"... **Informatics it is one of the most principal and necessary subject matters for the current generation of the information society to enable it to keep pace with the times, and sometimes be ahead of it...**"

INFORMATION PACKAGE

FACULTY OF INFORMATICS AND COMPUTER SCIENCE

Kyiv, 2023

CONTENT

*** *The information provided is current as of the 2023/2024 academic year.*

Please note that minor changes may occur in the list of training specialties and educational programs/specializations for the next academic year.

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1. COMMON DESCRIPTION OF THE FACULTY

Informatics is one of the most important and necessary subject matters for the current generation of the information society to enable it to keep pace with the times, and sometimes be ahead of it. A large number of the available modern achievements of human society, as well as the unprecedented potential of its development, are based on the use of computer and software systems. Informatics and computer sciences are the means and technics that are needed in all areas of human activity. They offer significant opportunities for many spheres of life, increasing speed, improving quality and productivity, and extending the geographical space.

The applicability of the knowledge areas and specialties, combined with a strong and reputable brand of the Igor Sikorsky KPI are the factors that will guarantee not only employment but also the further career of a future specialist – a graduate of the **Faculty of Informatics and Computer Science (FICS)** anywhere in the world.

The faculty trains qualified experts in the development and operation of software and hardware of the computer and computerized systems and networks, the introduction of modern information technologies of general and designated purpose for various branches of science and industry. They are capable of creating and maintaining computer systems and computerized data processing and management of organizational and technical facilities.

Graduates work as managers and developers of hardware and software systems, project managers, and managers of informational, computer, and computerized systems and networks in the public and private scientific, industrial, banking institutions and firms.

2. STRUCTURE

The Faculty of Informatics and Computer Science *includes:*

1. **Department of Computer Engineering;**

2. **Department of Information Systems and Technology;**

3. **Department of Informatics and Software Engineering.**

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3. EDUCATIONAL PROGRAMS

Levels of higher education. Training of students at the **FICS** is carried out at three levels of higher education.

At the first level (Bachelor's course, I-IV academic years) students acquire fundamental knowledge in physics, mathematics, mechanics, computing, informatics, and special disciplines. During the fourth year, they prepare and defend the bachelor's thesis and acquire a Bachelor's degree.

At the second level, (Master's course, I-II academic years) students acquire relevant professional skills including laboratory practice. Applicants prepare to defend a master's thesis and acquire a Master's degree.

The third educational-scientific level – postgraduate studies, I-IV academic years. Applicants defend their dissertations and they are awarded the educational qualification of Doctor of Philosophy (Ph.D.).

Terms of training: Bachelor – 4 years; Master (education-professional program) – 1.5 years; Master (education-scientific program) – 2 years; Ph.D. – 4 years.

1. Department of Computer Engineering provides training under the following Educational Programs:

Specialty	Educational Program	Levels of higher education		
		First	**Second**	**Third**
121 Software Engineering	Computer Systems Software Engineering	Bachelor *EPP*	Master *EPP*	–
	Computer and Information Systems Software Engineering	–	Master *ESP*	–
	Software Engineering	–	–	Ph.D. *ESP*
123 Computer Engineering	Computer Systems and Networks	Bachelor *EPP*	Master *EPP*	–
			Master *ESP*	
	Computer Engineering	–	–	Ph.D. *ESP*

Comment: *EPP* – Educational-Professional Program
ESP – Educational-Scientific Program

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Established in 1960, the Department of Computer Science is the first and leading department in Ukraine to train specialists in the field of software and hardware of modern computers, computer systems and networks: project managers, developers, users, programmers, system programmers, system administrators.

Students obtained gain comprehensive knowledge in the design, development, and operation of the system and application programming of complex computer systems: distributed and clustered computing systems, local, global, and corporate computer networks.

Activities of graduates are associated with the development and maintenance of application software for computer systems and networks, corporate networks and systems, decision support systems, automated control systems, intelligent systems, business software, web portals, multimedia software, databases and knowledge bases, software for information protection in computer systems and networks.

2. Department of Information Systems and Technology provides training under the following Educational Programs:

Specialty	Educational Program	Levels of higher education		
		First	**Second**	**Third**
126 Information Systems and Technologies	Integrated Information Systems	Bachelor *EPP*	Master *EPP*	–
	Dataware of Robotic Systems	Bachelor *EPP*	Master *EPP*	–
	Information Management Systems and Technologies	Bachelor *EPP*	Master *EPP*	–
			Master *ESP*	
	Information Systems and Technologies	–	–	Ph.D. *ESP*

Comment: *EPP* – Educational-Professional Program
ESP – Educational-Scientific Program

Graduates gain theoretical and applied knowledge that allows them to solve complex management problems in the field of information technology, which involves the use of theory and methods of computer science and modern software development technologies.

The fundamental mathematical training that graduates receive at the department allows them to solve complex, potentially unexplored problems concerning various spheres of society. Our graduates are professionals in the analysis of business processes, their formalization, and modeling, which together with the training in software engineering allows you to design and implement complex information systems and technologies.

Graduates are involved in all stages of creating applied software products and systems: from subject area analysis, and architecture design to final software product development and implementation.

3. Department of Informatics and Software Engineering provides training under the following Educational Programs:

Specialty	Educational Program	Levels of higher education		
		First	**Second**	**Third**
121 Software Engineering	Information Systems Software Engineering	–	Master *EPP*	–
	Computer and Information Systems Software Engineering	–	Master *ESP*	–
	Software Engineering	–	–	Ph.D. *ESP*

Comment: *EPP* – Educational-Professional Program
ESP – Educational-Scientific Program

The feature of graduates' training is a deep study of modern high-tech science and technology: information technology; computer, electronics, and microprocessor technology; systems and networks of data communication and telecommunications; computerized control systems. Specialist's activities are engaged in research, creation, and implementation of computerized control systems; microprocessor systems and automation;

telecommunication systems, and management networks.
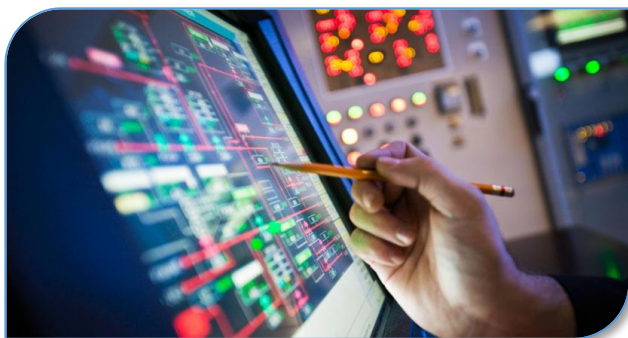
The activity of graduates is associated with the implementation of all stages of the creation of applied software products and systems: from the analysis of the subject area, and architecture design to the development of the final software product and implementation. A feature of graduate training is an in-depth study of modern areas, methods, and technologies of design, development, testing, implementation, and maintenance of software products and systems, the ability of software collaborative design.

4. TRAINING AND LABORATORY BASE

Department of Computer Engineering has a modern technical base, which consists of seven training and four research laboratories, equipped with modern technics. The department is one of the founders and developers of the concept of the Supercomputing Center design. Personnel of the department occupy key staff positions of the Center and make the main efforts to provide a high level of Center efficiency and technical support.

The department of computer engineering has deployed a GRID system based on middleware gLite 3.1, which is used to train students in modern IT technologies and solve complex scientific and engineering problems. Skills in the GRID environment enable efficient use of computing resources of GRID-systems in Ukraine and the world.

First in Ukraine educational and scientific center, which was organized by the company Hewlett-Packard (HP), operates in the department. The primary task of the center is to support Ukrainian universities in the training of high-level IT professionals and providing students with access to modern computer technology. Students receive training in HP server technologies and obtain an international certificate.

A Joint research laboratory of advanced information technologies with Samsung allows the participation of students and teachers in advanced R&D developments.

Participation of the department in international (Tempus, Erasmus +, H2020) projects (Tempus, Erasmus +, H2020 allows students and teachers to gain experience in cooperation with foreign universities and organizations, as well as to hold joint conferences, training, and internships.

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Department of Information Systems and Technology equipped with modern technics. Every student has the opportunity to work at a certain time in the laboratories:

- OSS-systems design laboratory;
- Convergent networks laboratory;
- Telecommunication systems and networks laboratory;
- Laboratory of infrastructure (IaaS);
- Laboratory of the platform (PaaS) and software (SaaS) services;
- Computerized control systems laboratory;
- Laboratory of electronics and microprocessor technology;
- Laboratory of distributed information processing systems;
- Laboratory of industrial automation.

The classes of the department are equipped with modern personal computers, which are connected by a local area network, which allows students to study comprehensively the latest advances in information technology, and work on the global computer network Internet with the use of WiFi.

The department has research and training centers and laboratories "NetCracker Technology", "EPAM Systems" and "PortaOne".

The Cisco Academy, the Cisco Academy Support Center in Ukraine, and the Cisco Academy Instructor Training Center have also been established and are operating effectively.

Department of Informatics and Software Engineering. The teaching of basic academic disciplines at the department is carried out with the use of modern technical means, which allows for increasing the efficiency of students' perception of the material.

The department has 6 computer classes, and two specialized laboratories equipped with about 150 computers:

- Laboratory of Programming Basics
- Laboratory of Database and Knowledge Systems
- Information Systems Laboratory
- Programming Technology Laboratory

Computer classrooms are equipped with modern computers. All computers are connected to the local computer network of the department, which is part of the computer network of KPI.

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The educational process uses modern software from the world's leading companies. This software supports all disciplines of programming cycles, systems engineering, and system integration.

5. .RESEARCH ACTIVITY

The scientific potential of the faculty is concentrated foremost in two divisions - "Research Institute of System Technologies" and "Research Institute of Information Processes." Scientists of these institutes carry out fruitful fundamental and applied research in computer science and information technology.

Scientific schools of professors V. Kostyuk., K. Samofalov., G. Lutskiy, and O. Pavlov were created and successfully functioning in the department. These schools have prepared dozens of doctors of technical sciences and hundreds of Ph.D. of technical sciences for Ukraine and abroad. The faculty actively engaged in scientific and educational work with the various institutions of the National Academy of Sciences of Ukraine (NASU).

A new scientific field "Theory of network information technologies, methods, and tools for hardware and software implementation of high-performance computer systems and networks focused on distributed processing of information in the cluster, GRID and Cloud environments" was formed at the *Department of Computing Engineering*.

Specialists of the *Department of Information Systems and Technology* have experience in engineering and technical developments on the orders of enterprises and organizations. Significant scientific and technical potential; well-equipped research and training laboratories; a combination of experience with the energy of young professionals makes it possible to implement a wide range of complex hardware and software systems. The specialists of the department mastered advanced equipment and production technology works.

Research is being conducted in the following areas:

- development of process control systems based on modern software and hardware (process controllers type P-130, KP-300, S7-200 (Siemens), Schneider, et al.), robust, neural network and fuzzy control algorithms;

- development of systems for collecting, recording, storing, processing, and displaying information about the process of activity of divisions of communal service (boilers, water heaters, gas distribution stations, etc.), the resulting data analysis and reporting;

- development of software for monitoring and management of telecommunications systems;

- development of methods and tools for analysis and management of regional information and communications networks, computing and monitoring of telecommunications equipment in local area networks;

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- development of measurement and control technics for automatic control systems for the food industry;
- development of software for enterprise management level;
- modernization of the CNC with the replacement of "Electronics-60" on an industrial PC with recovery (lost) algorithms, including systems analysis and software development based on Rational Rose;
- development and implementation of various systems, control, and management tools: a system of input, processing, data output, and transmission of control commands for electric power substations;
- development of methods and means of classification and recognition;
- development of a system for research of electrical and physical properties of industrial coal and determine its calorific capacitance, the quality control system of oil and petroleum products in the process of production and transportation;
- design, installation, configuration, and maintenance of local, corporate, and industrial networks;
- design and implementation of systems and networks for data transmission.

Department of Informatics and Software Engineering is engaged in research on scientific directions:
- methods of combinatorial optimization, strategic and operational planning, and decision-making;
- theory and creation of CASE technology, OLAP, and multiple tiers client-server systems;
- visual simulation modeling, generators of simulation programs, and methods of simulation accelerating stationary random processes;
- recognition methods and image analysis of situations;
- architecture and the basic elements of integrated computerized management systems and corporate networks.

6. INTERNATIONAL PROJECTS AND COLLABORATION

Within the framework of the academic mobility program, students of the faculty have the opportunity of simultaneous training at the University of Merseburg (Germany) to obtain bachelor's and master's degrees. Faculty Bachelor's program graduates can simultaneously receive a

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University of Applied Sciences

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master's degree at the University of Le Mans (France) in "Man and Computer" or "Real-time Architecture of Computer Systems."

Currently, specialists of **FICS** are leading performers in the international program TEMPUS-TACIS INTERNET to establish a high-speed optical network in the Igor Sikorsky KPI, which integrates more than 2,000 computers based on ATM technology, as well as the NATO program of Ukrainian scientific and educational URAN network creation.

The faculty cooperates with KOTC AT, which is the system integrator for the creation and implementation of information technology in the public and commercial organizations, using equipment of world companies Lucent Technologies, Philips, ASCOM, Bay Networks, Compaq, TANDEM, Gateway 2000, ALR and other leading manufacturers of communication tools, computing technics, system and applied software.

7. CONTACT INFORMATION

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