



## RTU Course "Aircraft Aerodynamics, Structures and Systems"

15E03 Lidaparātu teorijas un konstrukcijas katedra

### General data

Code	TAK222
Course title	Aircraft Aerodynamics, Structures and Systems
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Professional
Field of study	Transport
Responsible instructor	Kleinhofs Mārtiņš
Academic staff	Hauka Māris
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	In this course students will acquire the knowledge about aircraft aerodynamics, structure and classification. Students learn not about the specific aircraft, but generally about them, starting with a simple, small aircraft and up to a complex one. The learning process is about the aircraft structure, it also includes consideration about materials and their properties, but most attention is paid to the fuselage, wing and stabilizer structure. Generally, the basic AS system and in-depth: hydraulics, control and conditioning systems are examined at the lectures. In this course, students are given the opportunity to acquire peculiarities of the helicopter structure and on board maintenance systems. EASA PART-66 13 mod. B2 adequate knowledge.
Goals and objectives of the course in terms of competences and skills	The aim of the course is to acquire knowledge about the aircraft structure and systems, to examine aerodynamic properties of supersonic flight of the aircraft and aerodynamic properties of the helicopter. Lectures and practical tasks are designed to provide the relevant knowledge and a grasp of aerodynamics, construction and aircraft systems operation.
Structure and tasks of independent studies	Course paper based on literature research and presentation. To execute practical tasks describing the structure, management and chassis.
Recommended literature	1. A&P Technician Airframe Textbook. Colorado: Jeppesen Sanderson, Inc. 2002. 650p. 2. V. Pavelko Gaisakuģu aerodinamika. RTU izdevniecība, Rīga, 2009.-258 lpp. 3. Gaisakuģu uzbūve un izturība. Lekciju konspekts, 2009.g. 302 lpp. 4. Airoplane Structure and Strength Analysis. Part 1. RTU, Riga 2009.g. pp 121. 5. Airoplane Structure and Strength Analysis. Part 2. RTU, Riga 2002.g. pp 102.
Course prerequisites	Materials and elements; Basic aerodynamics.

### Course outline

Theme	Hours
Principles of flight, basic aerodynamics and flight control.	4
Airframe structures — general concepts.	2
Airframe structures — airplanes.	2
Air conditioning and cabin pressurization.	4
Equipment and furnishings.	2
Flight controls.	4
Landing gear.	4
Fire protection, fuel systems, ice and rain protection.	4
Hydraulic power, pneumatic/vacuum.	4
On board maintenance systems.	2
Practical work.	8
Laboratory work.	8

### Learning outcomes and assessment

Learning outcomes	Assessment methods
Student knows the principles of flight, basic aerodynamics and flight dynamics.	Exams.
Student is able to analyze the airplane basic structure, operation of the systems.	Exams, practical work.
Student is able to orientate in the airplane structure.	Practical work, practical tasks, exam, test.
Student knows the airplane danger zones.	Exam, test.
Student understands the basic airplane systems.	Exam, test.

### Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	3.0	4.5	2.0	0.5	0.5		*	