COURSE DESCRIPTION CARD - SYLLABUS

Course name
Operational procedures 2

Course

Field of study
Aerospace Engineering

Year/Semester
3/5

Area of study (specialization)
Flight Training For Civil Aviation

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
15

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
mgr Tomasz Zdziarski

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Responsible for the course/lecturer:

Prerequisites

The student starting this subject should have a basic knowledge of the regulations related to the operation of aircraft. He should also have the ability to apply the scientific method in solving problems and be ready to cooperate within a team.

Course objective

The ability to use operational and navigational documentation, interpret and apply the provisions related to the operation of aircraft, search and rescue, investigation of air accidents, anti-noise procedures, emergency procedures, transport of dangerous goods, transport of passengers, understanding the effects of violations of aviation regulations.

Course-related learning outcomes

Knowledge

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

2. has ordered, theoretically founded general knowledge in the field of technology and various means of air transport, about the life cycle of means of transport, both hardware and software, and in particular about the key processes taking place in them

3. has ordered and theoretically founded general knowledge in the field of key technical issues and detailed knowledge 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 ordered, theoretically founded general knowledge covering key issues in the field of technical thermodynamics, fluid mechanics, in particular aerodynamics

5. has an ordered, theoretically founded knowledge in the field of engineering graphics and machine construction: technical drawing, object projection, basic principles of engineering graphics, the use of CAD (Computer Aided Design) graphic programs in the construction of machines

6. has detailed knowledge related to selected issues in the field of manned and unmanned aircraft construction, 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 material strength, including the theory of elasticity and plasticity, stress hypotheses, methods of calculating beams, membranes, shafts, joints and other structural elements, as well as methods of testing the strength of materials and the state of deformation and stress in structures, and has basic knowledge of the main departments of technical mechanics: statics, kinematics and dynamics of a material point and a rigid body

8. has basic knowledge of metal, non-metal and composite materials used in machine construction, in particular about their structure, properties, methods of production, heat and thermo-chemical treatment and the influence of plastic processing on their strength, as well as fuels, lubricants, technical gases, refrigerants e.t.c.

9. has the ability to self-study with the use of modern teaching tools, such as remote lectures, 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 in English, integrate them properly, interpret them and make a critical evaluation, draw conclusions and exhaustively justify the opinions they formulate

2. is able to properly use information and communication techniques, applicable at various stages of the implementation of aviation projects

3. is able to properly select materials for simple aviation structures, and can indicate the differences between the fuels used in aviation

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

5. can solve tasks using basic knowledge of aerodynamics, flight mechanics and body flow

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

7. can analyze objects and technical solutions, can search in catalogs and on manufacturers' websites, ready components of machines and devices, including means and devices, assess their suitability for use in their own technical and organizational projects

8. can use the language of mathematics (differential and integral calculus) to describe simple engineering problems.

9. is able to organize, cooperate and work in a group, assuming various roles in it, and is able to properly define priorities for the implementation of a task set by himself or others

10. is able to plan and implement the process of own permanent learning and knows the possibilities of further education (2nd and 3rd degree studies, postgraduate studies, courses and exams conducted by universities, companies and professional organizations)

Social competences

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 a serious loss of health and even life

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

4. correctly identifies and resolves dilemmas related to the profession of an aerospace engineer

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

- assessment of knowledge and skills demonstrated on the written test - 1.5 hour

Laboratory:

Skills acquired as part of the laboratory are verified on the basis of reports and answers specific to each issue.

Programme content

Lecture:

semester 5:

Long-range flights. Transoceanic and polar flights. North Atlantic High Level Airspace (NAT HLA). Navigation system degradation. Special operational procedures and hazards.

Lab:

Minimum equipment list (MEL) and master minimum equipment list (MMEL). Icing conditions. Procedure to apply in case of performance deterioration, on ground/in flight. Bird-strike risk and avoidance. Noise-abatement procedures. Fire and smoke

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples given on the board.

2. Practical exercises at the didactic and laboratory positions.

Bibliography

Basic

Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	45	2,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for written tests)[1]	15	0,5

[1] delete or add other activities as appropriate