STUDY UNIT DESCRIPTION
Faculty of Engineering

CODE	EPC
TITLE	Modern programming techniques
LEVEL	
ECTS CREDITS	
DEPARTMENT	Automation and Computer Systems
DESCRIPTION	**Part 1.** Procedural programming in C++. It Includes theoretical information on the principles of building programs, branching and looping process performance, I /O for console working, arrays using and complex data types, working with linked lists and code structuring based on the creation of functions for solving tasks. **Part 2.** The principles of object-oriented approach to software development. It includes an overview of the properties of the three basic concepts of object-oriented programming: encapsulation, inheritance and polymorphism. Theoretical information available to allow the stream input /output, classes and their members, virtual, friendly and static functions and mechanism of templates. **Part 3.** Architectural approaches to programming. It includes review of the most common patterns of creational and structural programming. **Part 4.** Development of the system software. It Includes review of mechanisms of the file system, operating system registry, threads, processes, and communication interfaces. **Study-unit Aims:** This unit helps familiarize with the basics of algorithms and designing software. It allows to learn the basic constructions of C++ programming language, tools, and methods of modular and object-oriented programming. **Learning Outcomes:** 1. Knowledge & Understanding By the end of the study-unit the student will know: - Explain the basic programming concepts - Understand the basic data types and operations of C++ - Understand mechanisms of C++: functions, complex data types, templates, classes - Understand programming patterns 2. Skills By the end of the study-unit the student will be able to: - Develop software products for OS or Automation purposes - Take part in big software projects - Apply design patterns for propose modern approach to create programming products

Main Text/s and any supplementary readings:
- Stroustrup B., C++ Programming Language, The: Special Edition
- Hart J.M., Windows System Programming, Fourth Edition
- Gamma E., Helm R., Johnson R., Vlissides J., Design Patterns: Elements of Reusable Object-Oriented Software

ADDITIONAL NOTES

STUDY-UNIT TYPE Lecture and Tutorial

METHOD OF ASSESSMENT