RTU Course "Aircraft Automatic Control Systems"

15E02 Avionikas katedra

General data

Code	TAA231
Course title	Aircraft Automatic Control Systems
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Professional
Field of study	Transport
Responsible instructor	Trifonovs-Bogdanovs Pjotrs
Academic staff	Trifonova-Bogdanova Tatjana
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	Aircraft's automatic control system's organization charts. Aircraft automatic control system's modes of operation. Helicopter's automatic control system's operating principles.
Goals and objectives of the course in terms of competences and skills	Study the organization charts and operating principles of the aircraft automatic control system. Understand the aircraft parameters and the dynamic processes of regulation. Being able to analyze the aircraft parameters and the dynamic processes of regulation.
Structure and tasks of independent studies	Independently prepare reports in algorithms and structures circuits of the aircraft automatic control system, the automatic system of primary sensors. Work with professional literature. Lesson in the Aviation Institute's specialized lecture hall.
Recommended literature	1. Aircraft Control and Simulation. Brian L. Stevens, Frank L. Lewi. John Wiley & Sons Inc. 2003. 680 p. 2. Digital Avionics Systems: Principles and Practice, Cary, R Spitzer, The Blackburn Press, 2001, 296 p. 3. В.Воробев, С.Кузнецов. Автоматическое управление полетом самолетов. Москва. Транспорт.1995г. 423 стр. 4. Military Avionics Systems. Ian Moir, Malcolm Jukes, Allan Seabridge. John Wiley & Sons Ltd. 2006. 542 p. 5. Jan Moir and Allan Seabridge, Civil Avionics Systems, John Wiley & Sons, Ltd, 2006. 396. lpp. 6. Г.Разорёнов. Системы управления летательными аппаратами. Москва. Машиностроение. 2003г. 582 стр.
Course prerequisites	Aircraft Aerodynamics. Mathematics.

Course outline

Theme	Hours
Automatic control system's operating principles.	4
Command signal treatment. Aircraft motion dynamics.	4
Typical elements of automatic control system.	6
Modes of operation. Adjusting the angular motion of an aircraft.	8
Flight speed stabilization of an aircraft.	3
Automatic flight route control of an aircraft.	7
Automatic landing system.	6
Helicopter's automatic control system.	10

Learning outcomes and assessment

Learning outcomes	Assessment methods
The student understands the operation and design of the automatic control system's components.	Individual work, seminars, exam.
The student knows the forces and moments acting on the aircraft.	Pract. work: Dynamic of an aircraft automatic control system. Exam.
The student is able to analyze the automatic control system operation under different conditions.	Pract. work: Dynamic of an aircraft automatic control system. Exam.
The student is able to make conclusions of the aircraft flight parameters regulating processes.	Individual work, seminars, exam.

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	3.0	4.5	2.5	0.5	0.0		*	