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							
IT ELECTIVES https://pg.cabinet.sumdu.edu.ua/catalog									
Components of Scratch Programming (Language – Ukrainian)									
Department of Electronics, General and Applied Physics	Tkach Olena Petrivna	Tkach Olena Petrivna, Tishchenko Konstiantyn Volody-myrovich	Ability to abstract thinking, analysis, and synthesis. Ability to generate new ideas (creativity). Ability to evaluate and ensure the quality of work performed	Use the capabilities of modern information technologies through visual programming languages. Understand the principles of creating program code and adapt it to the tasks. Develop interactive multi-action projects (animations, games, simulators for memorizing information) by combining graphic design, logical thinking, and analysis of processed data	Interactive lectures, practical classes, teamwork	Without restrictions except for specialty 171 Electronics	For the whole contingent except for specialties 171 Electronics, 122 Computer Science, 113 Applied Mathematics	Basic computer skills	Without restrictions
Sports Programming (Language – Ukrainian)									
Department of Computer Science, ICT Section	Petrov Serhiy Oleksan-drovych	Petrov Serhiy Oleksand-rovych	Ability to apply knowledge in practical situations. Ability to make informed decisions. Ability to abstract thinking, analysis and synthesis	Be able to use a programming language to implement simulation algorithms. Be able to define and implement data structures for effective solution of applied problems	Interactive lectures, practical classes	Without restrictions	For the whole contingent except for the specialty 122 Computer Science	Basic computer skills	After 3 semesters
Modern Technologies of Two-Dimensional Computer Animation (Language – Ukrainian)									
Department of Electronics	Horyachev Oleksiy	Horyachev Oleksiy	Ability to abstract thinking, analysis, and synthesis	Know the basic concepts, terms, and principles of classical animation. Know the	Lectures, laboratory classes, independent work	Without restrictions	For the whole contingent	Basic computer skills.	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
and Computer Engineering	Yevhe-niyovych	Yevhe-niyovych		methods of creating computer animation based on working with vector and raster images. Be able to create animated videos, banners, graphics and convert them into standard formats for further use in information, entertainment, education, and other fields				Multi-media audience for lectures, computer class for laboratory work	
Algorithms of Artificial Intelligence (Language – Ukrainian)									
Department of Nano-Electronics	Borisyuk Vadim Mykolay ovych	Borisyuk Vadim Mykolayovy ch	Skills in the use of information and communication technologies. Ability to abstract thinking, analysis, and synthesis	Assimilate new knowledge, advanced technologies, and innovations, find new non-standard solutions and means of their implementation; meet the requirements of flexibility in overcoming obstacles and achieving the goal, rational use and standardization of time, discipline, responsibility for their decisions and activities	Interactive lectures, practical classes	Without restrictions	For the whole contingent	Without restrictions	Without restrictions
Creation and Promotion Of Websites (Basic Course) (Language – Ukrainian)									
Department of Computer Science, ITP section	Shendryk Vira Viktorivna Parfenen-ko Yuliya Viktorivna	Parfenenko Yuliya Viktorivna, Boyko Olga Vasylivna	Skills in the use of information and communication technologies, information management skills	Know the basic concepts of web-technologies, the principles of the Internet and WWW, the basic concepts of markup language HTML web pages and cascading tables of CSS styles, basic principles, technologies, and techniques of creating websites. Gain practical skills in using tool software tools for creating websites, with the help of CMS on the example of the most	Interactive lectures, practical work, independent work	Bachelor	For the entire contingent except for specialties 122 Computer Science, 125 Cyber Security	Basic skills of working with a personal computer	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
				popular CMS WordPress, as well as techniques for promoting websites on the Internet. Master knowledge of SEO (search) optimization of sites, skills in site registration in search engines and directories, web-analytics, promotion of websites in social media. Gain practical skills of hosting your own website on the Internet					
Creation and Promotion of Websites (Advanced Course) (Language – Ukrainian)									
Department of Computer Science, ITP section	Shendryk Vira Viktorivna Parfenen-ko Yuliya Viktorivna	Parfenenko Yuliya Viktorivna, Boyko Olga Vasylivna	Skills in the use of information and communication technologies, information management skills	Know the technologies of web-programming on the client side. Gain practical skills of software interaction with HTML documents based on DOM API. Know the syntax of the JavaScript programming language and master the skills of its use in managing the object model of the document and creating interactive elements of webpages. Be able to use JavaScript libraries to create websites on the example of the jQuery library. Know the principles of search engine optimization of websites written using JavaScript	Interactive lectures, practical work, independent work	Bachelor	For the entire contingent except for specialties 122 Computer Science, 125 Cyber Security	Knowledge of HTML and CSS, acquired independently or after studying the course Creation and promotion of websites (basic course) / Multimedia audience for lectures, computer class for practice	After the course Creation and promotion of websites (basic course)
Simulation in 3ds Max (Basic Course) (Language – Ukrainian)									

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	Lectures	Seminars, practical and laboratory classes							
Department of Computer Science, ITP section	Baranova Iryna Volody-myrivna	Baranova Iryna Volodymy-rivna, Koval Maksym Volodym-yrovych	Ability to abstract thinking, analysis, and synthesis. Skills in the use of information and communication technologies. Information management skills	Know the principles of creating 3D graphics, three-dimensional modelling technologies, tools for working with the application 3ds max in modelling and visualization. Be able to create three-dimensional models, adjust materials and perform scene visualization	Interactive lectures, laboratory work	Without restrictions	For the entire contingent except for specialties 122 Computer Science, 125 Cyber Security	Basic skills of work with a personal computer, spatial imagination / Multimedia audience for lectures, computer class with appropriate software for laboratory work	After 3 semesters
Simulation in 3ds Max (Advanced Course) (Language – Ukrainian)									
Department of Computer Science, ITP section	Baranova Iryna Volody-myrivna	Baranova Iryna Volodymy-rivna, Koval Maksym Volodym-yrovych	Ability to abstract thinking, analysis, and synthesis. Skills in the use of information and communication technologies. Information management skills	Know the principles of modelling complex objects of 3D graphics, Loft deformation tools, technologies of surface (Surface, NURBS) and polygonal (Poly, Mesh) modelling, tools for developing PBR materials, the principles of visualizers, be able to create complex models of organic objects, composite types of materials and perform realistic visualization of the scene	Interactive lectures, laboratory work	Without restrictions	For the entire contingent except for specialties 122 Computer Science, 125 Cyber Security	After studying the course Modelling in 3ds max (basic course) / Multimedia audience for lectures, computer class with appropriate software for laboratory work	After the 3ds max Simulation course (basic course)
Website Design (Language – Ukrainian)									
Department of Computer Science, ITP section	Fedotova Natalia Anato-liyivna	Fedotova Natalia Anatoliyivna	Skills in the use of information and communication technologies.	Know the basic principles and approaches to site design. Gain practical skills in working with appropriate software. Be able	Interactive lectures, practical works	All levels	For the entire contingent except for specialties	Basic skills of robots with a personal computer /	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
			Ability to abstract thinking, analysis, and synthesis	to create an interface and prototype it for different devices. Know the capabilities of modern programs for professional proto-typing and various tools for professional development of site layouts and mobile applications			122 Computer Science, 125 Cyber Security	Multimedia-for the auditorium for lectures, computer class with appropriate software for practice	
Modelling and Research of Systems in the FlexSim Environment **(Video about the course: https://youtu.be/x24Fzwz7rvY) (Language – Ukrainian)**									
Department of Computer Science, ITP section	Chibiryak Yana Ivanivna	Chibiryak Yana Ivanivna	Ability to abstract thinking, analysis and synthesis. Ability to apply knowledge in practical situations. Ability to use information and communication technologies. Abilit y to conduct research at the appropriate level	Have modern methods of simulation - discrete-event, continuous and agent. Build three-dimensional simulation models in the software environment higher FlexSim. Investigate the effectiveness of systems for various purposes (production, service, technical, economic, social, etc.). Carry out analysis and optimization of systems in terms of efficiency	Interactive lectures, practical classes	All levels	For the whole contingent except for the specialty 122 Computer Science	Basic skills of robots with a personal computer / Multimedia audience for lectures, computer class with appropriate software for practice	Without restrictions
Programming for Mobile Devices (Language – Ukrainian)									
Department of Computer Science, ITP section	Nagorny Volody-myr Vyache-slavovych	Nagorny Volodymyr Vyacheslavo-vych	Ability to abstract thinking, analysis, and synthesis. Ability to apply knowledge in practical situations. Knowledge and understanding of the subject area and understanding of	Have basic concepts and skills when creating mobile applications for the Android operating system. Gain practical skills in developing graphical interfaces, using the latest principles of Material Design, work with libraries that allow you to create and maintain mobile applications designed for the Android	Interactive lectures, laboratory work	Without restrictions	For the whole contingent in addition to the specialty 122 Computer Science	Basic knowledge of programming, to know and be able to apply the basics of OOP. It is desirable to know the syntax of the	Without restrictions

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	Lectures	Seminars, practical and laboratory classes							
			professional activity. Ability to use information and communication technologies. Ability to search, process and analyze information from various sources	operating system of different generations. Gain the skills to use the modern Android Studio development environment				Java / Multimedia programming language for lectures, computer class for laboratory work	
Compression and Retrieval of Information (Language – Ukrainian)									
Department of Electronics and Computer Engineering	Sandpiper Igor Anato-lievich	Sandpiper Igor Anatolievich	Ability to use information and communication technologies. Abilit y to search, process and analyze information from various sources	Know the properties of information and its essence, the extent of information evaluation. Understand the information approach to solving problems of professional activity. Apply methods of information compression and modern archiving systems in professional activities. Apply information retrieval methods and modern search engines on the Internet to solve professional problems	Interactive problem lectures, exploratory practical classes	Without restrictions	For the entire contingent of applicants	Basic computer and Internet skills	Without restrictions
Web Design (Language – Ukrainian)									
Department of Economic Cybernetics	Gritsenko K.G.	Gritsenko K.G.	Ability to develop and manage projects. Ability to generate new ideas (creativity)	Conduct research, generate new ideas, carry out innovative activities. Apply modern information technologies in socio-economic research. Formulate new hypotheses and scientific problems in the field	Lectures, teamwork, laboratory work	Bachelor, Master	For the entire contingent except for specialties 122 Computer Science, 125 Cyber Security	There are no restrictions	There are no restrictions

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	Lectures	Seminars, practical and laboratory classes							
				of economics, choose appropriate directions and appropriate methods for their solution, taking into account available resources					