RTU Course "Fluid and Gas Systems of Aircraft"

25101 Aeronautikas tehnoloģiju katedra

General data

Code	TAE211
Course title	Fluid and Gas Systems of Aircraft
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Professional
Field of study	Transport
Responsible instructor	Valerijs Muhins
Academic staff	Mārtiņš Kleinhofs Vitālijs Pavelko Māris Hauka Kristīne Carjova Andris Vaivads Jānis Bitenieks Juris Ignatovičs
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	In this subject the knowledge about classification and tasks of fluid and gas systems of aircraft, also about main requirements to fluid and gas systems of aircraft will be gained. Training include such questions as theoretical principles of function of fluid and gas systems, control of fluid and gas systems and monitoring of operation of fluid and gas systems. Influence of operation factors on function and technical condition of fluid and gas systems will be studied according EC 1321/2014 Part-66 requirements.
Goals and objectives of the course in terms of competences and skills	To ensure students with chance to obtain theoretical and practical knowledge/skills according to EC 1321/2014 Part 66 and Part 147 requirements and therefore sufficient to obtain AERTI TAMO certificate of recognition. To provide students basic knowledge and skills in such subjects as: Air Conditioning and Cabin Pressurisation (ATA 21), Fire Protection (ATA 26), Fuel Systems (ATA 28), Hydraulic Power (ATA 29), Ice and Rain Protection (ATA 30), Oxygen (ATA 35), Pneumatic/Vacuum (ATA 36) and Water/Waste (ATA 38).
Structure and tasks of independent studies	Independent work with technical literature, regulations, with with the Commission Regulation (EU) No 1321/2014 material and aircraft technical documentation. Laboratory work formatting, reports and presentation preparation.
Recommended literature	1.Michael Kroes; William Watkins; Frank Delp Aircraft Maintenance and Repair - McGraw-Hill Science, 1993, 647p 2.Airframe and Powerplant Mechanics. Airframe Handbook. US Department of Transportation. Federal Aviation Administration. New Delhi: Himalayan Books.1994, 630p. 3.Tooley M., Wyatt D. Aircraft Electrical and electronic Systems.Butterwarth-Heinmann Ltd, 2008g. 424 lpp. 4.Gaisakuģu uzbūve un izturība. Lekciju konspekts, 2009.g. 302 lpp. 5.Разоренов Г.Н., Бахрамов Э.А., Титов Ю.Ф Системы управления летательными аппаратами. Машиностроение, 2003с 6.Thomas W.W. Transport Category. Aircraft System. Jepppesen, 1996.-336.p. 7.Airframe and Powerplant Mechanics Handbook: US Department of Transportation. FAA, 1991. - 500 pp. 8.Electrical Systems for A & PS (Ea-412) -Jeppesen, 1992, 269p 9.Dale Crane Aircraft Hydraulics Systems (Aviation Technician Training JS312653) - Aviation Maintenance Pub, 1975, 97p 10.BOEING 737 (300/400/500)/INCLUDES GTCP AND pa PUSs GENERAL FAMILIZATION. By Steve Oebermann; Aircraft Technical Book Company; 2005; Vol. 1. 11.BOEING 737 (300/400/500)/INCLUDES GTCP AND pa PUSs GENERAL FAMILIZATION. By Steve Oebermann; Aircraft Technical Book Company; 2005; Vol. 2. 12.Airoplane Structure and Strength Analysis. Part 1. RTU, Riga 2009.g. 121p. 13.Airoplane Structure and Strength Analysis. Part 2. RTU, Riga 2002.g. 102p.
Course prerequisites	Physical processes, heat techniques and basics of thermodynamics.
Courses acquired before	TAD325 Heat Technics and Thermodynamics AND TAS219 Aerohydromechanics

Course outline

Theme	Hours
Air Conditioning and Cabin Pressurisation (ATA 21). Air supply. Air Conditioning. Pressurisation. Safety and warning devices	5
Fire Protection (ATA 26). Fire Protection (ATA 26)	3
Fuel Systems (ATA 28)	6
Hydraulic Power (ATA 29)	6
Ice and Rain Protection (ATA 30)	4

Oxygen (ATA 35)	3
Pneumatic/Vacuum (ATA 36)	3
Water/Waste (ATA 38)	2

Learning outcomes and assessment

Learning outcomes	Assessment methods
Students have a good knowledge in Air Conditioning and Cabin Pressurisation system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests
Students have a good knowledge in Fire Protection system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests
Students have a good knowledge in Fuel Systems system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests
Students have a good knowledge in Hydraulic Power system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests
Students have a good knowledge in Ice and Rain Protection system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests
Students have a good knowledge in Oxygen system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests
Students have a good knowledge in Pneumatic/Vacuum system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests
Students have a good knowledge in Water/Waste system theoretical and practical aspects, can merge and adapt separate elements of knowledge in logical and comprehensive way.	Independent works, progress tests

Study subject structure

Part	Semester			CP	ECTS	Hours per Week			Tests		
	Autumn	Spring	Summer			Lectures	Practical	Lab.	Test	Exam	Work
1.		*		2.0	3.0	1.5	0.5	0.0	*		