COURSE DESCRIPTION CARD - SYLLABUS

Course name
Organization of air space and air traffic [S2LiK2P>OPPiRL]

Course

Field of study
Aerospace Engineering

Year/Semester
1/2

Area of study (specialization)
–

Profile of study
practical

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

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 extended knowledge necessary to understand the profile subjects and specialist knowledge about air traffic management, safety systems, impact on the economy, society and the environment in the

field of aviation
2. Has basic knowledge of aviation organizations and the applicable Polish and European aviation law
3. Has basic knowledge of aircraft movement in the air and air traffic services

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
2. understands the need for lifelong learning; can inspire and organize the learning process of other people

Social competences:
1. Is ready to critically evaluate the knowledge and content received, recognize the importance of knowledge in solving cognitive and practical problems, and consult experts in case of difficulties in solving the problem on its own

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, PANSA, 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.

Course topics

none

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	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00