



RTU Course "Supplementary Mathematics (Aviation Transport)"

15E03 Lidaparātu teorijas un konstrukcijas katedra

General data

Code	TAK205
Course title	Supplementary Mathematics (Aviation Transport)
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
Volume of the course: parts and credits points	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN
Possibility of distance learning	Not planned
Maximum auditorium capacity	30
Maximum number of students per semester	30
Abstract	Application of the probability theory and mathematical statistics to the aviation transport reliability problems. Mathematical models of damages and failures accumulation. Lifetime distribution functions. Estimation of distribution function parameters. Main ideas of the reliability and renewal theories. Preventive maintenance planning.
Goals and objectives of the course in terms of competences and skills	<ol style="list-style-type: none"> 1. To get theoretical knowledge of the damage and failure accumulation mathematical models. 2. To understand the methods of the distribution function parameters estimation. 3. To understand the methods of the system reliability analysis.
Structure and tasks of independent studies	Estimation the parameters of the distribution function.
Recommended literature	<ol style="list-style-type: none"> 1. Paramonovs Ju.M. Transporta līdzekļu slodzes, resurss un drošums. - Rīga: RTU, 2002. -108 lpp. 2. Salenieks N. Mehānisko un tehnoloģisko sistēmu drošums.- Rīga: RTU MKI, 1994. -33 lpp. <p>Papildliteratūra:</p> <ol style="list-style-type: none"> 1. Gertsbakh I.B. Reliability theory with application to preventive maintenance. Berlin, NY, London, Tokio: Springer, 2000. -218 p. 2. Swift T. Damage tolerance Technology. Federal Aviation Administration, 1999. 3. Ireson W.G., Coombs C.F., Moss R.Y. Handbook of Reliability Engineering and Management. - McGraw-Hill, 1996. - 832 p.
Course prerequisites	Higher Mathematics, Probability Theory and Mathematical Statistics, Strength of Materials.

Course outline

Theme	Hours
Damage and failure accumulation mathematical models.	4
Lifetime distribution function.	4
Laplace transformation.	2
Relationship between the parameters and the moments.	6
Estimation the parameters of the distribution function.	8
Reliability and renewal theories main ideas.	8

Learning outcomes and assessment

Learning outcomes	Assessment methods
Student knows the damage and failure accumulation mathematical models.	Test.
Student understands the methods of the distribution function parameters estimation.	The defence of the work.
Student understands the methods of the system reliability analysis.	Test.
Student understands the methods of the aircraft reliability analysis.	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		*	