



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Construction of an unmanned aerial vehicle [S1Lot2-BSP>KBSP]

Course

Field of study

Aviation

Year/Semester

4/7

Area of study (specialization)

Unmanned Aerial Vehicles

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

0

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

30

Number of credit points

3,00

Coordinators

dr inż. Stanisław Gardecki

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Lecturers

Prerequisites

Knowledge: Basic knowledge of mathematical analysis, strength of materials, basics of machine design.

Skills: Possess basic skills in using design support software, as well as efficiently obtain additional

information from various sources. Social competences: understands the need to improve their qualifications and demonstrates readiness to work in a team.

Course objective

Familiarization with the loads and construction of selected types of aircraft fuselages.

Course-related learning outcomes

Knowledge:

1. has structured, theoretically based general knowledge in the field of technology and various means of air transport, about the life cycle of means of transport, both hardware and software, and in particular about the key processes occurring in them

2. has structured and theoretically based general knowledge in the field of key issues of technology and detailed knowledge in the field of selected issues related to air transport, knows the basic techniques,

3. has structured, theoretically based general knowledge covering key issues in the field of technical

thermodynamics, fluid mechanics, in particular aerodynamics

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 that are used at various stages of project implementation air traffic
3. is able to solve tasks using air traffic problems and design a runway in accordance with applicable ICAO requirements
4. is able to estimate various types of costs, is able to verify and evaluate market phenomena, is able to evaluate economic growth factors and the importance of money for its development, is able to decide on economic choices in terms of consumption and production,

Social competences:

1. understands that in technology, knowledge and skills very quickly become outdated
2. is aware of the importance of knowledge in solving engineering problems and knows examples and understands the causes of malfunctioning engineering projects that have led to serious financial or social losses or to serious loss of health or even life
3. is able to think and act in an entrepreneurial manner, including finding commercial applications for the system being created, taking into account not only business benefits but also social benefits of the conducted activity

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 of a test and calculation nature (the written test sheet contains information necessary to perform calculation tasks). The test pass threshold is 50%. Rewarding the grade from laboratory classes and attendance and activity during the lecture.

Exercises

A final colloquium and partial colloquia.

Project

Assessment of the project performed based on a report on the course of individual phases of its implementation. Additionally, activity during classes will be rewarded.

Programme content

The program covers basic issues related to the construction of an unmanned aerial vehicle. Students will become familiar with the materials used in the construction of UAVs, control systems and on-board computers. The subject also covers the area related to drives used in UAVs and ground systems and possible UAV functionalities.

Course topics

1. Materials for UAV frames;
2. Brushed and brushless motors;
3. ESC systems;
4. On-board computers;
5. Sensors and detectors;
6. Ground control equipment;

Teaching methods

Informative (conventional) lecture (transmission of information in a systematic way) - may be of a course (propaedeutic) or monographic (specialist) nature

Exercise method (subject-specific exercises, practice) - 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)

Project method (individual or team implementation of a large, multi-stage cognitive or practical task, the effect of which is the creation of a work)

Bibliography

Basic:

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Additional:

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Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
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)	45	2,00