STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Air traffic organisation and management	**1010601131010627746**

Field of study	Profile of study (general academic, practical)	Year /Semester
Aerospace Engineering	**general academic**	**2 / 3**
Elective path/specialty: **Safety and Management of Aviation**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time): **full-time**	

No. of hours	No. of credits
Lecture: **2** Classes: **1** Laboratory: **-** Project/seminars: **1**	**5**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
other	**university-wide**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**5 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has a basic knowledge of air transport, management and organization of transport processes
2	**Skills**	Student is able to associate and integrate the obtained information, analyze phenomena occurring in the environment, draw conclusions, formulate and justify opinions
3	**Social competencies**	Student is able to independently search for information in literature and knows the rules of discussion

Assumptions and objectives of the course:

Understanding the specificity of air transport. Discussion of the structure and division of the airspace, flight rules and institutions related to the organization of air traffic (in particular the Polish Air Navigation Services Agency)

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Student knows the rules of air traffic organization - [[K1A_W23]]
2. Student knows organizations involved in the organization of air traffic (PANSA) - [[K1A_W21]]
3. Student knows the general principles of creating and developing forms of individual entrepreneurship, also taking into account time management, as well as the ability to correctly self-present, using knowledge in the field of science and scientific disciplines, appropriate for aviation and astronautics - [[K1_W26]]

Skills:

1. Student can acquire information from literature, the Internet, databases and other sources. Can integrate the information obtained and interpret conclusions and create and justify opinions - [[K1A_U04]]
2. Student has the ability to self-study using modern teaching tools, such as remote lectures, websites and databases, didactic programs, e-books - [[K1A_U03]]

Social competencies:

1. Understands the need to learn throughout life; can inspire and organize the learning process of other people - [[K1_K01]]
2. Is able to properly define the priorities for the implementation of a task set by himself or others - [[K1_K04]]
3. Student can think and act in an entrepreneurial way - [[K1_K06]]

Assessment methods of study outcomes

Lecture: written exam of the content processed in the classroom

Classes: final test - planning and calculation of basic parameters of air transport (GA)

Project: Development of own flight route, drawing up a flight plan, selection of airports, aircraft, basic calculations (mass and balance of SP, taking into account the weather, work with the air map)

Course description

1. International Civil Aviation Organization ICAO and other aviation organizations (Eurocontrol, EASA, PANSA, ULC). Conventions arranging 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. Discussion of the basic rules of air traffic (ICAO Annex 2) - visual flight rules (VFR) and instrument flight rules (IFR) in general aviation (GA) and commercial air transport (CAT) flights. Common features and differences in the functioning of particular types of aviation.
4. Meteorological service for international air navigation (ICAO Annex 3) - discussion of weather significance in aviation, basic weather messages, METAR, SNOWTAM, TAF, GAMET. Encoding and decoding of messages.
5. Aviation maps (ICAO Annex 4) - responsibility, basic types of maps and mappings. Discussion of the basic units of measurement to be used during air and ground operations in aviation (ICAO Annex 5) - relationships between individuals, the genesis of their use.
6. Air traffic services (ICAO Annex 11) and Aeronautical Information Services (ICAO Annex 15). Discussing goals and differences. Discussion of air traffic control services, analysis of air traffic in uncontrolled (FIS) and controlled (ATC) space.
7. Airports (ICAO Annex 14). Design and operation of airports (Volume I) and Airports for helicopters (Volume II). Discussing the register of airports and records of landing sites. Definitions and number of facilities in Poland, legal requirements related to the establishment and operation of airports and landing sites. Environmental protection (ICAO Annex 16). Environmental management within airports - Row of aircraft (Volume I) and Emissions from aircraft engines (Volume II).
8. Flight preparation, mass and balance. Differences in the calculation of parameters for general and commercial aviation. VFR and IFR minima. The essence of general aviation (GA) and commercial air transport (CAT)
9. Operation of aircraft (ICAO Annex 6). International approach to commercial transport and general aviation (airplanes) and helicopter operations.
10. Licensing of personnel (ICAO Annex 1). Discussion of basic aviation licenses, requirements to become candidates, class of medical certificates. Licensing of ground staff (Controllers, Informants, Mechanics).
11. Signs of nationality and registration (ICAO Annex 7), Airworthiness of aircraft (ICAO Annex 8) and Facilitation (ICAO Annex 9)
12. Air communications (ICAO Annex 10). Radio navigation aids, Telecommunications procedures, Communication systems, Surveillance and collision avoidance systems, and The use of radio frequency frequencies.
13. ASAR Service ? Air Search and rescue (Annex 12 ICAO) and Investigation of aviation accidents and incidents (ICAO Annex 13). Discussing the scope, procedures and responsibilities
14. Safety in air traffic. Protection of international civil aviation against acts of unlawful interference (ICAO Annex 17). Elements related to air traffic in Safety Management in Aviation (Annex 19 ICAO) and Safe transport of hazardous materials by air (Annex 18 ICAO)
15. EXAMINATION

Basic bibliography:

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

Additional bibliography:

1. Zarządzanie ruchem lotniczym w przestrzeni powietrznej RP, WLOP, Warszawa 2002
2. Ustawa Prawo Lotnicze

Result of average student's workload

Activity	Time (working hours)
1. Preparation for the lecture	6
2. Participation in the lecture	30
3. Fixing the content of the lecture	10
4. Consultations	1
5. Preparation for passing	10
6. Participation in passing	2
7. Participation in design classes	15
8. Implementation of the project	30
9. Consultations related to the project	2
10. Public presentation of the project	2

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	108	5
Contact hours	52	3
Practical activities	15	2