COURSE DESCRIPTION CARD - SYLLABUS

Course name
IFR Flight Planning [S1Lot2-ORL>PLIFR]

Course

Field of study
Aviation

Year/Semester
2/4

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
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
15

Number of credit points

5,00

Coordinators

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Lecturers

Prerequisites

Knowledge: Basic knowledge in the field of aviation. Skills: Ability to analyze presented data as well as legal regulations and requirements. Capable of implementing data into new environments. Social Competences: Prepared for independent work and capable of presenting its results.

Course objective

Familiarization with the principles of flight planning under instrument flight rules (IFR) in commercial aviation within controlled airspace.

Course-related learning outcomes

Knowledge:
1. Possesses structured and theoretically grounded general knowledge in key areas of engineering, as well as specialized knowledge in selected aspects of air transport. Understands the fundamental techniques, methods, and tools used in solving aviation-related tasks, primarily of an engineering nature. [L1_W03]
2. Has detailed knowledge of selected topics related to the design of manned and unmanned aircraft, including onboard equipment, control systems, communication and recording systems, automation of

individual systems, as well as basic knowledge of flight simulation training devices and simulation methods used in solving air transport problems. [L1_W006]
3. Has a basic understanding of aviation law, organizations operating in civil aviation, and the fundamental principles governing state aviation. Possesses essential knowledge of key aspects of civil aviation operations. [L01_W24]

Skills:
1. Is capable of formulating and solving problems related to civil aviation using appropriately selected methods, including analytical, simulation, or experimental approaches. [L_U04]
2. Can assess, at least at a basic level, various risk aspects associated with logistical operations in air transport. [L_U06]
3. Is able to analyze business strategies, interpret corporate actions, and apply fundamental strategic analysis tools in practice. [L_U08]

Social competences:
1. Understands that in technology, knowledge and skills quickly become outdated. [L_K01]
2. Correctly identifies and resolves dilemmas related to the profession of an aerospace engineer. [L_K05]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - written test
exercises - final test
project - presentation of the completed project

Programme content

Lecture: Planning of commercial aviation flights in controlled airspace, with particular emphasis on:
1. Instrument approach procedures - including precision and non-precision approaches, circling approaches, and holding procedures.
2. Flight plan completion in accordance with applicable regulations and operational standards.
3. Fuel planning process - analysis of fuel components as required by aviation regulations and methods for their determination.
4. Aircraft mass and balance calculations - determination of the center of gravity, maximum and minimum operational weight.
5. Flight route planning - analysis of aeronautical charts, determination of great-circle courses, and course corrections.
6. Application of radio navigation in en-route flight - use of NDB, DME, and VOR systems.
7. Calculation of commercial flight operation costs - analysis of aircraft operating costs and route-related expenses.
Exercises:
1. Analysis of arrival and departure procedures based on AIP - SID, STAR.
2. Flight plan completion for a selected route in compliance with applicable standards.
3. Fuel planning process - determination of fuel requirements for sample routes in accordance with aviation regulations.
4. Aircraft mass and balance calculations - preparation of a weight and balance sheet.
5. Flight route planning - development of a sample route, determination of courses, and course corrections in flight.
6. Application of radio navigation in flight - determination of aircraft position and course based on radio navigation systems.
7. Cost analysis of a commercial flight operation - cost estimation for a selected flight route.
Project:
Development of a flight route between selected airports. Students are required to analyze applicable regulations and the principles of fee calculation at selected airports and by air navigation service providers (ANSP). The instructor provides general project guidelines, while students independently carry out their work. The final results are presented at the end of the semester.

Course topics

1. Instrument approach procedures

2. Flight plan
3. Fuel planning process
4. Mass and balance control
5. Flight route planning
6. Radio navigation
7. Costs of commercial flight operations

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)
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. Flight Planning & Monitoring - EASA | Aviationexam, wyd. Jeppsen
2. Osiągi, wyważenie i planowanie lotu szkolenie EASA, wyd. Pileus
3. Szutowski L., Poradnik pilota samolotowego, Poznań 2007
4. Compa T., Zarządzanie przestrzenią powietrzną, AON, Warszawa 2003
5. 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	125	5,00
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)	80	3,00