ТЕХНИЧЕСКИ УНИВЕРСИТЕТ – СОФИЯ

AFFIRM

Rector:

(Prof. Dr. Ivan Kralov)
Date:

Educational qualification: **Bachelor**
Professional qualification: **Bachelor - Engineer**

Term of study: **4 years**
Form of training: **Full-time**

QUALIFICATION CHARACTERISTIC

of Bachelor of Engineering in the specialty

"Design and Programming of Electronic Systems"
from professional field **5.**2 Electrical Engineering, Electronics and Automatics

1. Educational objectives

The modern electronics industry is one of the most high-tech and dynamically developing areas of the industry. The need for preparing engineering personnel who find professional realization in this fast growing industry in the country is constantly increasing. The educational objective of the Bachelor of Science in Electronic Systems Design and Programming is the preparation of qualified engineers, and an environment for their development, with knowledge and practical skills in the design, programming, inspection and control of electronic devices and systems.

2. Knowledge and skills needed for a successful career

In order to meet the growing demand for qualified engineers in the electronics industry, the training in Electronic Systems Design and Programming is focused on the acquisition of key competencies that enable successful implementation, such as the ability to develop electronic devices and systems of various types; the ability to use software for the development of electronic devices; the ability to perform basic operations in the installation and testing of electronic devices; the programming of mic

3. General theoretical training

The general theoretical preparation of Bachelors in the specialty "Design and Programming of Electronic Systems" includes the study of fundamental disciplines such as mathematics, physics, chemistry, theoretical electrical engineering, mechanics, mechanical systems, knowledge of methods and requirements for the development of technical documentation, fundamentals of programming, etc., which are the basis of engineering sciences.

4. Special preparation

The training in the specialty is in line with the latest achievements in the field of electronic industry, combining theoretical knowledge and practical skills, preparing students for research, design and production activities in the field of electronic technologies and their applications in all areas of industry, communications, healthcare, etc. By studying the specializing disciplines, students deepen their knowledge in specific, narrower "profiling" areas.

The emphasis is in several areas: obtaining fundamental knowledge of best practices in the software industry, the methodology of design, development and integration of software products, the principles of quality code and software project management, obtaining basic knowledge of the development of different types of software applications; studying methods for the design and use of microprocessors and microcontrollers, as well as their application in the field of production and service of electronic devices with microprocessor control; student

The approaches and technical means for quality assurance and reliability of electronic devices are studied. Students gain knowledge of performing statistical quality control, predicting reliability and applying sampling methods as well as accelerated test methods.

Special attention is focused on the design of electronic power and energy sources and practical experience in their research; introduction to the modeling and automated design of power electronic devices for the conversion of electrical energy; application of the approaches, methods and technical tools for the analysis and synthesis of electronic circuits and devices with specific purpose in medical electronic devices; mastering basic concepts and knowledge of systems with programmable logic controllers (PLCs); knowledge of students also acquire knowledge of modern computer communications and networks such as: open systems architecture - the ISO OSI model, the

INTERNET global computer network and modern Internet applications based on TCP/IP protocols. Gain their own experience in building computer networks, installing and administering network devices and applications; know modern innovations in optical communication systems. Parallel to the basic training, they receive up-to-date and useful information on management, company organization and management, marketing, project management and foreign language training.

The training culminates in the defense of an independently developed thesis with a specific topic.

5. Professional competences and realization

Graduates of Electronic Systems Design and Programming not only have a broad-based background, with deep knowledge of fundamental disciplines, but also develop the ability to independently obtain information in any field of knowledge. This facilitates adaptability not only in the various fields of the electronics industry, but also beyond. Engineers who graduate from the program are realized as specialists in the development of electronic devices and systems, including embedded microprocessor systems with various applications - industrial and automotive electronics, medical equipment, IoT, etc. The realization of the graduates of the specialty is mainly in the companies of the fastest growing industrial region of the country - "Trakia Economic Zone", leading companies in the electronic industry such as Sanmina Bulgaria Ltd, Sensata Technologies Bulgaria Ltd, OPTIX JSC, Btl Industries JSC and many others.