LIST OF COURSES
INDUSTRIAL PNEUMATICS
- P1: Pneumatics - basic course
- P2: Electropneumatics - basic course
- P3: Design and simulation of pneumatic and electropneumatic systems
- P4: Basic principles of vacuum technology
- P5: Industrial pneumatics according to client’s individual needs (c)

POWER HYDRAULICS
Stationary hydraulics
- H1: Power hydraulic components and systems - construction and operation
- H2: Hydraulic drives and control systems in machines and devices
- H3: Proportional hydraulics and electrohydraulics
- H4: Servohydraulic drives and control systems
- H5: Diagnostics, maintenance and repairs of hydraulic devices and systems
- H6: Design of hydraulic drives and control systems
- H7: Energy efficiency of hydraulic drives
- H8: Servohydraulic drives: modeling, identification, control (c)
- H9: Power hydraulics according to client’s individual needs (c)

Mobile hydraulics
- HM1: Mobile hydraulics in machines and devices
- HM2: Hydraulic drives and control systems in mobile hydraulics
- HM3: Basics of IQAN control system (c)

Hydrotronics
- HT1: Hydrotronics - basic course (c)
- HT2: Hydrotronics - advanced course (c)

CNC LATHES AND MILLING MACHINES
Trainings for CNC programmers and operators
- CNC1: Operation and programming of numerically controlled machine tools - CNC operator
- CNC2: Design of technological processes - CNC technologist
- CNC3: Writing programs for CNC machines - CAM programmer
- CNC4-P: Operation and programming of the machine tools with HEIDENHAIN control
- CNC4-Z: Advanced operation and programming of CNC machine tools with HEIDENHAIN control

Specialized trainings
- CNC5: Programming and operation of CNC machines with FANUC control system
- CNC6: Operation of CNC numerically controlled machines with SINUMERIK control system (c)
- CNC7: Programming and operation of CNC machines with MAZATROL control system (c)
- CNC8: Operating and programming CNC machines with OKUMA control system (c)
- CNC9: Operating and programming CNC machines according to client’s individual needs (c)

CONVENTIONAL MACHINE TOOLS
- OBR: Operation of conventional machine tools

MECHANICAL ENGINEERING
Maintenance
- PKM1: Basics of machine construction for mechanics
- PKM2: Design and utilization of bearings
- PKM6-UR: Vibratory feeders for maintenance department employees

Engineers
- PKM3: Technical drawing
- PKM4: Geometric dimensioning and tolerancing ISO-ASME/GD&T with coordinate techniques
- PKM5: Basics of machine construction for construction engineers
- PKM6-K: Designing vibratory feeders
- PKM7: Technical mechanics - maintenance (c)

MACHINE DIAGNOSTICS
- DM1: Vibrodiagnostics with elements of utilization - level 1
- DM2: Machine diagnostics based on spectrum analysis of vibration signals - level 2
- DM3: Advanced diagnostic methods - level 3 (c)
- DM4: Thermographic diagnostics (c)

(c) - closed training
ELECTRICAL ENGINEERING AND AUTOMATION
- AM1: Electrical engineering and control cabinet equipment
- AM2: Introduction to industrial automation and control systems
- AM3: Safety systems and devices in industrial automation
- NAP1: Basics of drive systems

SIEMENS S7-300/400
- PLC1: SIEMENS SIMATIC S7-300/400 programming - basic course
- PLC2: SIEMENS SIMATIC S7-300/400 programming - advanced course
- PLC3: SIEMENS SIMATIC S7-300/400 - diagnostics
- PLC4: PROFIBUS DP - SIEMENS SIMATIC S7-300/400 communication
- PLC5: S7-GRAF sequence programming
- PLC6: S7-SCL programming

SIEMENS S7 MIGRATION STEP7- TIA PORTAL
- TIAM1: Project migration from STEP 7 to TIA Portal
- TIAM2: Operating and programming S7-1500 TIA Portal controllers for STEP7 users

SIEMENS S7-GRAF / SCL W TIA PORTAL
- TIA-SCL: S7-SCL programming in TIA Portal

SIEMENS S7-300/400 TIA PORTAL
- TIA2: PLC SIMATIC S7-300/400 programming in TIA Portal - basic course
- TIA3: PLC SIMATIC S7-300/400 programming in TIA Portal - advanced course

SIEMENS S7-1200 TIA PORTAL
- PLC9: SIEMENS SIMATIC S7-1200 programming in TIA Portal - basic course
- PLC10: SIEMENS SIMATIC S7-1200 programming in TIA Portal - advanced course

SIEMENS S7-1500 TIA PORTAL
- TIA2: Operating and programming S7-1500 TIA Portal controllers for STEP7 users
- TIA1500-1: SIEMENS SIMATIC S7-1500 programming - basic course
- TIA1500-2: SIEMENS SIMATIC S7-1500 programming - advanced course
- TIA1500-T: Motion Control functions of S7-1500T controller

SIEMENS SAFETY INTEGRATED
- SAF300: Programming and designing with Distributed Safety in Simatic Safety Integrated Controllers
- SAF1500: Programming and designing in Step 7 Safety Advanced in SIMATIC Safety Integrated S7-1500 controllers

HMI/SCADA
- TIAW1: WinCC HMI Panels in TIA Portal
- TIAW2: WinCC SCADA in TIA Portal
- W1: WinCC SCADA
- W2: WinCC flexible

INDUSTRIAL NETWORKS
- SP1: AS-Interface
- SP2: PROFIBUS DP diagnostics
- SP3: PROFInet
- SP3-TIA: PROFInet in TIA Portal
- SP4: CAN and CANopen
- SP5: Automation systems AS-I/S7 integrator (c)
- PLC4: PROFIBUS DP - SIEMENS SIMATIC S7-300/400 communication

SIMATIC PCS7
- PCS7-UR: SIMATIC PCS7 in maintenance
- PCS1: SIMATIC PCS7 - basics of developing applications

CODESYS
- CDS1: CoDeSyS 2.3 - PLC programming
- CDS2: CoDeSyS 3.5 - PLC programming

DRIVE SYSTEMS
- NAP1: Basics of drive systems

SIEMENS drive systems
- TNS1-TIA: SIEMENS Sinamics G120 in TIA Portal - configuration, launch, diagnostics
- TNS1: SIEMENS Sinamics G120
- TNS2: SIEMENS Micromaster 4
- TNS3-TIA: SIEMENS Sinamics S120 in TIA Portal - configuration, launch, diagnostics
- TNS3: SIEMENS Sinamics S120 - configuration, launch, diagnostics
- TNS4: SIEMENS Simotion - configuration, launch, diagnostics
INDUSTRIAL ROBOTS

FANUC ROBOTS
- RF1: On-line programming of FANUC industrial robots - basic course
- RF2: On-line programming of FANUC industrial robots - advanced course
- RF3: Off-line programming of FANUC industrial robots - Roboguide

ABB ROBOTS
- RA1: Operation, programming and starting ABB robots - basic course
- RA2: Operation, programming and starting ABB robots – advanced course

KUKA ROBOTS
- RK1: Programming of industrial robots KUKA - basic course
- RK2: Programming of industrial robots KUKA - advanced course

WITTMANN ROBOTS
- RW1: On-line programming of WITTMANN manipulation robots - basic course
- RW2: On-line programming of WITTMANN manipulation robots – advanced course

COMAU ROBOTS
- RC: Operation and programming of COMAU robots (c)

INDUSTRIAL ROBOTS INTEGRATION
- RI1: The integration of KUKA / ABB robots and PLC Siemens SIMATIC controller
- RI2: The integration of KUKA / ABB robots and SINUMERIK controlled CNC machine

INDUSTRIAL SENSORS
- S1: Sensors in industrial applications
- S2: IO-Link interface - quick reconfiguration of the sensor process parameters
- S3: Industrial sensors according to client’s individual needs (c)

C AND C++ PROGRAMMING
- PR1: C/C++ programming
- PR2: Programming AVR and ARM microcontrollers using Arduino platform and Atmel Studio
- PR3: Object-oriented programming in C/C# - basic course

PLASTICS
Properties and tests
- TS1: Plastics and their properties

Design
- TS2: Designing components made of plastics
- TS5: Designing injection moulds

Processing of thermoplastics
- TS3-O: Thermoplastic injection molding for operators
- TS3-Z: Processing of plastics - injection moulding (c)
- TS4: Plastics processing - extrusion (c)
- TS7: Blow Moulding (c)

Tool shop and technical service
- TS6: Exploitation of injection molds

POLYMER COMPOSITES
- KP1: Chemoset and thermoset polymeric composites - introduction to polymer chemistry, composite properties and manufacturing methods
- KP2: Technical evaluation of the quality of polymer composites

3D PRINT
- 3D1: 3D print in FDM technology - basic course
- 3D2: 3D print in FDM technology - advanced course
- 3D3: 3D printing technologies (c)

HEAT TREATMENT
- OC1: Heat treating of metals
- OC2: Basic heat treatment (c)
- OC3: Chemo-thermal treatment (c)
- OC4: Thermal methods of producing surface layers (c)
- OC5: Heat treatment technology for machine parts and tools (c)
- OC6: Heat treatment disadvantages and quality control (c)
- OC7: Equipment for heat treatment processes (c)

CASTING
- OD1: Basics of casting technology (c)
- OD2: Casting metal alloys and smelting methods (c)
- OD3: Modern technologies of cast production (c)
- OD4: Defects of castings and prevention techniques (c)
- OD5: Resource and waste management in a foundry (c)
MACHINERY SAFETY

STANDARDS AND DIRECTIVES FOR MACHINERY
- BM1: The assessment of conformity of machines and devices against the requirements of applicable directives (terms of CE marking)
- BM2: Machine and device operation (according to 2006/42/WE and 2009/104/WE directives)
- BM3: Pressure Equipment Directive (PED) requirements - 2014/68/UE (c)

SAFETY SYSTEMS
- SAF300: Programming and designing with Distributed Safety in Simatic Safety Integrated Controllers
- SAF1500: Programming and designing in Step 7 Safety Advanced in SIMATIC Safety Integrated S7-1500 controllers

RESISTANCE WELDING
- ZO1: Programming and parameterization of resistance welding machines - basic course (c)
- ZO2: Programming and parameterization of resistance welding machines - advanced course (c)
- ZO3: Programming of BOSCH adaptive weld controllers - specialist course (c)
- ZO4: Programming of ARO adaptive weld controllers - specialist course (c)
- ZO5: Basics of resistance microwelding theory (c)

PRODUCTION QUALITY

KONTROLA JAKOŚCI
- KJ1: Quality management and quality ethics (z)
- KJ2: Computer-aided quality assurance - CAQ (z)
- KJ3: MSA - Measurement System Analysis (z)
- KJ4: SPC - Statistical Process Control (z)
- KJ5: 3D scanning for dimensional inspection, SPC and CAQ (z)

METROLOGY
- MR1: Industrial metrology
- MR2: Coordinate measuring method (c)
- MR3: Compilation of measurement results (c)

ANALYSIS OF MEASUREMENTS
- AP1: Descriptive statistics (c)
- AP2: Measurement uncertainty calculation (c)
- AP3: Compilation of measurement results (c)
- AP4: Legal metrology and arranging a research laboratory and calibration laboratory (c)

QUALITY MANAGEMENT SYSTEM
- SJ1: Migration of ISO/TS to IATF 16949:2016 with the use of Lean Management (c)
- SJ2: Preparation for the fulfillment of requirements of IATF 16949:2016 with the use of Lean Management (c)

PLASTIC FORMING
- OP1: Extrusion - basic course
- OP2: Extrusion according to client’s individual needs (c)

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PRODUCTION QUALITY MANAGEMENT

OPTIMISATION OF PRODUCTION PROCESSES
- **TPM1**: Maintenance management according to TPM and TOC
- **TPM2**: Maintenance management according to TPM - level 2
- **TPM3**: TPM Leader, or how to manage maintenance department
- **TPM4**: Optimisation of processes in Maintenance
- **TPM5**: Statistical methods in TPM

SMED METHODOLOGY
- **SMED1**: Single-Minute Exchange of Die
- **SMED2**: Methods Time Management in Single-Minute Exchange of Die

FMEA METHODOLOGY
- **FMEA1**: Machinery Failure Mode and Effects Analysis

LEAN MANUFACTURING
- **LEAN1**: Lean - basic course (c)
- **LEAN2**: 5S workplace organization (c)
- **LEAN3**: VSM and process optimization (c)
- **LEAN4**: Planning and organization of the production (c)
- **LEAN5**: Organization of internal logistics (c)

SIEMENS NX
- **NX CAD1**: Basic course
- **NX CAD2**: Intermediate course
- **NX CAD3**: Migration course (c)
- **NX CAD4**: Advanced course (c)
- **NX CAM1**: Basic course
- **NX CAM2**: Turning (c)
- **NX CAM3**: Milling (c)
- **NX CAM4**: Multi axis milling (c)
- **NX DW**: Die Wizard - die tools (c)
- **NX SM**: Sheet metal (c)
- **NX D**: Drafting
- **NX MFP**: Freeform Modeling
- **NX AS**: Advanced Simulation (c)
- **NX LM**: Laminat Modeling (c)
- **NX MS**: Motion Simulation (c)
- **NX**: NX Selection (c)

SIEMENS SOLID EDGE
- **SE1**: Solid Edge - practical basics of programming
- **SE2**: Solid Edge - advanced design aid