SYLLABUS OF THE SUBJECT

«INTELLIGENT TECHNOLOGIES IN TRANSPORT»

Educational Professional Program: «Air Transportation Management»
Field of study: 27 «Transport»
Speciality: 275 «Air Transport Technologies»
Specialization: 275.04 «Air Transport Technologies»

Higher Education Degree	The second level (master degree)
Subject status	Academic subject of professionally-oriented subjects cycle
Course of study	1
Semester	2
Subject volume, ECTS credits / total amount of hours	4,0/120
Language	Ukrainian, English
To be studied (study subject)	The discipline is an integral part of the theoretical basis of knowledge and skills for the study of technological disciplines for training in the field of transportation organization and transport management.
Why is it interesting and must be learned? (purpose)	The purpose of teaching the discipline is to form students' knowledge and skills in the field of intelligent technologies for managing complex transport systems and processes, as well as the use in practice of intelligent automated information systems to support decision making.
What is studied? (learning results)	– Search for the necessary information in the scientific and technical literature, databases, other sources, analyze and objectively evaluate information in the field of transport systems and technologies and related cross-sectoral issues; – Freely discuss in state and foreign languages issues of professional activity, projects and research in the field of transport systems and technologies orally and in writing; – Make effective decisions in the field of transport systems and technologies, taking into account technical, social, economic and legal aspects, generate and compare alternatives, assess the necessary resources and constraints, analyze risks; – Develop new and improve existing transport systems and technologies, define development objectives, existing constraints, efficiency criteria and scope; – Manage complex technological and production processes of transport systems and technologies, including unpredictable and those that require new strategic approaches; – Use specialized software for analysis, development and improvement of transport systems and technologies; – Present the results of research activities, prepare scientific publications, participate in scientific discussions at scientific conferences, symposiums and carry out pedagogical activities in educational institutions
How is it possible to use the gained knowledge and skills? (competencies)	- Ability to work in an international context; - Ability to search, process and analyze information from various sources; - Ability to develop and manage projects; - Ability to generate new ideas (creativity); - Ability to study and manage the operation of transport systems and technologies; - Ability to use specialized software to solve complex problems in the field of transport systems and technologies; - Ability to apply modeling and optimization methods to study and improve the

	efficiency of air transport systems and their management processes.
Academic logistics	**Course content: Module № 1 "Intelligent control of transport systems and processes"** Topic 1. Intelligent control systems for transport systems and processes. Topic 2. Modern intelligent technologies for managing transport systems and processes. Topic 3. Development of structural and functional schemes of integrated intelligent control systems. Topic 4. Intelligent decision support systems. Topic 5. Principles of building intelligent control systems. Topic 6. Expert systems for managing transport complexes. Topic 7. Algorithmic support of intelligent control of equipment of technological transport processes. Topic 8. Fuzzy logic. Neuro-fuzzy control systems of transport systems and processes. 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 as: "Methodology of applied research in the field of transport technologies (by type)", "Project management in the transport sector", "Management in integrated transport systems"
Post-requisites	The discipline is the basis for the study of such disciplines as: "Freight Forwarding", "Air Traffic Engineering", "Mathematical methods of modeling and optimization of transport systems and processes", "Course project" Project Management in the transport industry ""
Information support from the fund and repository of NAU library	1. Fuzzy Logic Applications in Engineering Science/ Harris, J, 2020. – 400p. 2. Kingdom J. Intelligent Systems / J. Kingdom. – Berlin: Springer–Verlag, 2015. – 227 p 3. Intelligent Hybrid Systems: Fuzzy Logic, Neural Networks, and Genetic Algorithm / Ed. by Da Ruan. – Boston : Kluwer Academic Publishers, 2019. – 258 p. 4. Інтелектуальні системи підтримки прийняття рішень : навч. посіб. / Б. М. Герасимов, В. М. Локазюк, О. Г. Оксіюк, О. В. Поморова ; Європ. університет. – Київ, 2017. – 335 с 5. Ковальчук К. Ф. Оцінка ефективності інформаційно-інтелектуальних технологій / К. Ф. Ковальчук, Л. М. Бандоріна, Л. М. Савчук. – Дніпропетровськ : ІМА-прес, 2018. – 132 с. 6. Щокін В. П. Інтелектуальні системи керування: аналітичний синтез та методи дослідження / В. П. Щокін. – Кривий Ріг : Д.О. Чернявський, 2018. – 264 с. 7. Introduction to Fuzzy Sets, Fuzzy Logic, and Fuzzy Control Systems By Guanrong Chen, Trung Tat Pham, 2019. – 368 p. 8. Гороховський О. І. Інтелектуальні системи / О. І. Гороховський ; Вінниц. нац. техн. університет. – Вінниця, 2015. – 193 с. 9. Створення мікроелектронних датчиків нового покоління для інтелектуальних систем / Я. І. Лепіх, Ю. О. Гордієнко, С. В. Дзядевич . – Одеса : Астропринт, 2020. – 256 с. 10. Neural Networks for Control and Systems / Ed. by K. Warwick – London: Peregrinus, 2018. – 260 p. **Information resources on the Internet** 1. Сайт розробника інтелектуальних систем / [Електронний ресурс]. - Режим доступу: https://www.sites.google.com/site/upravlenieznaniami/intellektualnye-informacionnye-sistemy-v-upravlenii-znaniami 2. Сайт «Українські інтелектуальні системи (UIS)» / [Електронний ресурс]. - Режим доступу: https://uislab.com/ 3. Авторські керівництва та довідкові матеріали по роботі з продуктами

	MathWorks [Електронний ресурс]. - Режим доступу: http://matlab.exponenta.ru 4. Сторінка сайту МФТІ, присвячена математичному моделюванню транспортних потоків / [Електронний ресурс]. - Режим доступу: https://mipt.ru/education/chair/computational_mathematics/upload/22b/Book-arpglktefbb.pdf
Location and logistics	Classroom of theoretical training, laptop, mobile device (phone, tablet) with Internet connection for: communication and surveys; homework; performing tasks of independent work; passing the test (current, boundary, final control)
Semester control, examination techniques	Graded Test, Testing
Department	Air Transportation Management Department
Faculty	Faculty of Transport, Management and Logistics
Lecturer(s)	 **SHEVCHUK DMYTRO OLEKHOVYCH** **Position:** Head of the Department **Scientific Degree:** Doctor of Engineering **Academic Status:** Professor **Teacher profile:** https://scholar.google.com/citations?view_op=list_works&hl=ru&user=KG9yZUQAAAAJ **Tel.:** 044 406 -72-85 **E-mail:** dmytro.shevchuk@npp.nau.edu.ua **Location:** 2.102
Originality of the subject	Author's course, teaching in English
Link to the subject	https://er.nau.edu.ua/handle/NAU/34200