COURSE DESCRIPTION CARD - SYLLABUS

Course name
Construction and diagnostics of aircraft engines 2 [S1Lot2-SLiPL>BiDSL2]

Course

Field of study
Aviation

Year/Semester
4/7

Area of study (specialization)
Aircraft Engines and Airframes

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

3,00

Coordinators

dr hab. inż. Grzegorz Szymański prof. PP
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Lecturers

Prerequisites

Basic knowledge of mechanics, metrology, strength of materials and machine design. Able to apply the scientific method in problem solving, execution of experiments and inference. Knows the limitations of his own knowledge and skills; can formulate questions precisely, Understands the need for further education

Course objective

The purpose of the course is to learn theoretical and practical issues related to testing and diagnostics of aircraft engines including: the scope of engine testing and diagnostic methods, diagnostic modeling and forecasting of future states of aircraft engines.

Course-related learning outcomes

Knowledge:
the student has knowledge of aviation safety and management. The student knows the concept of the human factor and methods of assessing human reliability, has detailed knowledge related to selected issues in the field of human capabilities and limitations during aircraft operation in flight, its impact on health and the ability to perform air operations, as well as the possibility of improving physical condition 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:
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
is able to properly use information and communication techniques, applicable at various stages of the implementation of aviation projects
can see legal aspects in the process of formulating and solving tasks in air transport, in particular, use the aspects of European and national aviation law regulations
can assess - at least in a basic scope - various aspects of the risk associated with a logistics undertaking in air transport
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
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:
is able to think and act in an entrepreneurial way, incl. finding commercial applications for the created system, bearing in mind not only the business benefits, but also the social benefits of the activity
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
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:

Knowledge acquired as part of the lecture is verified by a 45-minute test carried out on the 7th lecture. Colloquium consists of questions (test and open), variously scored. Passing threshold: 50% of points.
Skills acquired as part of the laboratory classes are verified on the basis of the final test, consisting of tasks scored differently depending on their level of difficulty. Passing threshold: 50% of points.

Programme content

Basic stages of engine testing. Role and scope of bench and flight tests. Determination of operating parameters and characteristics of aircraft engines. Registration and processing of engine test results. Basics of technical diagnostics. Techniques for detecting and removing damage.

Course topics

Basic stages of engine testing. The role and scope of bench tests and during flight. Braking of aircraft engines and their capabilities. Technical measures in aircraft engine tests. Methods of bench tests and during flight of aircraft engines. Determination of operating parameters and characteristics of aircraft engines. Registration and processing of results from engine tests
PART - 66 (THEORY - 11.25 hours, PRACTICE - 11.25 hours)
MODULE 6. MATERIALS AND EQUIPMENT
6.4 Corrosion
b) Types of corrosion and their identification;
The causes of corrosion;
Types of materials, susceptibility to corrosion. [1]
MODULE 7A. MAINTENANCE ACTIVITIES
7.18 Disassembly, Inspection, Repair and Assembly Techniques
d) Disassembly and reassembly techniques. [2]
e) Troubleshooting techniques. [2]

Teaching methods

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

2. Laboratory exercises: multimedia presentation illustrated with examples given on a blackboard and performance of tasks given by the teacher - practical exercises.

Bibliography

Basic:
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Additional:
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Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
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)	45	2,00