



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Flight rules [S1Lot2>ZL]

Course

Field of study

Aviation

Year/Semester

1/2

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other

0

Tutorials

15

Projects/seminars

0

Number of credit points

1,00

Coordinators

Murad El Joundi

murad.eljoundi@put.poznan.pl

Lecturers

Prerequisites

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

Course objective

To acquaint the student with the operation of airplane control systems.

Course-related learning outcomes

Knowledge:

1. has detailed knowledge related to selected issues in the field of navigation, flight mechanics and piloting techniques, the use of simulators, flight rules, its preparation, and related operating procedures
2. has a basic knowledge of the mechanisms and laws governing human behavior and psyche

Skills:

1. can solve tasks using basic knowledge of aerodynamics, flight mechanics and flow around a body

Social competences:

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

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

Exercises:

- knowledge acquired during the exercises is verified by two 45-minute colloquia carried out during 3 and 7 classes

Programme content

Lecture:

Subsonic aerodynamics: basic, laws and definitions. Basics of airflow. Aerodynamic forces on aerofoils. Shape of an aerofoil section. Wing shape. The lift coefficient (CL) - angle of attack (α) graph. General use of coefficients. Three-dimensional airflow around an aeroplane.

Exercises:

Two-dimensional airflow around an aerofoil: streamline pattern, stagnation point, pressure distribution, centre of pressure (CP) and aerodynamic centre (AC), drag and wake, the lift coefficient (CL) - angle of attack (α) graph. Streamline pattern. Stagnation point. Pressure distribution.

PART - 66 (THEORY - 22.5 hours)

MODULE 11B. PISTON AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

11.1 Theory of Flight

11.1.1. Aircraft aerodynamics and flight control

Operation and effect of balancing tabs, unloading and loading (leading) tabs, control tabs, spring tabs, mass balance, control surface inclination, [2] aerodynamic adjustment panels.

Course topics

Subsonic aerodynamics: basics, laws and definitions. Basic principles of airflow. Aerodynamic surface forces. Airfoil shape. Wing outline. General application of coefficients. Three-dimensional airflow around an aircraft. Two-dimensional airfoil flow: streamline diagram, stagnation point, pressure distribution, center of pressure, drag and wake, lift - alpha-dependent graph. Streamline diagram. Stagnation point. Pressure distribution.

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples given on the board.
2. Exercises: examples given on the board and performance of tasks given by the teacher - practical exercises.

Bibliography

Basic:

1. "Principles of Flight" (JAR Ref 080). JAA ATPL Training. Germany 2004
2. „Podstawy Aerodynamiki i Mechaniki Lotu”. Abłamowicz A.. Nowakowski W., Wydawnictwo Komunikacji i Łączności, Warszawa 1980
3. „Praktyczna aerodynamika i mechanika lotu samolotu odrzutowego, w tym wysokomanewrowego”, Milkiewicz A.. Wydawnictwo ITWL, Warszawa 2009
4. „Podstawy eksploatacji statków powietrznych”, Lewitowicz J., Wydawnictwo Instytutu Technicznego Wojsk Lotniczych, Warszawa 2001

Additional:

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Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,00
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)	0	0,00