Course name: **Embedded systems**

No. of ECTS: **4**

Aim:

- Presenting various opportunities to use IT micro-systems to control devices, facilities and processes;
- Learning about methods of processes' automatisation using IT techniques;
- Learning about embedded systems' components and methods of their programming;
- Introducing to real time operating systems and their utilization in controlling processes.

Course content:

- Basics of controlling and adjustment;
- Continuous and discrete adjustment;
- Computer as a controlling device;
- Automation channel – output systems;
- Automation channel – input systems;
- IT control systems software;
- PLC drivers – structures, software, programming rules;
- Micro-controllers – basic architectures;
- Real time system;
- Exam

Skills:

- Knowledge on embedded system's architecture, construction of a micro-controller, construction and functions of input/output systems to an embedded system, roles and methods of mathematical description of controlling system's components based on microprocessors, typical features of dynamic controlled facilities, rules of creating controlling algorythms for real time systems;
- Ability to choose hardware components for an identified controlling problem, organize programming process and programists' environment to create and test an embedded system for a chosen software and hardware platform, identify parameters of a controlled process and use them while programming regulating functions, write the combinational and sequential controlling process as logical equations;

- Ability to design innovational solutions based on embedded systems in new areas of usage; to cooperate with specialists from different areas within embedded systems' projects; relevant competences to promote solutions based on IT controlling techniques in the society.

Form of teaching:

Lecture, e-learning