Computing and Informatics, professional undergraduate study -learning outcomes-

III semester
Computer Networks

1. Analize the way how state-of-the-art computer networks operate
2. Distinguish functions of different layers in computer communications
3. Identify the computer networks functional elements and the parts
4. Propose a computer network solution
5. Compose necessary computer networks parts in order to enable required functionality
6. Mutually connect computer and telecommunication networks
7. Evaluate the security level of a computer network as the part of electronic communications network

Data Structures and Algorithms

1. Compare different algorithms and analyze their computational complexity,
2. Develop recursive algorithms for solving more complex computational problems,
3. Design solutions based on basic data structures, such as lists, stacks, and queues,
4. Design solutions using more advanced data structures, including trees, heaps, and priority queues,
5. Select appropriate sorting algorithms according to data type and application requirements,
6. Combine efficient sorting and searching methods, including the use of hashing techniques in practical applications.

IV semester
Information Security

1. Explain the role of technical, organisational and human resources factors involved in information security processes in an organisation
2. Apply the rules to set up an information security management system
3. Recognize the threats to an information system and its vulnerability
4. Analize information system security level before new technical solutions will be apply in order to improve existing status
5. Evaluate risks and threats to information security
6. Apply the solutions for information security of the data bases
7. Elaborate and apply the ways of protection and information security level increase in electronic business processes
8. Analize and prevent the threats to information security in Internet
9. Evaluate security level and design the mechanism to increase the level information security of the electronic communications networks
10. Evaluate the information security level from technical m legal and economical point of view

IV semester
Business application development

1. Analyze the development environment, libraries, and programming frameworks for the development of applications with a graphical user interface.
2. Develop an application with a simple graphical user interface that contains components such as buttons, drop-down lists, check boxes, dialogs, etc.
3. Develop an application that can save user settings (INI/Windows registry) and process and exchange data in XML and JSON formats.
4. Develop an application that can communicate with the database and perform CRUD (CREATE/READ/UPDATE/DELETE) operations.
5. Develop an application that can perform its tasks using multiple processor cores and threads, with the implementation of thread synchronization and mutual locking mechanisms.
6. Develop an application that enables network client-server communication based on TCP/IP and UDP protocols, as well as communication with SOAP and REST web services.
7. Develop an application that uses hash functions, encryption and decryption of content using symmetric and asymmetric cryptographic algorithms.
8. Develop own static LIB and dynamic DLL libraries and implement them in new projects using static and runtime linking of program code.

V semester
Security of Computer Systems

1. Set the requirements and evaluate the characteristics of computer security concepts
2. Evaluate and classify the threats to the computer networks and computer program solutions
3. Elaborate stet-of-the -art concepts for cybersecurity
4. Check and reconsider the solution for protection and cybersecurity prevention in both computer program and computer network concepts
5. Describe and elaborate the fundamental principles of digital forensic

Machine Learning and Artificial Intelligence

1. Identify basic machine learning methods and approaches,
2. Describe fundamental machine learning architectures and algorithms,
3. Explain basic neural network architectures and their operation,
4. Apply basic machine learning models to solve simple practical problems,
5. Distinguish between logical and statistical approaches to problem solving in artificial intelligence,
6. Use basic development environments and tools for modelling and solving artificial intelligence problems.