



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Operational procedures 2 [S1Lot2-PSPL>PO2s5]

Course

Field of study

Aviation

Year/Semester

3/5

Area of study (specialization)

Aircraft Piloting

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

15

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

A student starting this subject should have basic knowledge of the regulations related to aircraft operation. They should also have the ability to apply the scientific method to solve problems and be willing to cooperate within a team.

Course objective

Ability to use operational and navigational documentation, interpret and apply regulations related to aircraft operation, search and rescue, aircraft accident investigation, noise control procedures, emergency procedures, transport of dangerous goods, transport of passengers, understanding the effects of violating aviation regulations.

Course-related learning outcomes

Knowledge:

1. has extended and deepened knowledge of mathematics including algebra, analysis, theory of differential equations, probability, analytical geometry as well as physics including the basics of classical mechanics, optics, electricity and magnetism, solid state physics, thermodynamics, useful for formulating and solving complex technical tasks related to aeronautical engineering and modeling

transport, about the life cycle of means of transport, both hardware and software, and in particular about the key processes occurring in them

3. has structured and theoretically based general knowledge in the field of key issues of technology and detailed knowledge in the field 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

4. has structured, theoretically based general knowledge covering key issues in the field of technical thermodynamics, fluid mechanics, in particular aerodynamics

5. has structured, theoretically based knowledge in the field of engineering graphics and machine design: technical drawing, projection of objects, basic principles of engineering graphics, application of CAD (Computer Aided Design) computer graphic programs in machine design

6. has detailed knowledge related to selected issues in the field of construction of manned and unmanned aircraft, in the field of on-board equipment, control systems, communication and recording systems, automation of individual systems, has basic knowledge of flight simulation training devices and simulation methods used to solve air transport issues

7. has extended knowledge in the field of strength of materials, including the theory of elasticity and plasticity, stress hypotheses, methods of calculating beams, membranes, shafts, connections and other structural elements, as well as methods of testing the strength of materials and the state of deformation and stress in structures and also has basic knowledge in the main areas of technical mechanics: statics, kinematics and dynamics of a material point and a rigid body

8. has basic knowledge of metallic, non-metallic and composite materials used in machine design, and in particular about their structure, properties, methods of production, heat and thermochemical treatment and the influence of plastic processing on their strength as well as fuels, lubricants, technical gases, refrigerants, etc.

9. has the ability to self-educate using modern teaching tools, such as remote lectures, Internet websites and databases, teaching programs, e-books

Skills:

1. is able to obtain information from various sources, including literature and databases, both in Polish and English, integrate it properly, interpret and critically evaluate it, draw conclusions and exhaustively justify the opinions he/she formulates

2. is able to appropriately use information and communication techniques that are used at various stages of the implementation of aviation projects

3. is able to appropriately select materials for simple aircraft structures, indicate differences between fuels used in aviation

4. is able to communicate using various techniques in the professional environment and other environments using a formal record of the structure, technical drawing, concepts and definitions of the scope of the studied field of study

5. is able to solve tasks using basic knowledge of aerodynamics, flight mechanics and flow around bodies

6. is able to design means of transport with appropriate external requirements (e.g. regarding environmental protection)

7. is able to analyse objects and technical solutions, is able to search in catalogues and on manufacturers' websites for ready-made components of machines and devices, including means and devices, assess their suitability for use in their own technical and organisational projects

8. the student is able to use theoretical probability distributions. the student is able to analyse and interpret statistical data. the student is able to apply methods and tools of mathematical statistics in engineering practice

9. is able to organise, cooperate and work in a group, assuming different roles in it and is able to appropriately define priorities for the implementation of a task specified by themselves or others

10. is able to plan and implement the process of their own permanent learning and is familiar with the possibilities of further education (second and third cycle studies, postgraduate studies, courses and exams conducted by universities, companies and professional organisations)

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Social competences:

1. understands that in technology knowledge and skills become outdated very quickly

2. is aware of the importance of knowledge in solving engineering problems and knows examples and understands the causes of malfunctioning engineering projects that led to serious financial and social

losses or to serious loss of health or even life

3. is aware of the social role of a graduate of a technical university, in particular understands the need to formulate and communicate to the public, in an appropriate form, information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the engineering profession

4. correctly identifies and resolves dilemmas related to the performance of the profession of an aviation and astronautics engineer

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: - assessment of knowledge and skills demonstrated in the written examination - 1.5 hours

Laboratory: Skills acquired during laboratory classes are verified on the basis of reports and oral answers to each issue.

Programme content

Lecture:

Semester 5:

Navigation requirements for long-haul flights. Transoceanic and polar flights (ICAO Doc. 7030-Supplementary regional procedures). Minimum Navigation Performance Specifications (MNPS) airspace. Special operational procedures and hazards. Ground de-icing. Laboratory: Minimum equipment list. Bird strike hazard and avoidance. Noise mitigation. Fire and smoke. Depressurization of pressurized cabin. Wind shear, microbursts. Wake turbulence. Emergency and precautionary landings

Course topics

Discussion of navigation requirements for long-haul, transoceanic and polar flights. Introduction to MNPS airspace, discussion of ground de-icing and special operating procedures.

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples given on the board.
2. Practical exercises at didactic and laboratory stations.

Bibliography

Basic:

Andrzej Fellner, Henryk Jafernik, Radosław Fellner. Prawo i procedury lotnicze z uwzględnieniem systemów bezzałogowych, Gliwice 2022.

Additional:

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Breakdown of average student's workload

	Hours	ECTS
Total workload	45	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	15	1,00