



RTU Course "Aircraft Conceptual Design"

15E01 Aeronautikas tehnoloģiju katedra

General data

Code	TAK432
Course title	Aircraft Conceptual Design
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Professional
Field of study	Transport
Responsible instructor	Paramonovs Jurijs
Academic staff	Kleinhofs Mārtiņš
Volume of the course: parts and credits points	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN, RU
Possibility of distance learning	Not planned
Abstract	The course "General aircraft design" is founded on a theoretical basis of the aerodynamic and airplane structure strength analysis. The subject covers such issues as market survey (demand and supply), civil airplane types, modern airplane specifications and mass calculation, airplane arrangement and mass centre definition, computer-aided design of airplane and its parts.
Goals and objectives of the course in terms of competences and skills	To gain knowledge about the airplane and its systems design, problem statement. To be able to find the solution method of this problem. To get knowledge about the aircraft technical parameters interconnection, airplane mass calculation. To get skill of making the airplane draft design.
Structure and tasks of independent studies	Independent working on the theme: "Airplane mass calculation". Work with technical literature and internet.
Recommended literature	1. Filding J. P. Introduction to aircraft design. University Press, Cambridge, 2003, 264 p. 2. Mair W. A. and Birdsall D.L. Aircraft Performance. Cambridge University Press. 2003, 300 p. 3. Stinton D. The design of the aeroplane. Blackwell Science. University Press. Cambridge, 1997, 642 p. 4. Paramonov Yu.M. Aeroplane structure and strength analysis. Riga: RTU, 2009, 122 p. 5. ICAO un EASA normatīvā dokumentācija (JAR-21, JAR-23).
Course prerequisites	Strength of material, aerodynamics, aviation engine theory, civil aviation airplanes and engines.

Course outline

Theme	Hours
Airplane classification.	2
Airplane mass analysis.	4
Fuel mass calculation.	4
Engine mass calculation.	2
Airplane structure mass calculation.	4
Airplane arrangement and mass centre calculation.	4
Design of airplane system.	4
Design of details.	4
Drawings. Technical documentation.	4

Learning outcomes and assessment

Learning outcomes	Assessment methods
The student knows and is able to analyse the airplane market demand.	Exam.
The student knows the airplane and its system design problem statement.	Exam.
The student is able to analyse the airplane mass and calculate the airplane and its part mass.	Practical work questions. Exam.
The student knows and is able to make the airplane arrangement and calculation of mass centre.	Practical work questions. Exam.
The student can make drawings and prepare technical documentation.	Independent work questions. Exam.

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	2.0	3.0	1.0	1.0	0.0		*	