



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Drone detection and neutralizations systems

Course

Field of study

Aviation

Area of study (specialization)

Unmanned aerial vehicles

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

15

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

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Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Prerequisites

Knowledge:

1. Basics of mathematics, chemistry and physics.

Skills:

1. Using literature (textbooks, internet), the ability to perceive lecture content.

Social competences:

1. Awareness of the need to deepen engineering knowledge and its place in everyday life

Course objective



Getting acquainted the basics of drone detection and neutralization systems

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 covering the basics of classical mechanics, optics, electricity and magnetism, solid state physics, thermodynamics, useful for formulating and solving complex technical tasks related to engineering aeronautical and modeling
2. has ordered, theoretically founded 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 taking place in them
3. has ordered and theoretically founded general knowledge in the field of key technical issues and detailed knowledge of 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

Skills

1. is able to obtain information from various sources, including literature and databases, both in Polish and in English, integrate them properly, interpret them and make a critical evaluation, draw conclusions and exhaustively justify the opinions they formulate
2. can, when formulating and solving tasks related to civil aviation, apply appropriately selected methods, including analytical, simulation or experimental methods

Social competences

1. is aware of the importance of knowledge in solving engineering problems and knows examples and understands the causes of faulty engineering projects that have led to serious financial and social losses, or to a serious loss of health and even life
2. is able to think and act in an entrepreneurial way, incl. finding commercial applications for the created system, bearing in mind not only the business benefits, but also the social benefits of the activity

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: written exam;

project: execution of the Design of the detection and neutralization system for the indicated object;

Programme content

1. detection systems based on:
 - a) shape detection;
 - b) sound detection;
 - c) detecting the communication signal;
2. neutralization systems based on:
 - a) mesh neutralization;



- b) neutralization with the e-m impulse;
- c) laser neutralization;
- d) neutralization by GPS disturbance;

Teaching methods

Lecture: informative (conventional), information transfer in a systematic way

Bibliography

Basic

1. Drony dla początkujących, Terry Kilby, Belinda Kilby,
2. Drony, Wiktor Wyszywacz,
3. Rozporządzenie wykonawcze UE 2019/945

Additional

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Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for classes, preparation for tests,) ¹	45	2,0

¹ delete or add other activities as appropriate