

Документ подписан простой электронной подписью

Информация о владельце:

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Discipline annotation

Discipline name	Математические основы теории управления / Mathematical fundamentals of management theory
Summary	Actions on matrices. Matrix operations. Matrix inversion, rank and determinant calculation. Application of matrix calculus for solving problems of automatic control. Study of the stability of an automatic control system using algebraic criteria. Compilation of differential equations of the object of regulation. Method for solving a linear system of differential equations with different real roots of the characteristic equation. Solving a linear system of differential equations with different real roots of the characteristic equation. Mathematical description of input signals used in system identification: step unit function, Dirac delta function, polynomial signal, harmonic signal. Controllability and observability of automatic control systems. Calculation of controllability of systems according to the criteria of Hilbert and Kalman. Calculation of observability of systems according to the criteria of Hilbert and Kalman.
Learning outcomes of the discipline	- identifies a problem situation, carries out its multifactorial analysis and diagnostics based on a systematic approach; - determines and evaluates the risks of possible solutions to a problem situation, chooses the best option for solving it.
Workload, c. u.	3 c. u.
Reporting Forms	Credit - 3th semester
List of essential and supplementary literature necessary for mastering the discipline	
Essential literature	1. Kochetkov V. P. Fundamentals of control theory: textbook / V. P. Kochetkov. – Rostov-on-Don: Phoenix, 2012. - 411 p. – Stamp: recommended by the AMA 2. Theory of automatic control: textbook: approved by the RF Ministry of Education / ed. by V. B. Yakovlev. – M.: Vyssh.shk., 2009. – 568 p.
Supplementary literature	1. Akchurin R. M. Methods for making optimal management decisions: a tutorial. - M.: MEI Publishing House, 2014. 2. Kats M. D. Workshop on the academic discipline "Mathematical foundations of control theory". Electronic book. Tomsk, TPU ed., 1997. - 85 p. - Reg. No. 42 dated March 14, 2013. 2. Kats M. D. Control tests in the discipline "Mathematical foundations of the theory of regulation". Electronic book. Tomsk, TPU ed., 2014.- 55 p. - Reg. No. 43 dated March 14, 2015, 3. Kats M. D. Mathematical foundations of control theory: textbook. - Tomsk, TPU ed., 2013.- 105 p.