COURSE DESCRIPTION CARD - SYLLABUS

Course name
Designing Unmanned Aerial Vehicles [S2AiR2-SIiB>PO2-PBSP]

Course

Field of study
Automatic Control and Robotics

Year/Semester
1/2

Area of study (specialization)
Intelligent and Unmanned Systems

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
30

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

1. Has structured knowledge of the theory of electrical circuits and electrical engineering of direct and alternating current (including three-phase). Has organized and theoretically based knowledge of the principles of operation of basic electronic, analog and digital components, selected electronic circuits and systems. 2. Can work individually and in a team; can estimate the time needed to complete the assigned task; is able to develop and implement a work schedule ensuring that deadlines are met. 3. He should also understand the need to expand his competences and be ready to cooperate as part of a team implementing, for example, a joint project.

Course objective

1. Getting to know the principles of designing mechanical structures for flying platforms. 2. Acquiring the ability to use programs to support the design and analysis process. Knowledge in reading and creating technical documentation. 3. Developing students' teamwork skills during the implementation of the final project

Course-related learning outcomes

Knowledge:

K1_W05 [P6S_WG]: The graduate knows and understands in advanced level the methods of signal processing in the time and frequency domain.
K1_W06 [P6S_WG]: Knows and understands to an advanced level the theory of linear dynamic systems, including selected methods of modelling and stability theory.
K1_W17 [P6S_WG]: The graduate knows and understands to an advanced level the basic criteria of synthesis and tuning methods of regulators.

Skills:
K1_U01[P6S_UU]: Is able to obtain information from literature, databases and other sources; has the ability to self-educate in order to improve and update professional competences.
K1_U04 [P6S_UK]: Can use a foreign language at B2 level of the Common European Framework of Reference for Languages, sufficient for communication, as well as reading with an understanding of catalogue cards, application notes, user manuals and descriptions of IT tools.

Social competences:
K1_K02[P6S_KR]: The graduate is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment and the associated responsibility for decisions taken. The graduate is ready to take care of the achievements and traditions of the profession.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lecture is verified by a written exam and an individual discussion of exam issues. The exam consists of open questions. Passing threshold: 50% of points. The exam topics on the basis of which the questions are developed are made available to students during the semester.
The skills acquired during design classes are verified on the basis of the final project.

Programme content

A historical outline of the subject of flying platforms. Familiarization with the structure and principles of operation of multi-rotor flying platforms and the legal regulations accompanying them.

Course topics

none

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples given on the board.
2. Project: project implementation, discussion, team work, workshops - independent project development, etc.

Bibliography

Basic:
1. Drony-teoria i praktyka, Bartkiewicz Bartosz , Kruszewski Patryk , Szczepkowski Marek, Kabe 2016
2. Drony dla początkujących. Konstrukcja i dostosowanie własnego quadcoptera, Ty Audronis, Packt, 2014

Additional:
1. Drony dla początkujących. Konstrukcja i dostosowanie własnego quadcoptera, Kilby Terry, Kilby Belinda, APN Promise, 2008

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	15	1,00