recovery of aircraft and space ship personnel.

Teaching methods

Lecture—Showing/Telling, Project-Based Learning

Bibliography

Basic

S. Szczeciński (kierownik projektu), Ilustrowany leksykon lotniczy, Osprzęt i radioelektronika, WKiŁ Warszawa 1990

S. Barański, Medycyna lotnicza i kosmiczna, PZWL Warszawa 1977

P. Fortescue, G. Swinerd, J. Stark, Spacecraft Systems Engineering, 3th Edition, Wiley, 2003

J. Jaap Wijker, Spacecraft Structures, Springer; 2008 edition (February 13, 2008) 2

Moir I., „Civil Avionics Systems", 2003

Neese W., "Aircraft Hydraulic Systems", Krieger Publishing Company, 1991

Pallet E.H.J., "Aircraft Instrument Systems", IAP, 1993

Pallet E.H.J., "Aircraft Instruments and Integrated Systems", Longman Scientific and Technical Series, 1992

Spitzer, Cary R. Red., „The avionics handbook", 2001

Titterton, David H., „Strapdown Inertial Navigation Technology", 1997

Additional

Materiały szkoleniowe firmy Lockheed Martin

EADS Casa materiały szkoleniowe

Dokumentacja techniczna samolotów F-16, C-130, C-295,B737, G550, C-295

Artykuły naukowe ze stron NASA i ESA

Breakdown of average student's workload

	Hours	ECTS
Total workload	47	1,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	30	1

[1] delete or add other activities as appropriate