



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Flying objects

### Course

Field of study

Aerospace Engineering

Area of study (specialization)

Aircraft Transport

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

elective

### Number of hours

Lecture

75

Laboratory classes

15

Other (e.g. online)

0

Tutorials

30

Projects/seminars

0

### Number of credit points

8

### Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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### Prerequisites

Knowledge: Basic knowledge of physics, geography, technical mechanics, strength of materials and fluid mechanics

Skills: Can analyze interrelations between the effects and causes of phenomena and events resulting from the laws of physics.

Social competencies: Prepared for teamwork.

### Course objective

Acquainting with the basic elements of the construction of aircraft structures and their basic



dependencies between the construction requirements and the operating conditions and the function of the purpose of aircraft.

### Course-related learning outcomes

#### Knowledge

1. Has basic knowledge in the field of the main branches of technical mechanics: static, kinematics and dynamics of the material point and rigid body and strength of materials, including the basis of the theory of elasticity and plasticity, performance hypotheses, calculation methods - [[ T1A\_W02]]
2. Has detailed knowledge related to selected issues in the field of construction of manned and unmanned aerial vehicles, including on-board equipment and their main components - [[T1A\_W02]]
3. Has detailed knowledge related to selected issues concerning the construction of aircraft propulsion systems and their components design - - [[T1A\_W03]]

#### Skills

1. Can identify a problem in the field of air transport. - [[K1A\_U07]]
2. Is able to carry out a cause and effect analysis of a problem and propose its solution - [[K1A\_U08]]
3. Has the ability to formulate tasks and stages of aircraft construction - [[K1A\_U07]]
4. Understands the essence of the operation of navigation systems used in aviation. - [[K1A\_U07]]

#### Social competences

1. Understands the need to learn throughout life; can inspire and organize the learning process of other people - - [[T1A\_U01]]
2. Is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions - [[T1A\_U02]]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Final exam, colloquium from auditory exercises and pass from laboratory exercises

### Programme content

Construction and principles of aircraft construction technology. History of aircraft development (aerostats, gliders, propulsion systems, aircraft), the beginnings of air transport. Aviation structures, construction and structural features of aircraft. Rules for the use of aircraft in air transport. Development perspectives for aviation transport structures.

### Teaching methods

Informative (conventional) lecture (transfer of information in a systematic way) - can be of course (propedeutical) or monographic (specialist)



The exercise method (subject exercises, exercises) - in the form of auditorium exercises (the use of acquired knowledge in practice - can take a different nature: solving cognitive tasks or training psychomotor skills; transforming conscious activity into a habit through repetition).

Laboratory (experiment) method (independent conducting of experiments by students)

### Bibliography

#### Basic

1. Błaszczak J., Wprowadzenie w technikę lotniczą, WAT, Warszawa 1982
2. Cheda W., Malski M., Techniczny poradnik lotniczy. Płatowce, WKŁ, Warszawa 1981
3. Dzierżanowski P., Turbinowe silniki śmigłowe i śmigłowcowe, WKŁ, Warszawa 1985
4. Gotowała J. Lotnictwo XXI wieku. AON, Warszawa 2002
5. Karpowicz J., Współczesne konstrukcje lotnicze, AON, Warszawa 2003.
6. Lewitowicz J., Podstawy eksploatacji statków powietrznych. Tom I, ITWL, Warszawa 2001

#### Additional

1. Pilecki S., Lotnictwo i kosmonautyka, WKŁ, Warszawa 1984
2. Szczeciński S., Ilustrowany leksykon lotniczy. Technika lotnicza, WKŁ, Warszawa 1988

### Breakdown of average student's workload

	Hours	ECTS
Total workload	200	8,0
Classes requiring direct contact with the teacher	120	5,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	80	3,0

<sup>1</sup> delete or add other activities as appropriate