Program: Information Engineering (in English)

Mission

The mission of the study program is to provide specialized training in the direction of Information Engineering that must be carried out under the conditions of a solid general training.

The purpose of such training is to acquire knowledge and professional qualification, allowing the use of methods and working techniques suitable for the design of secure, high-quality, intensive information systems with advanced software and based on artificial intelligence, and to form the necessary qualities to correctly assess the economic and social consequences of the application of technical progress.

Thus, graduates are provided with adequate skills with the needs of current qualifications and a modern, quality and competitive scientific and technical training, allowing them to be hired quickly after graduation, the study program being perfectly framed in the policy of the University Politehnica of Bucharest and of the European partner universities both in terms of content and structure, as well as in terms of skills and international openness offered to students.

Specialists in Information Engineering will be able to assert themselves in the most diverse fields of scientific research, design, but also in the fields of private economy or administration such as for example: research, planning (production preparation, production, sales, investment planning), logistics (purchasing, storage, transport), sales (offer, orders, advertising, customer service), economic information system (accounting, finance), administration (recruitment of personal, data processing) etc.

Objectives

- ➢ To achieve a balanced structure between general engineering training, specific engineering training, specialized training, professional communication skills, culture and humanism;
- ➢ To allow the training of specialists able to analyze, design and realize products and services in the field of program and application systems engineering in general and intelligent systems in particular;
- ➢ To ensure high compatibility with the programs of European universities;
- ➢ To get as close as possible to the European criteria for accrediting specializations in terms of quantifiable results in professional and individual training.

Knowledge:

- The object-oriented paradigm, which is based on classes, objects, methods and interfaces, as well as their application in software design and analysis, organization and programming techniques.
- The methodologies and tools used to create a logical and physical structure of databases, such as logical data structures, diagrams, modelling methodologies, and entity relationships.
- The sequence of stages such as planning, creation, testing and application and models for developing and managing the life cycle of a system.

- Techniques and principles of software development, such as analysis, algorithms, coding, testing and compilation of programming paradigms (e.g. object-oriented programming, functional programming) and programming languages.
- The programming paradigm based on combining the markup (which adds context and structure to the text) and other web programming code to perform appropriate actions and visualize the content.
- Engineering elements such as functionality, multiplier capacity and costs related to design and how they are applied to the realization of engineering projects.
- Understand project management and the activities involved in this area. Knows the variables involved in project management, for example time, resources, requirements, deadlines, and responds to unforeseen events.

Skills:

- Creates and documents the structure of software products, including components, coupling, and interfaces. Ensures feasibility, functionality and compatibility with existing platforms.
- Applies schemas and database design models, defines data dependencies, uses query languages and database management systems (DBMS) to develop and manage the database.
- Uses reusable solutions, prepares best practices, in order to carry out joint ICT development activities in software development and design.
- Creates an incomplete or preliminary first version of a software application to simulate some specific aspects of the end product.
- Acquires, corrects or improves knowledge of phenomena, using scientific methods and techniques, based on empirical or measurable observations.
- Manages the resources, budget, timelines and human resources related to engineering projects and plans programs and any technical activities relevant to the project
- It uses collections of codes and software packages that capture commonly used procedures to help programmers simplify their work.
- Configures and implements digital and analog electronic communications. Understand electronic diagrams and equipment specifications.

Responsibility and autonomy:

- Identifying roles and responsibilities in a multidisciplinary team and applying techniques for networking and effective work within the team.
- Management of processes and activities carried out in industrial organizations with the help of intelligent computer applications
- The responsible application of the principles, norms and values of the professional ethics in the accomplishment of the professional tasks and the identification of the objectives to be achieved, of the available resources, of the work stages, of the execution durations, of the related deadlines for achievement and of the related risks.

- Compliance with the different cultures, customs and methods and professional technical processes inherent in an industry with many differences based on locality or region or country or continent.
- Identifying opportunities for continuous training and efficient use, for its own development, of information sources and resources for communication and assisted professional training (Internet portals, specialized software applications, databases, online courses, etc.) both in Romanian and in a language of international circulation.
- The ability to communicate with the superior hierarchical structures and with the subordinated team;

Skills:

- Development and implementation of IT solutions for concrete problems
- Management of the lifecycle of hardware, software and communication systems based on performance evaluation
- Evaluation of functional and non-functional characteristics of hardware, software and communication components, based on metrics
- Elaboration of specifications and design of information systems using specific methods and tools
- Recognition and description of concepts specific to calculability, complexity, programming paradigms and modeling of computer and communication systems
- Analysis, design, execution and measurement of electonic circuits of low/medium complexity
- Use of simulation media for digital signal analysis and processing
- Honorable, responsible, ethical behavior in the spirit of the law to ensure the reputation of the profession
- Demonstration of the spirit of initiative and action for updating professional, economic and organizational culture knowledge

Credit points or workload (ECTS): 240

Occupations that can be practiced on the labour market - COR/ISCO-08 code:

COR/ESCO code: 252101 - COR/ESCO name: database administrator

Other : Computer network administrator - 252301; Analyst - 251201; Web page designer (higher education) - 216610; Software system engineer - 251205; System engineer in informatics - 251203; Computer system programmer - 251204; Designer engineer of systems and computers - 215214; Electronics engineer designer - 215213; Designer of information systems – 251101