



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Organization of air traffic

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

2/3

Profile of study

general academic

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

4

Lecturers

Responsible for the course/lecturer:

Artur Kinowski

Responsible for the course/lecturer:

email: artur.kinowski@pansa.pl

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

Getting to know the specificity of the functioning of air transport. Discussion of the structure and



division of the airspace, rules of flights and institutions related to the organization of air traffic (in particular the Polish Air Navigation Services Agency)

Course-related learning outcomes

Knowledge

1. 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
2. has basic knowledge of aviation law, organizations operating in civil aviation and knows the basic principles of state aviation functioning, has basic knowledge of key issues in the functioning of civil aviation

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. is able to properly use information and communication techniques, applicable at various stages of the implementation of aviation projects
3. can solve tasks using the rules of air traffic and design a runway in accordance with the applicable ICAO requirements

Social competences

1. understands that in technology, knowledge and skills very quickly become obsolete
2. 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
3. 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
4. is aware of the social role of a technical university graduate, in particular understands the need to formulate and provide the society, in an appropriate form, with information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the engineer profession

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

LECTURE: written test of the content processed in the class

TUTORIALS: final test



Programme content

1. The International Civil Aviation Organization ICAO and other aviation organizations (Eurocontrol, EASA, PANSO, CAA). Conventions organizing air navigation. Historical conditions of aviation law and the structure of its functioning.
2. Division of the Polish Airspace. Flexible Airspace Management (FUA). Airspace Use Plan (AUP). Strategic, Pre-Tactical and Tactical Space Management (ASM-1, ASM-2 and ASM-3).
3. Meteorological service for international air navigation (ICAO Annex 3): discussion of the importance of weather in aviation, basic weather reports, METAR, SNOWTAM, TAF, GAMET. Coding and decoding of messages.
4. Aeronautical charts (ICAO Annex 4): responsibilities, basic types of charts and projections. Overview of the basic units of measurement to be used during air and ground operations in aviation (ICAO Annex 5): relationships between units, the origin of their use.
5. Air traffic services (ICAO Annex 11) and Aeronautical Information Services (ICAO Annex 15). Overview of goals and differences. Discussion of air traffic control services, analysis of air traffic in uncontrolled (FIS) and controlled (ATC) airspace.
6. Flight preparation, mass and balance. Differences in calculating parameters for general and commercial aviation. Minima VFR, IFR. The essence of General Aviation (GA) and Commercial Aviation (CAT)
7. Air communications (ICAO Annex 10). Radio navigation aids, Telecommunication procedures, Communication systems, Surveillance and collision avoidance systems and the use of the aviation radio frequency range.
8. ASAR service. Search and rescue (ICAO Annex 12) and Aircraft Accident and Incident Investigation (ICAO Annex 13). Overview of the scope, procedures and responsibilities
9. ATFCM traffic flow management
10. Airspace management - FUA - AFUA, FRA, new surveillance techniques, air traffic management systems (AMS2000, PEGASUS)
11. Modern aircraft positioning systems in RNAV, multilateration in ATM, automatic ADS-B supervision in ATM
12. New trends in air traffic management in Europe FUA → SES → SESAR → SESAR II
13. FUA / FRA in a controlled space
14. Surveillance techniques: VOR, DME, ILS, MLS, GPS NAVSTAR and GLONASS, LAAS (GBAS), EGNOS in ATM, navigation based on PNP RNAV characteristics in ATM.



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 acquired knowledge in practice - may take various forms: solving cognitive tasks or training psychomotor skills; transforming a conscious activity into a habit through repetition)

Bibliography

Basic

1. 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
4. Laskowski R., Osiągi, wyważenie i planowanie lotu, Szkolenie samolotowe EASA, Żółwin, 2014

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	100	4,0
Classes requiring direct contact with the teacher	47	2,0
Student's own work (literature studies, preparation for classes, preparation for tests,) ¹	53	2,0

¹ delete or add other activities as appropriate