Degree Programme: Mechatronics
ECTS code: MEH

Qualification awarded: MEng

Education forms: Full-time

Term of education:
1 year for MEng after BEng"

Final examination: each degree is defended by developing a diploma project

Admission requirements: according to the general requirements and rules for admission of TU-Sofia

Access to further studies: Graduates of the specialty with a master's degree have the right to apply for a doctorate at home or abroad in the relevant scientific fields..

Programme importance: Mechatronics is a relatively new interdisciplinary specialty, which in recent years has been intensively taught in over 90 universities. In the last 35-40 years, in all highly developed industrial countries, great attention has been paid to machine-building production and its automation. In the early 1970s, along with the mass entry of industrial robots into Japanese industry, the concept of mechatronics emerged. Today, it is increasingly becoming an important integral part of technical training. Mechatronics is a new specialty, which is not only a combination of its constituent disciplines, but is also a mutual penetration and merging of mechanical, electronic and computer structures to realize a complete, functionally complete product called "mechatronic product".

General characteristics of the education:
The training in the specialty "Mechatronics" allows students to receive in-depth and integrated theoretical and practical training in the fields: mechanical engineering, instrument making, electrical engineering, electronics, information and computing and systems technology and others. in order to create, implement and operate mechatronic systems.

The specialty provides sufficient general training and solid basic knowledge necessary for the implementation of future engineering and scientific activities and providing appropriate professional flexibility. It provides knowledge of the methodological approach in the design and implementation of mechatronic systems for various purposes.

In the master's course of the specialty "Mechatronics" there are two main modules: robotic equipment, fine-mechanical equipment.

- "Mechatronic systems in discrete production" - design, programming and production of industrial robots and mechatronic systems, manipulation equipment and robotic systems; executive bodies; new materials and principles for construction and control of mechatronic systems and robots in medicine; modeling and simulation of mechatronic and robotic systems; diagnostics, operation and maintenance of mechatronic and robotic systems.
- "Optical, micromechanical and measuring equipment" - design, manufacture, operation, diagnostics and maintenance of office and security equipment; optical and laser technology; micromechanics, medical equipment; Measuring Equipment; optoelectronic technology.

The two fields have a common theoretical foundation, which includes general engineering and general special disciplines, satisfying both the general requirements of mechanical engineers and the specific requirements for mechanical engineers in mechatronics, which combine knowledge and skills in mechanical engineering, electronics and computer technology.

Each of the modules includes four specialized disciplines, which specify and deepen the preparation in the respective field.

The curriculum for the training of students in the specialty "Mechatronics" is in line with the requirements of TU - Sofia and is largely borrowed from the curricula of leading universities in Europe and especially in Germany. This allows for the mobility of students and the exchange of credit units when moving from one university to another.

The graduated mechanical engineer in the specialty "Mechatronics" will be able to perform research, design, engineering, production, operation, installation, repair, management and more activities related to the practical use of technologies, devices, mechanisms, equipment or other objects of mechatronics.

Educational and professional goals:
The graduate of the specialty "Mechatronics" must have in-depth combined-integrated knowledge in the field of mechanics, electronics and automation and in particular for automated drives of mechanisms and actuators, for servo drives, for microelectronic and optoelectronic control and monitoring systems, for sensors and sensors systems for collecting and processing information, for application of computer equipment and peripherals for control and management of mechanisms, technological processes and complex systems, etc., which will help him to successfully:

- to design and constructs elements, units, fixtures and matching devices and develops the relevant technical documentation;
- to organize the production and manages the activity of the production units, - to organize the use, maintenance and repair of the respective sites; - to control the quality of documentation, products and processes; - to work as a leader or team member; - support investment processes in Bulgarian and foreign companies.

Employment of the graduates:
The mechanical engineer in the specialty "Mechatronics" is prepared to work in:

- all branches and levels of the economy (manufacturing, service, transport, etc.) and of public life in which mechatronic technology, including integrated mechanics, electronics and cybernetics, is produced, designed and used;
- the state administration and the local self-government as users of such equipment.