



The syllabus of the discipline
"STATISTICAL ANALYSIS OF TRANSPORT SYSTEMS AND PROCESSES"

Educational Professional Program: «Air Transportation Management»

Field of knowledge: 27 «Transport»

Specialty: 275 «Air Transport Technologies»

Specialization: 275.04 «Air Transport Technologies»

Level of higher education	First (Bachelor)
Discipline status	Educational discipline is mandatory component of the educational program
Course	2
Semester	4
The scope of discipline, ECTS credits / hours	5,0/150
Language of teaching	Ukrainian, English
What will be studied (subject of study)	The subject of the discipline is the formation of theoretical knowledge and practical skills on the basis of probabilistic - statistical approach to the analysis of the role of random factors influencing real processes, the principles of variance and regression analysis used in planning, product quality assessment, systematic analysis of economic models and processes.
Why it is interesting / necessary to study (goal)	The educational purpose of the course is to cover the basics of the mathematical apparatus of probability theory, mathematical statistics and random processes. The main purpose of the course is to teach students: • Apply methods of statistical analysis to study transport processes, models of which are based on real observations; • Draw conclusions about the adequacy of models and be able to use them to make a forecast; • Use MS Excel to solve application problems.
Why you can learn (learning outcomes)	- Apply, use modern information and communication technologies to solve practical problems in the organization of transportation and design of transport technologies; - Investigate transport processes, experiment, analyze and evaluate the parameters of transport systems and technologies; - Formulate, modify, develop new ideas for improving transport technologies; - Evaluate the parameters of traffic flows. Design schemes and networks of transport systems. Develop technologies for operational management of traffic flows; - Develop, design, manage projects in the field of transport systems and technologies.
How to use the acquired knowledge and skills (competencies)	- Skills in the use of information and communication technologies; - Ability to evaluate and ensure ergonomic efficiency of transport technologies; - Ability to evaluate plans and proposals for the organization and technology of transportation, performed by other developers and make the necessary changes based on the technical and operational parameters and principles of operation of facilities and devices of transport infrastructure, vehicles.

Educational logistics	Thematic Plan: Module №1 «Basics of Applied Statistics» Topic 1. Statistical observations. Random events. Topic 2. Concept of probability. Probability addition theorem. Topic 3. Conditional probabilities. Probability multiplication theorem. Topic 4. Random variables and their distributions. Topic 5. Numerical characteristics of random variables distributions. Topic 6. Systems of random variables. Conditional laws of distribution of random variables. Topic 7. Basics of sampling method. Topic 8. Statistical parameters estimations Module № 2 «Analysis of variance. Correlation - Regression Analysis» Topic 1. Statistical hypotheses. Topic 2. Statistical hypothesis testing. Topic 3. Statistical tests of nonparametric hypotheses. Topic 4. Design of experiment and analysis of variance. Topic 5. Correlation and regression dependences. Topic 6. Multiple linear regression. Topic 7. Various aspects of multiple regression. Topic 8. Basics of time series theory. Topic 9. Statistical analysis of air transportation problems. Module № 3 «Course project» Types of classes: lectures, laboratory classes. Teaching methods: explanatory-illustrative method; method of problem statement; reproductive method; research method. Forms of study: full-time, part-time.
Prerequisites	The discipline is based on knowledge of such disciplines: "Higher mathematics", "Information Technology on Transport".
Details	The discipline is the basis for the study of such disciplines: "Operations Research on Transport", "Technical and Economic Research of Transport Development", "Mathematical Methods of Modeling and Optimization Systems and Processes".
Information support from the repository and fund of NTB NAU	1. Барковський В. В. та ін. Теорія ймовірностей та математична статистика.- 5-те видання. - К. : ЦУЛ, 2014. - 424 с. 2. Руденко В. М. Математична статистика. Навч. посіб. – К.: ЦУЛ, 2012. – 304 с. 3. Berenson M.L., Levine D.M., Krehbiel T.C. Basic Business Statistics: Concepts and Applications, 12th ed. –Prentice Hall, 2013. – 859 p. 4. Walpole R.E. Probability and Statistics for Engineers and Scientists / R.E. Walpole, R.H. Myers, S.L. Myers and K.E. Ye., 9th ed. – Pearson, 2014. – 791p. 5. http://www.lib.nau.edu.ua/main/ , 6. http://er.nau.edu.ua/
Location and logistics	Classroom for theoretical training, laptop, mobile device (phone, tablet) with Internet connection for: communication and surveys; homework; performing tasks of independent work; testing (current, boundary, final control).
Semester control, examination methods	Exam, course project, testing
Department	Air Transportation Management
Faculty	Transport, management and logistics

Teacher	ANTONOVA ANNA OLEGIVNA Position: Professor Scientific degree: Ph.D. Academic title: Associate Professor Teacher profile: https://scholar.google.com.ua/citations?user=14QRvJQAAAAJ&hl=uk Tel: 044 406-70-94 E-mail: anna.antonova@npp.nau.edu.ua Location: 2.113a
Originality of academic discipline	Author's course, teaching in Ukrainian and English
Link to the discipline	https://er.nau.edu.ua/handle/NAU/34200