ТЕХНИЧЕСКИ УНИВЕРСИТЕТ – СОФИЯ

AFFIRM

Rector:

(Prof. Dr. Ivan Kralov)
Date:

Educational qualification: Master
Professional qualification: Master - Engineer

Term of study: 1 year
Form of training: **Full-time**

QUALIFICATION CHARACTERISTIC

at master-engineer on 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 Master of Science in Design and Programming of Electronic Systems prepares qualified engineers capable of making immediate contributions in the design, programming, structural engineering, modernization and operation of electronic devices and systems.

Additionally, the training enables students to acquire the skills and competencies to carry out design and research activities in various fields of science and industry. This allows them to continue their education to obtain the degree of Ph.

The curriculum of the specialty "Design and Programming of Electronic Systems" for the Master's degree, full-time study, has a duration of 1 year, includes 60 ECTS credits and is aimed both at graduates of the Bachelor's degree in the same specialty and students who have completed the Bachelor's and/or Master's degree in the following professional fields of higher education: 5.2. Electrical Engineering, Electronics and Automation; 5.3. Communication and Computer Engineering; specialty "Mechatronics" (5.1 Mechanical Engineering) and specialty "Industrial Engineering" (5.13 General Engineering).

2. Knowledge and skills needed for a successful career

Successful graduates should have in-depth theoretical knowledge, professional competencies in the creation, development, programming and maintenance of a wide range of electronic devices and systems with applications in communications, computing and data storage, medicine, automotive, clean technologies, etc.

3. General theoretical training

The Master's course in Design and Programming of Electronic Systems is a natural continuation and upgrade of the Bachelor's degree. The general theoretical training in basic fundamental areas should have been acquired during the Bachelor's degree studies, and the knowledge acquired in the previous stage of studies is deepened and broadened in order to prepare Master Engineers to successfully solve a wide range of engineering problems.

4. Special preparation

The Master's degree in Design and Programming of Electronic Systems is tailored to the latest developments in the electronic industry, household, communications, healthcare, etc. It is mainly carried out through specialized training, which includes training of students in various areas: circuit engineering and programming for embedded systems; system programming for embedded systems; acquisition of knowledge in the field of artificial neural networks for information and information signal processing, design of systems based on learning and self-learning; acquisition of knowledge in the field of Internet-based medical systems for remote monitoring of vital physiological parameters, as well as knowledge of the development of In-depth training in mathematical methods for numerical processing - in particular, acquiring knowledge and practical skills in the use of probabilistic and statistical methods in solving the most important theoretical and practical problems of electronic systems with emphasis on statistical processing of measurement and research data.

There are disciplines in the field of modern industrial electronic devices and systems, electronic energy converters, as well as electronic converters for control of electric drive systems. Along with in-depth specialized technical training, students receive up-to-date and useful project management information as well as knowledge in the field of industrial legislation.

The training is characterized by the practical orientation - coursework and course projects are developed in selected disciplines. A thesis with a specific topic is developed during the last semester of study. The training ends with the defense of the independently developed diploma project.

5. Professional competences and realization

Graduates of the specialty "Design and Programming of Electronic Systems", M.Sc. have not only in-depth theoretical knowledge, but also develop the ability to independently obtain information in any field of knowledge, as well as the development of scientific research skills. This facilitates adaptation not only in the various fields of the electronics industry, but also outside it, such as performing managerial functions in public and private business, teaching and learning in vocational schools and technical universities.

Master-engineers who graduate from the specialty 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, etc.