Degree Programme: AUTOMATION, INFORMATION AND CONTROL ENGINEERING
ECTS code: BpAICE (BEng), MpAICE (MEng)

Qualification awarded: BEng and MEng

Education forms: Full-time

Term of education:
4 years for BEng,
1 year for MEng - for graduated bachelors and/or masters in professional field *5.2 Electrical engineering, electronics and automation* and specialty *"Mechatronics"* in professional field *5.1 Mechanical engineering* and *"Industrial Engineering"* in professional field *5.13 General Engineering*
2 years for MEng - for graduated "*professional bachelors*" in professional field *5.2 Electrical engineering, electronics and automation* and for graduated bachelors and/or masters in specialties from professional fields: *4.1 Physical sciences*, *4.5 Mathematics*, *4.6 Informatics and computer sciences*, *5. Engineering* (excluding professional field 5.2 Electrical engineering, electronics and automation and specialties "*Mechatronics*", and "*Industrial Engineering*" in professional fields *5.1 Mechanical engineering* and *5.13 General Engineering*)

Final examination: development and public defence of a diploma project for BEng and MEng

Admission requirements: according to the Technical University of Sofia regulations https://tu-sofia.bg/foreign-applications/site/index/page/how>

Access to further studies: After the graduation in MEng degree the study could be continued in a PhD degree program in the same or in another close area specialization

Programme importance: The AICE specialization emphasizes on both classical and modern trends in control systems design and industrial automation. An engineer with this specialization can be appointed with design and technological activities in the area of production of elements and devices for industrial automation, with the assemblage, tuning and maintenance of automatic production lines in all industrial areas and also in agriculture, transport systems, power engineering, etc.

General characteristics of the education: The specialty deals with the engineering fundamentals of technical cybernetics. It gives fundamental knowledge in the modeling of various processes in technical and organizational systems, electrical engineering, electronics, computer science, control theory in general engineering, science, humanitarian and economic knowledge, and learning a foreign language. There are special courses in the field of control theory, systems identification, automation and control of technological processes (process control), automation of electromechanical systems, measurement of electrical and non-electrical quantities, technical means of automation, microprocessor systems, programming and using computers modeling of systems management, systems analysis and decision making. Depending on the professional training of studying process there are the optional subjects in the following research areas:

Systems and control - to acquire knowledge in research, construction, operation and development of systems for automatic control of objects and systems (technical, economic and organizational) in various business sectors and non-productive sphere, as well as their technical, software and information insurance.

Electric Drives and Production Automation Systems - to acquire knowledge of electric drives, engineering design, manufacture and operation of electrical systems and automatic control of machinery, mechanisms, and moving production facilities.

Industrial Control Systems and Process Control - Knowledge of research, development, exploitation and development of systems for automation technology, information and communication processes, systems analysis and design, modeling, simulation and optimization, measurement, control and management of material, energy and information flows, decision-making in conflict and competition.

Robotics - relates to research, design, installation, management, programming and operation of robots, robotic complexes programmable automation and flexible manufacturing systems, technical vision, artificial intelligence, intelligent behavior systems.

Educational and professional goals: Quality and productivity in the situation of market economy and competition cannot be achieved without automation and effective control. This is why in all economy fields the specialists with this specialty are much sought after. The graduated specialists can work in all fields where

there is design and development of contemporary automation information systems. The graduated AICE specialty must acquire skills in:

- crating and using documentation in the field of automation and information-measurement systems;
- mounting, tuning, maintenance and utilization of automation devices
- design of devices in automation;
- management and marketing in the manufacturing process and trading with devices for automation;
- research and development;
- use of contemporary economically advisable technical, software and organizational-management tools;

Employment of the graduates:
The graduates with this specialization will be able to work successfully in all companies that are specialized in design, engineering, maintenance, research, education and servicing activities in the area of control engineering, information and measurement systems and industrial automation. The graduates could be realized as competent workers and researches in automatic control of engineering, physical, biological, medical, transport, economical and other systems in the broadest sense from theory, modeling, and design, through algorithms, software and hardware, networks and communication, automata, embedded systems and robotics, to practical applications, industrial implementations and their impact on society, namely:

- research, design, engineering firms and organizations in building complex technical, economic and organizational management systems of automated information technology;
- managerial and executive teams in the industry, energy, transport, construction, building automation, health, agriculture and in the service sphere;
- construction equipment and meteorological services, industrial enterprises, companies and units associated with measuring equipment, automation and quality control;
- companies aimed at the creation, production and operation of automation of programmable machines, mechanisms, robots and robotic systems, robotic industries.
- positions related to control and diagnostics;
- in the transport, energy, construction, agriculture, food, pharmaceutical and military industries, oriented towards the automated production and operation via mechanisms and robots;
- positions in design and operation of information systems in different fields.
- positions in educational and training process of staff in the field of automation, information and control engineering.