

Automation of Technological Preproduction Activities

Course Workload		Assessment form (examination/ graded test/ ungraded test)
ECTS	Hours	
3	108	Exam, course project

The course provides fundamental concepts and definitions, as well as general and theoretical issues related to the automation of technological and production processes. It includes an overview of automation tools and their areas of application. Students gain the necessary theoretical knowledge and acquire practical skills in selecting appropriate automation tools based on the nature of the tasks in industrial automation.

Course structure:

1. General concepts and definitions, structure, functions, and layout of robotic technological complexes

- 1.1. Types of RTC layouts
- 1.2. Automation and its levels
- 1.3. Degree of automation of an RTC
- 1.4. Industrial robots used in RTCs
- 1.5. Automatic machines, semi-automatic machines, special-purpose machines, and CNC machines
- 1.6. General structure of a Robotic Technological Complex (RTC)
- 1.7. Main functions of an RTC
- 1.8. Determination of the automation level of a production system

2. Fundamentals of Flexible Automated Technology and Design of Flexible Manufacturing Systems (FMS)

- 2.1. Key characteristics and definitions of Flexible Automated Manufacturing (FAM) and Flexible
- 2.2. Manufacturing Systems (FMS)
- 2.3. FMS levels
- 2.4. FMS operational reliability
- 2.5. Design of FMS (robotized technological complexes)