

# ELECTIVES COURSE CATALOG

## 2021/2022

Department	Lecturer		General competences	Learning outcomes	Teaching methods (lectures, practical training, teamwork, seminars, project work, case study etc.)	Higher education level	Study programme / specialty	Prerequisites	Semester restrictions
	Lectures	Seminars, practical and laboratory classes							
<b>ENGINEERING AND NATURE ELECTIVES</b>									
<a href="https://pg.cabinet.sumdu.edu.ua/catalog">https://pg.cabinet.sumdu.edu.ua/catalog</a>									
<b>Design of New Materials (Language – Ukrainian)</b>									
Department of Applied Materials Science and Technology of Construction Materials	Gaponova O.P. Degula A.I.	Gaponova O.P. Degula A.I.	Ability to abstract thinking, analysis, and synthesis	Understand the characteristics of evolutionary and innovative processes of material development. Be able to choose the basic methods of ensuring the quality of materials. Understand the role of technologies in ensuring product quality and competitiveness. Choose effective materials for the products of the national economy. Use resources and reserves rationally	Lectures, practical classes, project work	For the whole contingent	For the whole contingent	Basic (school) knowledge of general education subjects. Multi-media audience	Without restrictions
<b>Modern Materials and Technologies that Change the World. Inventions of Mankind (Language – Ukrainian)</b>									
Department of Applied Materials Science and Technology of Construction Materials	Kharchenko N.A. Gaponova O.P.	Gaponova O.P. Kharchenko N.A.	Ability to abstract thinking, analysis, and synthesis	Analyze current trends in materials development. It is reasonable to choose materials. Identify patterns of relationship between production technology and material properties. Conduct research on materials on modern equipment	Lectures, practical classes, teamwork	For the whole contingent	For the whole contingent	Basic (school) knowledge of general education subjects. Multi-media audience	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
<b>Resource-Saving Technologies of Modern Materials and Coatings (Language – Ukrainian)</b>									
Department of Applied Materials Science and Technology of Construction Materials	Degula A.I. Gaponova O.P.	Gaponova O.P. Degula A.I.	Ability to abstract thinking, analysis, and synthesis	Rationally choose materials and coatings to ensure the reliability and durability of products. It is reasonable to choose the type of coating to ensure the best performance properties of products. Model the properties of the material when working in extreme conditions	Lectures, practical classes, project work	For the whole contingent	For the whole contingent	Basic (school) knowledge of general education subjects. Multi-media audience	Without restrictions
<b>Cold and Heat in Human Life (Language – Ukrainian)</b>									
Department of Technical Thermophysics	Kozin V.M.	Kozin V.M.	The desire to preserve the environment	To determine the potential opportunities of the region in relation to energy sources, to perform a comparative analysis of the efficiency of different types of thermal power facilities. Perform thermal calculations of electro-heat generating objects. Determine energy losses by the building and apply methods to reduce them; create an energy passport of the building. Rational selection of working substances of power plants to obtain the highest energy efficiency and environmental safety. Determine the main economic indicators of energy equipment and perform technical and	Lectures; practices; seminars	For the whole contingent	For the whole contingent	Basic (school) knowledge of general education subjects, application of computational skills in practical situations, logical reasoning, substantiation of one's actions and performance of actions according to the algorithm	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
				economic analysis of energy saving measures					
<b>Substances in the Life of Modern Man (Language – Ukrainian)</b>									
Department of Theoretical and Applied Chemistry	Bolshanina S.B.	Bolshanina S.B.	Ability to apply knowledge in practical situations	Find and analyze information from various sources about substances in the human body and in the composition of food, clothing, medicines, cosmetics. Apply knowledge about substances for the selection of food, clothing, household chemicals, cosmetics. Assess the impact on the human body of certain substances in food products, household chemicals, cosmetics	Lectures, practical classes; group work; problem solving, business games	Bachelor	For the whole contingent	Possession of knowledge and skills in chemistry at the level of the program of the standard of secondary school / Chemical laboratory, multimedia audience	Spring semester
<b>Energy Saving (Language – Ukrainian)</b>									
Department of Applied Hydroaero-Mechanics	Captain M.I.	Khovansky S.O.	The desire to preserve the environment	To determine the quantitative characteristics of energy and power of energy losses and reserves of energy saving in various physical and technological processes. Use devices to account for and control the cost of energy resources. Conduct energy audits at the utility level, develop proposals and action plans to reduce energy losses. Calculate and choose the best options for combining types of	Lectures, practices, teamwork, individual problem tasks	For the whole contingent	For the entire contingent, except for the specialty 144 Heat and energy	Basic (school) knowledge of subjects. A multi-active lecture audience is needed	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
				building materials and wall thickness of building structures to minimize heat loss and heating. To develop economic schemes of heating and lighting in working and household premises					
<b>Engineering Psychology (Language – Ukrainian)</b>									
Department of Technology of Mechanical Engineering, Machines and Tools	Kushnirov P.V.	Kushnirov P.V.	Ability to abstract thinking, analysis, and synthesis	Identify the causes of errors in the management of equipment. Assess the psychological and psychophysiological capabilities of man in the system "man-machine". To present engineering-psychological and ergonomic requirements for technology	Lectures and practical work	For the whole contingent	For students of TeSET and EIIT faculties	Basic (school) knowledge of subjects. A multi-active lecture audience is needed	Without restrictions
<b>System engineering for everyone (Language – Ukrainian)</b>									
Department of computer mechanics named after Vladimir Martsinkovsky Section "Resistance of materials"	Zhigiliy D.O.	Zhigiliy D.O.	Ability to abstract thinking, analysis, and synthesis	Implement a full cycle of development of technical systems in the interaction of specialists in various fields. Eliminate various kinds of systemic contradictions. Formalize tasks and solutions based on the analysis and synthesis of existing problems and the development of an ideal calculation model of the experimental object. Make rational decisions in the development of technical systems	Lectures and practical work	For the whole contingent of students	For students of TeSET and EIIT faculties	Basic knowledge of mathematics. A multi-active lecture audience is needed	Without restrictions
Department of Machine-Building Technology,	Nekrasov S.S.	Nekrasov S.S.							

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	Lectures	Seminars, practical and laboratory classes							
Machines and Tools									
<b>Human Ecology (Language – Ukrainian)</b>									
Department of Ecology and Environmental Technologies	Shevchenko S.M.	Shevchenko S.M.	The desire to preserve the environment	Know the anthropogenic factors that reduce the environmental safety of man. Understand current global and regional environmental and demographic issues. Evaluate indicators of comfort, discomfort and extremity of human living conditions	Lectures, practice-oriented learning, teamwork, project work	Without restrictions	For the whole contingent	Without restrictions / Multi-media audience	Without restrictions
<b>Landscaping (Language – Ukrainian)</b>									
Department of Ecology and Environmental Technologies	Gurets L.L., Kornus A.O.	Gurets L.L., Kornus A.O.	Ability to develop and manage projects	Understand the ecological and aesthetic functions of green spaces. Carry out design of objects of landscape design. Carry out selection of plants and artificial materials	Lectures, practice-oriented learning, teamwork, project work	Without restrictions	For the whole contingent	Without restrictions / Multi-media audience	Without restrictions
<b>Ecological Tourism (Language – Ukrainian)</b>									
Department of Ecology and Environmental Technologies	Trunova I.O., Yakhnenko O.M.	Trunova I.O., Yakhnenko O.M.	The desire to preserve the environment	Rationally solve the problem of the impact of green tourism on the environment. To use this direction of tourism for the well-being of natural territorial complexes and tourists. Develop ecotours within protected areas	Interactive lectures, practice-oriented learning, teamwork	Without restrictions	For the whole contingent	Without restrictions / Multimedia audience	Without restrictions
<b>Green Initiatives of Smart Cities of the World (Language – Ukrainian)</b>									

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	Lectures	Seminars, practical and laboratory classes							
Department of Ecology and Environmental Protection Technologies	Ableeva I.Yu. Chernysh E.Yu.	Ableeva I.Yu. Chernysh E.Yu.	The desire to preserve the environment	Identify programs and companies in cities to achieve the Sustainable Development Goals. Substantiate and implement environmental standards at the local level. Assess the opportunities and risks for modern man in the educational space of smart society. Analyze the standards of "green" construction and urban solutions to protect the natural environment of the city	Interactive lectures, problem lectures, practice-oriented learning	Without restrictions	For the whole contingent	No restrictions / Multi-media audience	Without restrictions
<b>Landscape Ecology (Language – Ukrainian)</b>									
Department of Ecology and Environmental Protection Technologies	Cornus A.O.	Cornus A.O.	The desire to preserve the environment	Perform analysis of patterns of structure, functioning, dynamics and development of landscapes. Perform analysis of elements of the morphological structure of the landscape (facies, tract, terrain). Be able to determine the levels of anthropogenic impact on the landscape and its response. Perform analysis of the resistance of landscapes to anthropogenic loads	Interactive lectures, lectures-discussions, case method	Bachelor	For the whole contingent	Without restrictions	Without restrictions
<b>Environmental Standardization, Certification, And Labelling (Language – Ukrainian)</b>									
Department of Ecology and Environmental	Ableeva I.Yu., Roy I.O.	Ableeva I.Yu., Roy I.O.	The desire to preserve the environment	Determine the environmental labelling of products in accordance with environmental certificates.	Interactive lectures, problem lectures, practice-oriented learning	Without restrictions	For the whole contingent	Without restrictions / Multimedia audience	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
Protection Technologies				Substantiate and implement environmental standards for educational and educational institutions. Choose products with better quality and environmental characteristics. Analyze the safety of working conditions in accordance with the system of standards for safety of life					
<b>Introduction to EU Climate Policy (Language – Ukrainian)</b>									
Department of Ecology and Environmental Protection Technologies	Vaskina I.V.	Vaskina I.V.	The desire to preserve the environment	Know the causes of climate and the consequences of change. Understand European and international climate policy. Combat climate change in everyday life and professional activities	Lectures, discussions, practice-oriented learning	Without restrictions	The entire contingent of the Faculty of TeSET	Multi-media audience	Without restrictions