



## RTU Course "Structure of a Piston Engine"

15E01 Aeronautikas tehnoloģiju katedra

### General data

Code	TAD212
Course title	Structure of a Piston Engine
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Professional
Field of study	Transport
Responsible instructor	Blumbergs Ilmārs
Volume of the course: parts and credits points	1 part, 3.0 Credit Points, 4.5 ECTS credits
Language of instruction	LV, EN, RU
Possibility of distance learning	Not planned
Abstract	Subject gives basic information about structure of main components of aircraft piston engines as well as different systems like engine fuel system, engine starting and ignition systems, engine induction, exhaust and cooling systems and the engine lubrication system. Students will learn about construction of superchargers and turbochargers. Students will learn how to read and understand readings of engine gauges. Students will have basic knowledge about propeller and structure of the propeller reduction gearbox.
Goals and objectives of the course in terms of competences and skills	The goal is to obtain the general view about piston engines, their components, operation principles and to be able to recognize basic malfunctions of engine and their reasons. Students should be able to independently gather the necessary information and analyze it to maintain engine in the way that ensures the top condition of engine. The course gives competences that are necessary for further work in the civil aviation industry.
Structure and tasks of independent studies	Independent studies consist of preparing answers and solving given tasks - 60%; students should independently get familiar with different engine parts, be able to find typical damages and to evaluate their importance - 20%; students will have the task to independently study the latest literature and to prepare a report about the read information - 20%.
Recommended literature	<ol style="list-style-type: none"> <li>1. Airframe and Powerplant Mechanics. Airframe Handbook. US Department of Transportation. Federal Aviation Administration. New Delhi: Himalayan Books. 1994. 630p.</li> <li>2. A&amp;P Technician Powerplant Textbook. Colorado: Jeppesen Sanderson, Inc. 1994. 550p.</li> <li>3. Powerplant Handbook. USA Department of transport FAA. 519p.</li> <li>4. Powerplant. Jeppesen. 2001. 433p.</li> <li>5. Attiecīgo dzinēju tehniskie apraksti.</li> </ol>
Course prerequisites	Material resistance, materials and components.

### Course outline

Theme	Hours
Basics.	6
Engine operation principles.	6
Engine structure.	7
Engine fuel system.	7
Engine starting and ignition systems.	4
Engine induction, exhaust and cooling systems.	5
Superchargers and turbochargers construction.	2
Lubricants and fuels.	1
Engine lubrication system.	3
Engine indication systems.	4
Engine on ground working procedures.	3

### Learning outcomes and assessment

Learning outcomes	Assessment methods
A student knows the structure and parts of aviation piston engine.	Test, exam.
A student knows operation principles of piston engines.	Test, exam.
A student knows and understands operation and structure of the engine fuel system, starting and ignition systems, induction, exhaust and cooling systems and lubrication system.	Test, exam.
A student understands operation principles and construction of superchargers and turbochargers.	Test, exam.
A student can read and understand readings of engine gauges.	Test, exam.
A student can identify basic damages and malfunctions of engine.	Test, exam.

### Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	3.0	4.5	1.5	1.5	0.0		*	