



**Syllabus of the academic subject**  
**«TECHNICAL AND ECONOMIC RESEARCH OF TRANSPORT DEVELOPMENT»**

**Educational Professional Programs: «Air Transportation Management»**  
**«Multimodal transport and logistics»**  
**«Onboard Services of Air Passenger Transportation»**

**Field of Study: 27 «Transport»**  
**Speciality: 275 «Air Transport Technologies»**  
**Specialization: 275.04 «Air Transport Technologies»**

<b>Level of higher education</b>	First (bachelor)
<b>Subject status</b>	Professionally Oriented Subject EP
<b>Year of study</b>	3
<b>Semester</b>	6
<b>Total, credits ECTS/hours</b>	3,5/105
<b>Language teaching</b>	Ukrainian, English
<b>What will be studied (subject of study)</b>	<ul style="list-style-type: none"> <li>- the purpose of the technical and economic research, the TER's composition, and the structure;</li> <li>- the principles of TER's organization;</li> <li>- the concept of the forecasting, types and classification of the forecasting;</li> <li>- classification of the methods for passenger turnover and cargo transportation forecasting;</li> <li>- the area of attraction as the general objects of study the transport services market, methods of determining the boundaries of gravity areas;</li> <li>- tasks of the technical and economic research to substantiate the structure of the park and its operation;</li> <li>- stages and contents of developments on the formation of the aircraft fleet and its rational use;</li> <li>- the identification of the system assessment of the aircraft operation, hourly and annual flight performance, the fuel consumption, the cost of the transportation;</li> <li>- the change of the commercial loading depending on the flight range, specific flight and the fuel expanse, the fuel consumption on the different flight range;</li> <li>- profitability (losses) of the flight, the profitability dependence on the different flight range.</li> </ul>
<b>Why it is interesting/necessary to study (aim)</b>	The aim of the subject is to obtain the necessary knowledge and skills on the basics of technical and economic research for civil aviation development as a branch of economy and civil aviation enterprises of all forms of ownership.
<b>Why you can learn (learning outcomes)</b>	<ul style="list-style-type: none"> <li>- Take responsibility, show public consciousness, social activity and participation in the life of civil society, think analytically, critically understand the world;</li> <li>- Formulate, modify, develop new ideas for improving transport technologies;</li> <li>- Develop, design, manage projects in the field of transport systems and technologies;</li> <li>- Classify and identify transport processes and systems. Evaluate the parameters of transport systems. Perform system analysis and forecasting of transport systems;</li> <li>- Choose effective technologies for transport modes interaction. Analyze the possibilities of using different options for transport modes interaction. Be able to automate the process of managing material and related flows in aviation supply chains (transportation operations, cargo processing, storage, sorting, labeling, consolidation, customs clearance, information support, etc.);</li> </ul>

	<ul style="list-style-type: none"> <li>- Choose information systems for transportation. Operate automated control systems and navigation systems in the transportation process. Use electronic cards;</li> <li>- Critically evaluate the scientific values and achievements of society in the transport technologies development;</li> <li>- Investigate transport processes, experiment, analyze and evaluate the parameters of transport systems and technologies;</li> <li>- Evaluate the parameters of traffic flows. Design schemes and networks of transport systems. Develop technologies for operational management of traffic flows;</li> <li>- Investigate the types of transport systems. Find solutions for optimizing the transport systems parameters. Assess the efficiency of infrastructure and technology of transport systems</li> </ul>
<b>How to use the acquired knowledge and skills (competencies)</b>	<ul style="list-style-type: none"> <li>– Ability to exercise their rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine;</li> <li>– Skills in the use of information and communication technologies;</li> <li>– Ability to analyze and predict the parameters and performance indicators of transport systems and technologies, taking into account the impact of external environment;</li> <li>– Ability to assess operational, technical and economic, technological, legal, social, and environmental components of transportation management;</li> <li>– Ability to evaluate and ensure ergonomic efficiency of transport technologies;</li> <li>– Ability to evaluate plans and proposals for transportation management and technology, drawn up by other entities, and make the necessary changes based on technical and operational parameters and principles of operation of facilities and devices of transport infrastructure, vehicles (vessels);</li> <li>– Ability to use modern information technologies, automated control systems and geographic information systems in the transportation process organization;</li> <li>– Ability: to describe the key components of air transport system, to explain their essential characteristics, goals, functions, tasks and problems; recognize and interpret technical, technological, legal, economic and environmental aspects of aviation transport technologies development;</li> <li>– Ability to manage the quality of air transport enterprises, identify and prevent possible risks;</li> <li>– Ability to identify insured events in air transport, to develop a system of measures to prevent and eliminate them;</li> <li>– Ability to solve complex specialized problems and solve practical problems in the field of transport using theories and methods of modern transport science on the basis of systematic approach and taking into account the complexity and uncertainty of transport systems conditions;</li> <li>– Ability to conduct research at the appropriate level;</li> <li>– Ability to generate new ideas (creativity);</li> <li>– Ability to develop and manage projects;</li> <li>– The desire to preserve the environment;</li> <li>– Ability to work independently and in a team;</li> <li>– Knowledge and understanding of the subject area and understanding of professional activity;</li> <li>– Ability to abstract thinking, analysis, synthesis</li> </ul>
<b>Educational logistics</b>	<p><b>Content of the subject:</b> Module №1 «System organization of technical and economic research»</p> <p>Topic 1. The purpose, classification and stages of technical and economic research.</p> <p>Topic 2. Forecasting of air transport development: methods of passenger transportation forecasting.</p> <p>Topic 3. Fundamentals of freight transportation volume forecasting.</p> <p>Topic 4. Determination of air traffic gravity areas. Technical and economic study for airports development.</p> <p>Topic 5. Aircraft choice justification for forecasted transportation volumes.</p> <p>Topic 6. Methods for determining hourly and annual aircraft productivity.</p>

	<p>Topic 7. Determination of specific fuel consumption, operating costs and transportation costs.</p> <p>Topic 8. Factors determining aircraft choice for operation on airlines.</p> <p>Topic 9. Stages and content of technical and economic research on aircraft fleet structure formation and its rational use.</p> <p><b>Types of classes:</b> lectures, laboratory classes</p> <p><b>Teaching methods:</b> explanatory and illustrative method; method of problem presentation; reproductive method; research method.</p> <p><b>Forms of education:</b> full-time and part-time</p>	
<b>Prerequisites</b>	Academic subject is based on knowledge of such subjects as «Transport Vehicles Operation», «Fundamentals of Transport Processes and Systems Theory».	
<b>Requisites</b>	Academic subject is the basis for studying such disciplines, as: «Efficiency of Air Transportation», «Aircraft Handling at Airports».	
<b>Information support from the repository and fund of NTB NAU</b>	<p>1. Техніко-економічні вишукування та прогнозування розвитку галузі: навч. посібник для студентів напрямку 1004 «Транспортні технології» / Яценко Л.А., Шаповал Н.С., Мержвінська А.Н./ -К.: Центр навчальної літератури, 2016. – 240 с.</p> <p>2. Єріна А.М. Статистичне моделювання та прогнозування: Навч. посібник. –К.: КНЕУ, 2016. – 170 с.</p> <p>3. Лащенко О. А. Імовірнісні і статистико-експериментальні методи аналізу транспортних систем: навчальний посібник / О. А. Лащенко, О. Ф. Кузькін, С. В. Грицай. – Запоріжжя: ЗНТУ, 2016. – 420 с.</p> <p>4. <a href="https://er.nau.edu.ua/handle/NAU/40773">https://er.nau.edu.ua/handle/NAU/40773</a></p> <p>5. <a href="https://er.nau.edu.ua/handle/NAU/25974">https://er.nau.edu.ua/handle/NAU/25974</a></p> <p>6. <a href="https://er.nau.edu.ua/handle/NAU/25829">https://er.nau.edu.ua/handle/NAU/25829</a></p>	
<b>Location and logistics</b>	Classroom for theoretical training, laptop, mobile device (phone, tablet) with an Internet connection for: communication and surveys; homework; performing tasks of self-study work; passing testing (current, midterm, final control).	
<b>Semester control, examination methods</b>	Examination, homework, testing	
<b>Department</b>	Air Transportation Management Department	
<b>Faculty</b>	Faculty of Transport, Management and Logistics	
<b>Teacher (s)</b>		<p><b>VOLKOVSKA HANNA HRYHORIVNA</b></p> <p><b>Position:</b> senior lecturer</p> <p><b>Scientific degree:</b> no</p> <p><b>Academic title:</b> no</p> <p><b>Teacher profile:</b></p> <p><a href="https://scholar.google.ru/citations?hl=ru&amp;pli=1&amp;user=GZFE7bQAAAAJ">https://scholar.google.ru/citations?hl=ru&amp;pli=1&amp;user=GZFE7bQAAAAJ</a></p> <p><b>Tel.:</b> 044 406-70-94</p> <p><b>E-mail:</b> <a href="mailto:hanna.volkovska@npp.nau.edu.ua">hanna.volkovska@npp.nau.edu.ua</a></p> <p><b>Workplace:</b> 2.113a</p>
<b>Originality of academic subject</b>	Author's course, teaching in Ukrainian and English	
<b>Link to subject</b>	<a href="https://er.nau.edu.ua/handle/NAU/34200">https://er.nau.edu.ua/handle/NAU/34200</a>	