



TRAINING AGENDA

Agreement number: PPI/SPI/2020/1/00029/U/00001		
Project title: Digital industry: training for students		
IMPK 1		
The scope of the training: Digitalization of production processes		
<u>Training dates for IMPK 1:</u> - 11.10.2021 – 29.10.2021 (1 edition) - 14.03.2022 – 01.04.2022 (2 edition)		
Serials No.	Title of a training	Number of hours
1.	<p>Selected issues of IoT (Internet of Things) systems engineering Basic concepts of systems approach. Definitions, taxonomies, properties. Historical and mathematical background. Examples of simple and complex systems. Mathematical models for complex systems engineering: simulations of transitions and complex structures.</p> <p>Databases in IT Basic mechanisms of data analysis - SQL language. Fundamentals of Structured Query Language (SQL), Data Definition Language (DDL) and Data Manipulation Language (DML).</p> <p>IT system security basics Basic mechanisms of ensuring security in OS Windows. Encryption of disks and partitions. Theoretical background: principle of operation, encryption algorithms. Program installation (configuration, disk determination, parameter selection, key generation). Analysis of the resilience of wireless networks. Theoretical basis: principle of operation, encryption protocols. Performing an attack on the WEP protocol. Performing a brute-force attack on the WPA / WPA2-PSK protocol.</p>	5 hours 5 hours 5 hours
2.	<p>Digital tools and digitalization in technology – product development, design, manufacturing and quality control</p> <p>Digitalization in product development, design and manufacturing Modern digital tools used in mechanical and manufacturing engineering (e.g. CAx software tools and machines). Application of CAx tools in manufacturing firms. Design of products and manufacturing processes. Product development. Technological process planning. CNC programming and CNC manufacturing.</p> <p>Introduction to Industry 4.0 with SAP Introduction to the Industry 4.0. Basic concept of Industry 4.0 by using the SAP Manufacturing Execution (ME) system. The use of a simulated production plant, represented by the Smart Factory Line Monitor. Advanced functionalities of the SAP Manufacturing Execution (ME) system.</p> <p>Digitalization in manufacturing process inspection Introduction to scanning electron microscope (SEM). Surface topography measurement and analysis (contact and non-contact methods). Automation features in surface topography analysis. 3D image stitching methods using white-light interferometry. Best practices for 3D reconstruction of 2D SEM images.</p>	4 hours 4 hours 4 hours



	Digitalisation in the field of product quality control Contact and non-contact coordinate measurements of products characterized by regular geometric shapes and composed of free-form surfaces. Stages of programming of a coordinate measuring machine.	3 hours
3.	Modeling of production processes Introduction to simulation. Simulation model. Simulation of production processes. Simulation of discrete events in production systems. Methods, techniques, tools for simulation processes. Simulation software - Enterprise Dynamics. Modeling of production systems with a professional DES-software - Enterprise Dynamics. Building business relationships. Business development aspects Stakeholders in business relationships. Conditions and requirements for building long-term relationships with stakeholders. Trust as an element of business relationships. Benefits of building long-term business relationships. Ways to build long-term business relationships (networking). Remote team management Remote team management: selected methods of team management; tools used for remote work. Form of classes: workshops.	6 hours 5 hours 4 hours
4.	Films promoting Poland	3 hours