



RTU Course "Aircraft Radio Navigation Systems"

15E02 Avionikas katedra

General data

Code	TAA414
Course title	Aircraft Radio Navigation Systems
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Professional
Field of study	Transport
Responsible instructor	Smirnovs Igors
Academic staff	Trifonovs-Bogdanovs Pjotrs
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 radio navigation systems" based on a theoretical basis of studying aircraft radio navigation equipment. The studying covering issues such as navigational coordinate systems, navigation elements, navigational accuracy, radio navigation equipment and systems, the task, their structure and functional circuitry, the operating principle design, technical specifications and parameter control methods.
Goals and objectives of the course in terms of competences and skills	Acquire knowledge of radio navigation theoretical foundation to understand radio navigation equipment and systems, tasks and operational principles. Able to perform radio navigation equipment structure and functional circuitry analysis. Gain knowledge about the equipment and system design and technical specifications, apply this knowledge in analysis of the specific equipment and system. Acquire practical skills in radio navigation devices and system technical parameters.
Structure and tasks of independent studies	Independent work with literature and technical documentation. Independent work on the theme: "Aircraft radio navigation equipment (system) technical parameters control methods".
Recommended literature	1. Aviation Electronics. By Keith W. Bose, Jeppesen. Sanderson Training products, 2006, 384 p.; 2. Wasson J.W. Avionic Systems. Operation & Maintenance. Colorado: Jeppesen Sanderson, Inc. 2004, 318 p.; 3. Henderson M.F. Aircraft Instruments & Avionics for A&P Technicians. Colorado: Jeppesen Sanderson, Inc. 2001. 212 p.; 4. Civil Avionics Systems. I. Moir, A. Seabridge, 2002, 416 p.
Course prerequisites	Physics, electrical engineering, electronics.

Course outline

Theme	Hours
Radio navigation equipment and systems. Tasks and the conceptual design.	6
Radio navigation equipment and systems characteristics.	4
Complex aircraft navigation system, the principles of construction.	4
Very high frequency Omni-range navigation system (VOR).	6
Automatic Direction Finder (ADF).	4
Instrument Landing System (ILS).	6
Microwave Landing System (MLS).	4
Distance Measuring Equipment (DME).	6
Very low frequency and hyperbolic navigation (VLF / Omega).	2
Zonal navigation, RNAV systems.	4
Electronic Flight Instrument System (EFIS).	2

Learning outcomes and assessment

Learning outcomes	Assessment methods
The student knows the theoretical foundations of radio navigation and is able to apply knowledge of navigation devices and systems analysis.	Final exam question.
The student knows the aircraft radio navigation equipment and systems, tasks and operating principle, is able to use this knowledge in navigation equipment maintenance.	Final exam question.
The student is able to analyze the radio navigation equipment structure and functional circuitry and is able to use this knowledge in navigation equipment maintenance.	Final exam question.
The student knows and is able to analyze the radio navigation equipment and system technical parameters.	Final exam question.
The student knows the standard radio navigation equipment unit structures, is able to use this knowledge in navigation equipment maintenance.	Laboratory work question and final exam question.

The student is able to control the radio navigation equipment capacity and technical parameters.

Laboratory work question and final exam question.

Study subject structure

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