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UPDATING THE ICT STUDY PROGRAMS FOR MASTER

The faculty of electronic information system takes part in the Erasmus+-project "Modernization of Master Curriculum in ICT for Enhancing Student Employability in Belarus" (MaCICT). One of the main goals of the MaCICT project is to update the ICT study programs to become more labor market and society oriented, practice-based and student-centered. The training of specialists of new type fully complies with the goal and objectives of the National Strategy for Sustainable Socio-Economic Development of the Republic of Belarus for the period up to 2020, developed in accordance with the Law of the Republic of Belarus "On State Forecasting and Programs of Social and Economic Development of the Republic of Belarus" [1]. Such specialists will make a significant contribution to the effectively developing information and communication infrastructure in the country, designed to create the conditions for improving the efficiency of the economy.

The development of skills required for the intensively developing ICT sector of the national economy, as well as close cooperation with the ICT industry enterprises for use in the educational process of updated information and real-world problems, will significantly improve the quality of training, and advanced educational methods, methods and training technologies will ensure the effectiveness of practice-oriented training and the deepening of relations with the labor market.

Within the framework of the project 10 courses were upgraded. Information about some updated and developed courses with description of methodology, approaches and competencies are given in Table.

Table – Information about courses

Course name (type of upgrade)	Methodology, approaches and competencies
Special Mathematics training (developed)	Conducting lectures on the discipline is based on an active method of teaching, in which students are not passive listeners, but active participants in the class, answering questions from the teacher. The teacher's questions are aimed at activating the process of learning the material, as well as the development of logical thinking. The teacher outlines a list of questions in advance that stimulate associative thinking and establish connections with previously mastered material. Practical classes are conducted based on the implementation of the method of learning by action: problem areas are identified and groups are formed. When conducting practical classes, the following goals are pursued: applying knowledge of individual disciplines and creative methods to solve problems and make decisions; developing students' skills of teamwork, interpersonal

	communication and leadership development; fixing the foundations of theoretical knowledge. Interactive lectures, group discussions, role-playing games, training sessions, and analysis of situations and simulation models are used during training sessions. In the course of studying this discipline, fundamental ideas about dynamic phenomena are formed; the quantities that characterize these phenomena; the laws that they obey. This includes the acquisition of theoretical knowledge and practical skills for solving problems in the qualitative theory of dynamical systems, as well as problems about branching solutions of these systems when parameters change (bifurcation theory). The content of the course is also aimed at forming students' modern natural science worldview, developing scientific thinking and expanding their scientific and technical horizons.
Mobile Applications Architecture & Development (updated)	The main form of knowledge is classroom interactive lecture classes, which discuss the information provided between the lecturer and students in the form of a dialogue. At this stage of training, online lectures and webinars are also provided. At the second stage of training, an individual technical task is compiled and issued, the result of which will be a ready-made mobile application on the topic of the dissertation. In the process of project implementation, practical classes (individual and team work), group and individual consultations, meetings are held and intermediate control is performed as a code review in a distributed system by Git versions. At the final (third) stage, a full code review is conducted by the course supervisor and / or the supervisor of the dissertation. After a positive feedback on the work done (completed project), the student is allowed to credi (pass pre exam)t, which takes place in the audience and includes: 1. written answers to questions with the possibility of oral explanation; 2. project protection, which includes a demonstration of the finished application and the presentation of the results. In the process of studying the course, it is necessary to learn the distinctive features of the mobile platforms Android, iOS and Windows Phone, understand the principles and methods of building a graphical interface for mobile applications. It is necessary to study in detail the interaction mechanisms of user windows and data transfer methods, as well as data storage using a given operating system. Be able to create and manage local databases, and use adapters to display data. Pay attention to the principles of organizing secure access and data exchange between applications, debugging, testing and reviewing a mobile application.

Software Verification & Certification (updated)	The work of the first month is devoted to acquaintance with the basics of software verification theory. For full involvement of all the participants of the lecture session in the process of the material study, along with the usual type of lectures in the form of a monologue, they are also supposed to be held in an interactive form: in the format of mini-lectures (discussion of the learner's attitude to a question before and after the representation of material), lectures-consultations (presentation of material on the type of "questions – answers – discussion") and press conferences (with a system of reports lasting 5–10 minutes). In order to consolidate and adjust independently acquired knowledge and skills, to develop skills in group activities and to share experiences with other participants, it is also planned to hold group educational discussions, which will simulate real work situations and promote the development of skills to listen and interact with other people. Mid-term virtual consultations will be held during the self-study period. The self-study sessions will provide the opportunity to learn the bulk of the training information, while writing assignments and case study seminars will develop the skills to use the course concepts in a practical way. During the semester students are encouraged to conduct a detailed analysis of the requirements for their own Master's project software, which will allow them to understand better the goals of their individual research. Students are responsible for planning their own time. At the end of the semester students are expected to present this individual work, as well as analyze the requirements for each other's software and creative work on it. Testing features are considered during the whole life cycle of software development: levels, types and methods of testing and test designing. Further peculiarities of testing organization, planning and evaluation, as well as advantages and risks of testing automation are studied in detail. Within the framework of laboratory classes practical application of the approaches and methods studied in the sphere of software verification and certification is supposed. A lot of time is devoted to studying basic concepts: test cases and error reports. In the course of the work the peculiarities of both manual and automated testing are analyzed. Special attention is paid to using modern testing tools. The main tools used in training are Silenium Web Driver and JMeter.
Neural Network Modeling & Data Processing (updated)	As part of the lecture classes, analysis and discussion of examples of solving typical tasks is carried out, starting with analysis of the problem, selection and comparison of models, ending with a ready-made code and analysis of its effectiveness. As a

	main part of the laboratory work a sequential implementation of an individual project to solve an essential practical problem is provided (for example, image classification or analysis of semantic proximity of text documents). Upon completion of laboratory work, the project should be presented for discussion, and the results should be evaluated during the debate. This course aims to provide students with a clear idea of the actual problems of data analysis and possible ways to solve them. This will allow students to understand the specifics of work and requirements to specialists in the field of data processing, and therefore develop the necessary technical and research skills. At the same time, the knowledge gained in the course on designing models, planning computational experiments, developing and debugging code will also be very useful for successful training in other courses.

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ИСПОЛЬЗОВАНИЕ ИКТ НА УРОКАХ МАТЕМАТИКИ КАК СРЕДСТВО РАЗВИТИЯ ОДАРЕННЫХ ДЕТЕЙ В НАЧАЛЬНОЙ ШКОЛЕ

Возможно ли надолго удержать в ребенке чувство радостного удивления перед школой? Возможно ли, чтобы школа стала золотой порой в жизни каждого ребенка? Конечно, возможно. Только так и должно быть. Ведь начальная школа – это тот фундамент, от которого зависит дальнейшее развитие и обучение ребенка. Поэтому задача учителя – не только научить писать, читать, считать, но и развивать ребенка духовно, что очень важно в нашем мире, переполненном информацией. Академик А. П. Семенов сказал: «Научить человека жить в информационном мире – важнейшая задача современной школы». Эти слова должны стать определяющими в работе каждого учителя.

Человек, который эффективно владеет информационными технологиями, имеет новый стиль мышления. Он иначе подходит к организации своей деятельности и оценке возникшей проблемы. Уроки математики, на которых используются информационные технологии, имеют большое преимущество перед традиционными уроками. Такие уроки более интересны учащимся, следствием чего становится более эффективное усвоение знаний. Мы считаем, что самыми интересными и эффективными уроками являются уроки с использованием универсальных образовательных ресурсов, т. е. уроки, разработанные педагогом с учетом особенностей конкретного ученического коллектива и для конкретных учащихся.