



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Organization of airspace and air traffic

### Course

Field of study

Aerospace engineering

Area of study (specialization)

-

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

practical

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other (e.g. online)

0

Tutorials

15

Projects/seminars

0

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

Artur Kinowski

Responsible for the course/lecturer:

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Polish Air Navigation Services Agency

ul. Wieżowa 8 02-147 Warszawa

### Prerequisites

Knowledge: The student has a basic knowledge of air transport, knowledge about the management and organization of transport processes

Skills: The student is able to associate and integrate the obtained information, analyze the phenomena occurring in the environment, draw conclusions, formulate and justify opinions

Social competences: The student is able to independently search for information in the literature and knows the rules of discussion; the ability to formulate a research problem and search for its solution, independence in problem-solving, the ability to cooperate in a group

### Course objective

To acquaint students with the structure and functions of selected air traffic management systems



### Course-related learning outcomes

#### Knowledge

1. Has extended knowledge necessary to understand the profile subjects and specialist knowledge about the construction, methods of construction, production, operation, air traffic management, safety systems, impact on the economy, society and the environment in the field of aviation and cosmonautics [K2A\_W01]
2. Has basic knowledge of aviation organizations and the applicable Polish and European aviation law [K2A\_W08]
3. Has basic knowledge of aircraft movement in the air and air traffic services [K2A\_W10]
4. Has basic knowledge of law, in particular civil aviation law, copyright and industrial property law and its influence on the development of technology, can use patent information resources [K2A\_W18]

#### Skills

1. Has the ability to self-educate with the use of modern teaching tools, such as remote lectures, websites and databases, teaching programs, e-books [K2A\_U03]
2. Can obtain information from literature, the Internet, databases and other sources. Can integrate the obtained information, interpret and draw conclusions from it, and create and justify opinions [K2A\_U04]

#### Social competences

1. Understands the need for lifelong learning; can inspire and organize the learning process of other people [K2A\_K01]
2. Is able to cooperate and work in a group, assuming various roles in it [K2A\_K04]
3. Correctly identifies and resolves dilemmas related to the profession [K2A\_K06]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: written exam on the content processed in class  
Tutorials: final test - planning and calculation of basic parameters of air transport (CAT)  
Project: credit on the basis of the completed project and its defense

### Programme content

1. ICAO International Civil Aviation Organization and other aviation organizations (Eurocontrol, EASA, PANSAs, CAA). Conventions organizing air navigation. Historical conditions of aviation law and the structure of its functioning.



2. ATFCM air traffic flow management
3. Airspace management - FUA - AFUA, FRA, new surveillance techniques, air traffic management systems (AMS2000, PEGASUS)
4. Modern aircraft positioning systems in RNAV, multilateration in ATM, automatic ADS-B surveillance in ATM
5. New trends in air traffic management in Europe FUA → SES → SESAR → SESAR II
6. Free en route, FUA / FRA in controlled airspace
7. Surveillance techniques: VOR, DME, ILS, MLS, GPS NAVSTAR and GLONASS, LAAS (GBAS), EGNOS in ATM (4), navigation based on the characteristics of PNB RNAV in ATM (2)

### Teaching methods

Informative (conventional) lecture (providing information in a structured way) - may be of a course (introductory) or monographic (specialist) character

The exercise method (subject exercises, practice exercises) - in the form of auditorium exercises (application of the 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

Szutowski L., Poradnik pilota samolotowego, Poznań 2007

2. Compa T., Zarządzanie przestrzenią powietrzną, AON, Warszawa 2003

3. Domicz J., Szutowski L., Podręcznik pilota samolotowego, Poznań 2008

Additional

1. Zarządzanie ruchem lotniczym w przestrzeni powietrznej RP, WLOP, Warszawa 2002.

2. Ustawa Prawo Lotnicze.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for tutorials, preparation for tests and exam) <sup>1</sup>	30	1,0

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