POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Organization of air traffic [S1Lot2-ORL>ORL]

Course

Field of study
Aviation

Year/Semester
2/3

Area of study (specialization)
Air Traffic Organisation

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
30

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

Knowledge: The student has basic knowledge of air transport, information on the management and organization of transport processes Skills: The student is able to associate and integrate obtained information, analyze 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 seek its solution, independence in solving problems, the ability to cooperate in a group

Course objective

Learning the specifics of air transport operation. Discussing the structure and division of airspace, flight rules and institutions related to the organization of air traffic (in particular the Polish Air Navigation Agency)

Course-related learning outcomes

Knowledge:
1. has a structured and theoretically founded general knowledge in the field of key technical issues and detailed
knowledge in the field of selected issues related to air transport

2. has basic knowledge of Aviation Law, organizations operating in civil aviation and knows the basic principles of
functioning of the State Aviation

Skills:
1. can obtain information from various sources, including literature and databases, both in Polish and in English, integrate them properly, interpret and critically evaluate them, draw conclusions and exhaustively justify their opinions
2. s 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 the runway in accordance with the applicable ICAO
requirements
Social competence
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 serious
3. can think and act in an entrepreneurial way, incl. finding commercial applications for the created system, taking into account not only the business benefits, but also the social benefits of the conducted activity
4. is aware of the social role of a graduate of a technical university, in particular understands the need to formulate and convey to the society, in an appropriate form, information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the engineer profession

Social competences:
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Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

LECTURE: written test on the content covered in class
EXERCISES: final test
PROJECT: Development of own flight route, preparation of a flight plan, selection of airports, aircraft, basic calculations

Programme content

1. International Civil Aviation Organization ICAO and other aviation organizations (Eurocontrol, EASA, PAŻP, ULC).
Conventions governing air navigation. Historical conditions of aviation law and the structure of its functioning.
2. Division of Polish Airspace. Flexible Airspace Management (FUA). Airspace Use Plan (AUP). Strategic, Pre-tactical
and Tactical Airspace 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 messages, METAR, SNOWTAM, TAF, GAMET. Coding and decoding messages.
4. Aeronautical Charts (ICAO Annex 4): responsibility, basic types of maps and projections. Discussion of basic units
of measurement for use in air and ground operations in aviation (ICAO Annex 5): relationships between units, origins
of their use. 5. Air Traffic Services (ICAO Annex 11) and Aeronautical Information Services (ICAO Annex 15).
Discussion of objectives 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. VFR, IFR minima. The essence of general (GA) and commercial (CAT) aviation
7. Aeronautical communications (ICAO Annex 10). Radio navigation aids, Telecommunications procedures,

Communication systems, Surveillance and collision avoidance systems and the use of the aeronautical radio

frequency range.

8. ASAR service. Search and rescue (ICAO Annex 12) and Aircraft accident and incident investigation (ICAO

Annex 13). Discussion of 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 dependent surveillance ADS-

B in ATM

12. New trends in air traffic management in Europe FUA → SES → SESAR → SESAR II

13. FUA / FRA in controlled airspace

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

1. International Civil Aviation Organization ICAO and other aviation organizations
2. Division of Polish Airspace
3. Meteorological service for international navigation
4. Aeronautical ground maps
5. Traffic services
6. Flight preparation
7. Air communications
8. ASAR service
9. ATFCM traffic flow management
10. Airspace management
11. Modern aircraft positioning systems in RNA
12. New trends in air traffic management in Europe FUA → SES → SESAR → SESAR II
FUA / FRA in controlled airspace
13. Surveillance techniques

Teaching methods

Informative (conventional) lecture (transmission of information in a systematic way) - may be of a course (propaedeutic) or monographic (specialist) nature

Exercise method (subject-specific exercises, practice) - 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)

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:

1. Szutowski L., Airplane Pilot's Handbook, Poznań 2007
2. Compa T., Airspace Management, AON, Warsaw 2003
3. Domicz J., Szutowski L., Airplane Pilot's Handbook, Poznań 2008
4. Laskowski R., Flight Performance, Balance and Planning, EASA Airplane Training, Żółwin, 2014

Supplementary

1. Air Traffic Management in the Airspace of the Republic of Poland, WLOP, Warsaw 2002.
2. Aviation Law Act

Additional:

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Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	47	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	53	2,00