

TRAINING CATALOGUE

Digital Technology Education Centre (D-TEC)
LILAMA 2 International Technology College



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LILAMA 2 International Technology College





Implemented by
giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

DVET



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Digital Technology Education Centre (D-TEC)
LILAMA 2 International Technology College

www.dtec.lilama2.edu.vn



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ABOUT US



“

I am inviting you to explore our comprehensive training catalogue and initiate a knowledge-building path as well as embark on a learning adventure for your colleagues.

Mr Nguyen Khanh Cuong
Rector of LILAMA 2

”

LILAMA 2 International Technology College (LILAMA 2) is one of the leading Technical Vocational Education and Training Institute in providing initial and further training programmes oriented to German standards in line with the latest requirements of enterprises. LILAMA 2 is rigorously committed to endure its role as the centre of excellence to deliver state of the art training and assessment services across Vietnam and in the South East Asia region.

Located inside LILAMA 2, D-TEC – Digital Technology Education Center was established as the achievement of strong development partnership among Siemens Vietnam, LILAMA 2 and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, represented by the Programme “Reform of Technical and Vocational Education and Training in Viet Nam”. We help to identify the industry’s training needs and suggest the optimal course pathway, offering an exceptional learning platform for participants, enabling them to master intricate technical aspects in the realm of smart manufacturing. We provide a diverse array of customised and inclusive training programmes aimed at enhancing the competencies of their human workforce. Through immersive practical courses and simulation, we now deliver indispensable knowledge and expertise in smart manufacturing in and/or with machine tools.

For further information: www.dtec.lilama2.edu.vn



ABBREVIATIONS

2D	Two-Dimensional
3D	Three-Dimensional
AMP	Additive Manufacturing Processes
CAD	Computer-aided Design
CAM	Computer-Aided Manufacturing
CNC	Computer Numerical Control
CMLV	Cambodia, Myanmar, Laos and Vietnam
CMM	Coordinate Measurement Machine
DT	Driven tools
D-TEC	Digital Technology Education Centre
DIN	Deutsches Institut für Normung e.V. (German Institute for Standardization)
ISO	International Standardization Organization
LILAMA 2	LILAMA 2 International Technology College
MCOSMOS	Mitutoyo Controlled Open Systems for Modular Operation Support
MD	Module
NC	Numerical Control
NX	Officially NX does not stand for anything but the name came from the merging of technology from SDRC I-DEAS with UGS Unigraphics to deliver the “Next Generation” CAD system
PDW	Progressive Die Wizard
PLC	Programmable Logic Controller
TC	Training Course
VNCK	The Siemens 840D Virtual NC Kernel – a stand-alone Windows programme containing the Siemens 840D NC control kernel embedded within a server programme



NHÀ ĐÀ NẴNG

WHY TRAIN WITH DIGITAL TECHNOLOGY EDUCATION CENTRE (D-TEC)?



“

D-TEC provides you in-depth and exhaustive industry-oriented training

”

Welcome to the our Training Catalogue. We are pleased to present training programmes which include a wide variety of courses and training solutions to meet your personal or corporate demands and requirements.

With a professional training process, modern machinery and a team of trainers with highly skilled and rich practical experience, LILAMA 2 has been accredited as SIEMENS training partner institute and presented its high-end Digital Technology Education Centre (D-TEC), which is proud to be one of the pioneer centres of excellence in the field of smart manufacturing applied on the best machine tools in Vietnam today.



STATE-OF-THE-ART TRAINING FACILITIES:

- D-TEC's training facility features 8 available workstations.
- D-TEC offers hands-on and interactive training.
- Each workstation provides students with 2 monitors and a 3D mouse.



CUSTOMISATION OF TRAINING TO DEMANDS OF YOUR COMPANY

For your convenience, our dedicated trainers are willing to conduct sessions on-site at your facility. Additionally, all courses are available in a hybrid format, ensuring flexibility through various platforms such as Microsoft Teams, allowing participants to seamlessly join and engage in the learning experience.

Our master trainers meticulously employ instructional design best practices when developing training contents. This rigorous approach guarantees that our training sessions are not only informative but also engaging and interactive for all participants, fostering a comprehensive learning experience.

To arrange the training tailored to your demands and requirements, please directly contact us at:

LILAMA 2 INTERNATIONAL TECHNOLOGY COLLEGE

MECHANICAL ENGINEERING FACULTY

DIGITAL TECHNOLOGY EDUCATION CENTRE

Address: Km32, National Highway 51, Long Phuoc, Long Thanh, Dong Nai

Email: www.dtec.lilama2.edu.vn

Tel: 0251 629 6204



MISSION – VISSION – VALUE



MISSION

- To provide high-quality vocational training and education in digital technologies for trainees and company technicians/ engineers in Vietnam, and to foster innovation and collaboration with local industries and communities.
- To equip learners with the skills and competencies needed to adapt to the changing demands of the Industry 4.0 and the digital and green economy.
- To expand the network of partnerships and cooperation with regional and international organisations, especially in the CMLV region (Cambodia, Myanmar, Laos and Vietnam), to enhance the quality and relevance of vocational education and training.



VISSION

- To become a leading digital technology education center in the field of metal technology in Vietnam and Southeast Asia, and to contribute to the socioeconomic development, digital transformation and just transition of the region and of the world.
- To be recognised as a center of excellence for vocational education and training in digital technologies, with a focus on innovation, entrepreneurship, and sustainability.
- To be a trusted partner for employers, industry associations, government agencies and civil society in developing a skilled and qualified workforce for the digital and green era.



VALUE

- To uphold the values of excellence, integrity, diversity, inclusion, green and digitalisation, sustainability, and social responsibility in all aspects of teaching, learning, research, and service.
- To promote a learner-centered approach that fosters creativity, critical thinking, problem-solving and lifelong learning.
- To embrace a culture of collaboration, openness, inclusiveness, and respect for diversity among staff, learners and stakeholders.





FURTHER TRAINING PROGRAMMES

COMPLETE TRAINING MODULE

ADVANCED DIN/ISO PROGRAMMING AND OPERATION OF CNC MACHINES – TURNING AND MILLING





MODULE SYMBOL

MD01



DURATION

320 HOURS



MODULE OBJECTIVES

BY THE END OF THIS MODULE,
THE TRAINEES WILL BE ABLE TO

- Know the regulations of IT security, occupational safety, health and environmental protection when dealing with multi axis CNC machine tools
- Describe the structure, functional units and safety devices of 5-axis CNC milling machines
- Describe the structure, functional units and safety devices of CNC lathes with C and Y axes and with a counter spindle
- Apply of DIN/ISO programming for special applications that go beyond the limits of classic G code and graphic CNC programming
- Know and apply the benefit of rogramme-integrated measuring to reduce set-up times and to ensure quality features.
- Consolidate and deepen the fundamental DIN/ISO programming CNC turning and milling
- Programme and operate turning machines with driven tools and counter spindle in G code on advanced level
- Programme and operate milling machines with 3+2 axes in G code by swivel cycles on advanced level
- Programme high-level languages for extremely demanding CNC turning and milling applications of the industry
- Apply quality assurance through machine integrated measuring of work pieces and tools with CNC turning and milling machines
- Plan and realise complex industrial work assignments on system.



MODULE DESCRIPTION

- The module orients on German training and examination standard. It mediates digitalisation topics and advanced Industry 4.0 competencies as higher qualification in the fields of metal cutting.
- The module is structured in 5 training units that contents build up on each other's. It can be offered as supplementary training module for college graduates of initial training programmes as well as offered to the industry in hybrid short-term trainings for technicians, engineers, and in-company trainers.
- CNC programmers increasingly face special tasks that take them to the limits of classic (DIN 66025) and graphical CNC programming. The CNC programming language, used in the training module, is internationally standardised applied. The trainees can build up on their already acquired competencies and further develop the necessary understanding for highly demanding machining processes with multi-axis CNC machines.



ENTRY REQUIREMENTS

THE PARTICIPANTS WHO MEET THE FOLLOWING:



KNOWLEDGE

- Understand the regulations on information technology security, labor safety, health protection and environmental protection when working with CNC lathes and milling machines.
- Describe the structure, function and safety devices of CNC lathes and milling machines.
- Understand the operation of CNC lathes and milling machines and applicable safety regulations.
- Know how to programme with ProgramGUIDE on CNC lathes and milling machines.
- Specify input and output data devices according to the intended usage



SKILLS

- Import, test, modify and optimise basic programmes on CNC lathes and milling machines.
- Transfer and secure data in accordance with legal and business regulations basically.
- Basically adjust, operate and maintain CNC lathes and milling machines.
- Be able to select, prepare, mount and adjust of clamping tools and fixtures.
- Adjust and clamp workpieces.
- Be able to select, mount and measure parameters of cutting tools and standard workpieces.
- Be able to define and enter production parameters with attention to workpieces, workpieces, tools, and cutting tool materials.
- Be able to identify errors in production.
- Perform and document maintenance work, preventive maintenance for CNC lathes and milling machines as planned.





FUNDAMENTAL DIN/ISO PROGRAMMING – CNC – TURNING AND MILLING PROGRAMMING BASIC



COURSE SYMBOL

MD01 – TC1



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the required programming parameters of the integrated machining cycles in the SINUMERIK 840Dsl Operate version 4.8
- Analyse detail drawings and customer's technical requirements
- Complete the work plan for each mechanical part in the order
- Calculate and select machining parameters for required mechanical parts
- Use mechanical manuals to look up relevant technical information
- Use G-code instructions and suitable cycles to program machining for specific applications
- Optimise specified programming files



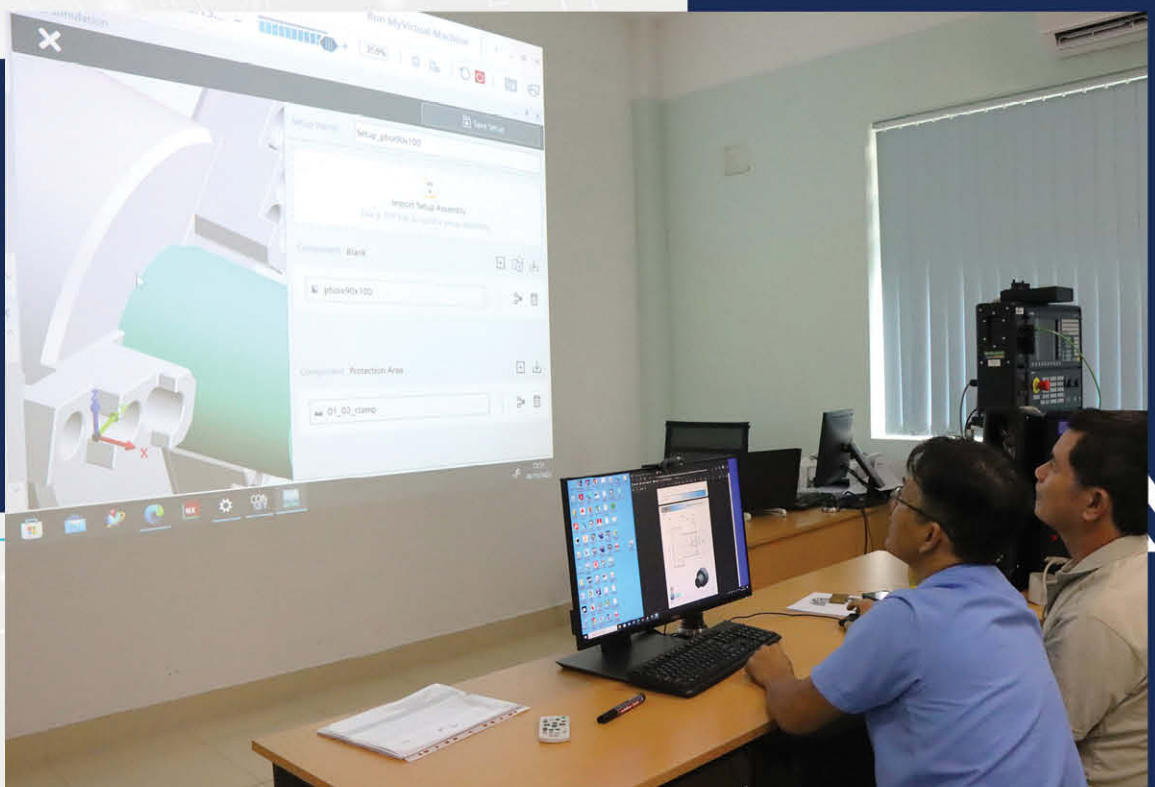
COURSE SUMMARY

- Programme management and basic operations
- Operation area for parameter offset
- General basics for programGUIDE
- Contour definition and contour call in the programme
- Programme turning cycles
- Programme milling cycles
- Programme drilling cycles
- Programme jump and branches, check structures
- Plan and realisation of operational work order of the industry



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST MEET THE MENTIONED ENTRY REQUIREMENTS OF TRAINING MODULE – MD01





ADVANCED DIN/ISO PROGRAMMING – CNC TURNING WITH DRIVEN TOOLS (C AND Y AXIS) AND COUNTER SPINDLE



COURSE SYMBOL

MD01 – TC2



DURATION

60 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Understand plans in CNC programming with driving tools;
- Analyse the process of preparing, programming, simulating, machining, editing and optimising in CNC turning programs;
- Set up the tool offset, spindle chuck data and work offset;
- Programme with machining control tools on the front surface of the workpiece;
- Programme with machining control tools on the cylindrical surface of the workpiece;
- Programme for milling, drilling with C and Y axis;
- Plan the working of CNC lathes with reverse axis and how to calculate for programming;
- Programme with main spindles on lathes with counter spindle;
- Use Mechanical Trade and Metal Handbook.



COURSE SUMMARY

- Plans when working with driven tools
- Setup of the tool offset, spindle chuck data and work offset
- Programming of driven tools (DT) on the front surface
- Programming of driven tools (DT) on the circumference surface
- Application of milling and drilling operations with C and Y-axis
- Working areas of machines regard to the frames and how to calculate them for programming
- Advanced programming of exercises with counter spindle and driven tools with the cycles and G-codes
- Plan and realisation of operational work order of the industry
- Practice of technical English



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD01-TC1: FUNDAMENTAL DIN/ISO PROGRAMMING – CNC – TURNING AND MILLING PROGRAMMING BASIC





ADVANCED DIN/ISO PROGRAMMING – CNC MILLING 3+2 AXES – SWIVELING IN ACCORDANCE WITH DIN/ISO



COURSE SYMBOL

MD01 – TC3



DURATION

60 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Explain function of swivel cycle (CYCLE800) and the advantages of this cycle
- Set and select control configuration in Sinutrain software for AC and BC kinematics for machining on 5-axis CNC milling machines
- Analyse detail drawings and customer's technical requirements
- Complete the work plan for each mechanical part in the order
- Calculate and select machining parameters for required mechanical parts
- Use mechanical manuals to look up relevant technical information
- Utilise swivel cycle (CYCLE800), G-code instructions and suitable cycles to programme machining for advanced milling applications (3+2 axes)
- Optimise specified programming files



COURSE SUMMARY

- Simplifying programming for 3+2 axes with programGUIDE
- Tool carrier of a 5-axis milling machine
- Kinematics of 5-axis machines
- Functional explanation for the swivel cycle (CYCLE800)
- Swivel modes by the programming
- Advantages of programming with the CYCLE800
- Advanced programming of exercises with swivelled planes, the cycles and G-codes
- Plan and realise operational work order of the industry
- Practice of technical English



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD01-TC2: ADVANCED DIN/ISO PROGRAMMING – CNC TURNING WITH DRIVEN TOOLS (C AND Y AXIS) AND COUNTER SPINDLE.





CNC PROGRAMMING OF HIGH-LEVEL LANGUAGE
FOR EXTREMELY DEMANDING CNC TURNING AND
MILLING APPLICATIONS OF THE INDUSTRY



COURSE SYMBOL

MD01 – TC4



DURATION

120 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Develop configurable CNC programmes for component families that differ only in a few geometric sizes.
- Apply the higher level language such as R parameter, arithmetic parameters, system variables, user variables and loops for programs that require their own technology cycle because not all special tasks can be handled using standard cycles.
- Programme a simple operator message to be generated from an ongoing CNC program that cannot be fully implemented using the instruction set offered by DIN 66025 or graphical CNC programming.
- Develop comprehensive programmes logging of machining parameters and measurement results.
- Recognise and observe the regulations on IT security and occupational safety as well as health and environmental protection.
- Optimise specified programming files.



COURSE SUMMARY

- Introduction and overview of the basics and functionality:
- Subprogramme
- R Parameter
- Jumps and user variables
- System variables and subprogramme
- System variables and safety query
- Frame concept
- Programming of arithmetic functions
- User cycles
- Plan and realisation of operational work order of the industry
- Practice of technical English



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD01-TC3: ADVANCED DIN/ISO PROGRAMMING – CNC MILLING 3+2 AXES – SWIVELING IN ACCORDANCE WITH DIN/ISO





MACHINE INTEGRATED MEASURING OF WORKPIECES AND TOOLS WITH 3D TOUCH PROBES



COURSE SYMBOL

MD01 – TC5



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Analyse the structure and operate the principle of measuring devices used when measuring workpieces and products on CNC milling machines
- Repair the instruments for high accuracy before measuring
- Measure the dimensions of various types of part shapes in manual and automatic modes on CNC milling machines
- Measure the position of common workpiece standards before machining
- Practice well in the work of redefining the standard and accuracy of CNC milling machines
- Export the measurement result report as text
- Use Mechanical Trade and Metal Handbook.



COURSE SUMMARY

- Measuring instruments for measuring workpieces
- Calibration of measuring instruments for measuring accuracy
- Measuring in the Setup mode
- Measuring in Automatic mode
- Measuring results through logging
- Log measurement results with using the high level language (HLL)



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD01-TC4: CNC PROGRAMMING OF HIGH-LEVEL LANGUAGE FOR EXTREMELY DEMANDING CNC TURNING AND MILLING APPLICATIONS OF THE INDUSTRY.



COMPLETE TRAINING MODULE

ADVANCED MOLD AND DIE DESIGN WITH INTEGRATED CAM/CAM/CAE SOLUTIONS





MODULE SYMBOL

MD02



DURATION

320 HOURS



MODULE OBJECTIVES

BY THE END OF THIS MODULE,
THE TRAINEES WILL BE ABLE TO

- Make detailed models, the process of creating 3D drawings
- Plan drawings and modify commands with NX software to create 3D product models and sheet metal product models
- Analyse the sheet metal model, the process of creating products from sheet metal
- Understand the material standards applied in sheet metal, plastic injection molds
- Apply mold design and manufacturing technology
- Analyse the structure and classification of plastic injection molds
- Make the process of designing and manufacturing plastic injection molds
- Present the concept of sheet presswork technology and classify the types of this technology
- Analyse the functions of the components that make up a common press die
- Explain the use of support commands of the PDW tool/module
- Create the simulation and analysis the causes and results and find ways to fix design errors
- Make the process of simulating plastic flow with NX software.
- Apply benefits of integrated programme measurement to reduce the time for quality functions to be establishes and ensured.
- Draw products and 3D models in simple and complex forms with NX software
- Export 2D technical drawings for 3D models, drawings to manufacture mold details, the report of simulation results of plastic injection mold with NX software
- Assemble subassembly models
- Draw simple and complex sheet metal products and models with NX software
- Create technical drawing from sheet metal with NX software
- Calculate the technical parameters of plastic injection molds
- Perform automatic mold design steps with NX software
- Implement the simulation process to analyse and optimise the mold design process with NX software
- Implement the management of mold data after design (BOM)
- Use the commands of the PDW tool/module to design a complete set of progressive press die
- Solve application exercises with the help of the PDW tool/module
- Plan and implement the distribution of complicated industrial tasks



MODULE DESCRIPTION

- The module orients on German training and examination standard. It mediates digitalisation topics and advanced Industry 4.0 competencies as higher qualification in the fields of metal cutting.
- The module is structured in 5 training units that contents build up on each other's. It can be offered as supplementary training module for college graduates of initial training programmes as well as offered to the industry in hybrid short-term trainings for technicians, engineers, and in-company trainers.
- The complete product shape needed can be designed with NX
- The data files can be simply imported from other software without abundant modification, similar to products designed directly with NX
- The machinability of mold products can be easily checked.
- Advanced separating tools specifically designed with NX are available
- Core and cavity generation are fully automatic.
- NX can check against new product versions created later automatically.
- List of standard parts from mold manufacturers is provided.
- Customised tools for push pins, oblique cores, slide cores are available.
- The cooling system, pipes and linking valves can be designed with NX
- NX can create and extract drawings on demand automatically.





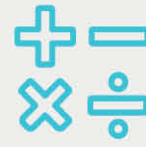
ENTRY REQUIREMENTS

THE PARTICIPANTS WHO MEET THE FOLLOWING:



KNOWLEDGE

- Understand drawing and modifying basic commands with 2D CAD/CAM software
- Present the concept of pressing technology and classify the types of this technology
- Read and understand basic simulation and analysis of results
- Analyse the causes and find ways to fix basic design errors



SKILLS

- Draw products, 2D models in simple forms
- Export 2D technical drawings for 3D models
- Basically assemble the subassemblies
- Draw simple sheet metal product models
- Implement the simulation process to analyse the design process.
- Implement the management of mold data after design (BOM).
- Export drawings to manufacture mold details.
- Analyze the functions of the components that make up a common press die





FUNDAMENTALS OF 2D & 3D DESIGN AND ASSEMBLY



COURSE SYMBOL

MD02 – TC1



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Analyse detailed models, the process of creating 3D drawings
- Sketch drawing and edit commands on NX software to create 3D product models
- Draw products, 3D models from simple to complex forms on NX software
- Export 2D technical drawings for 3D models on NX software
- Assemble the subassemblies



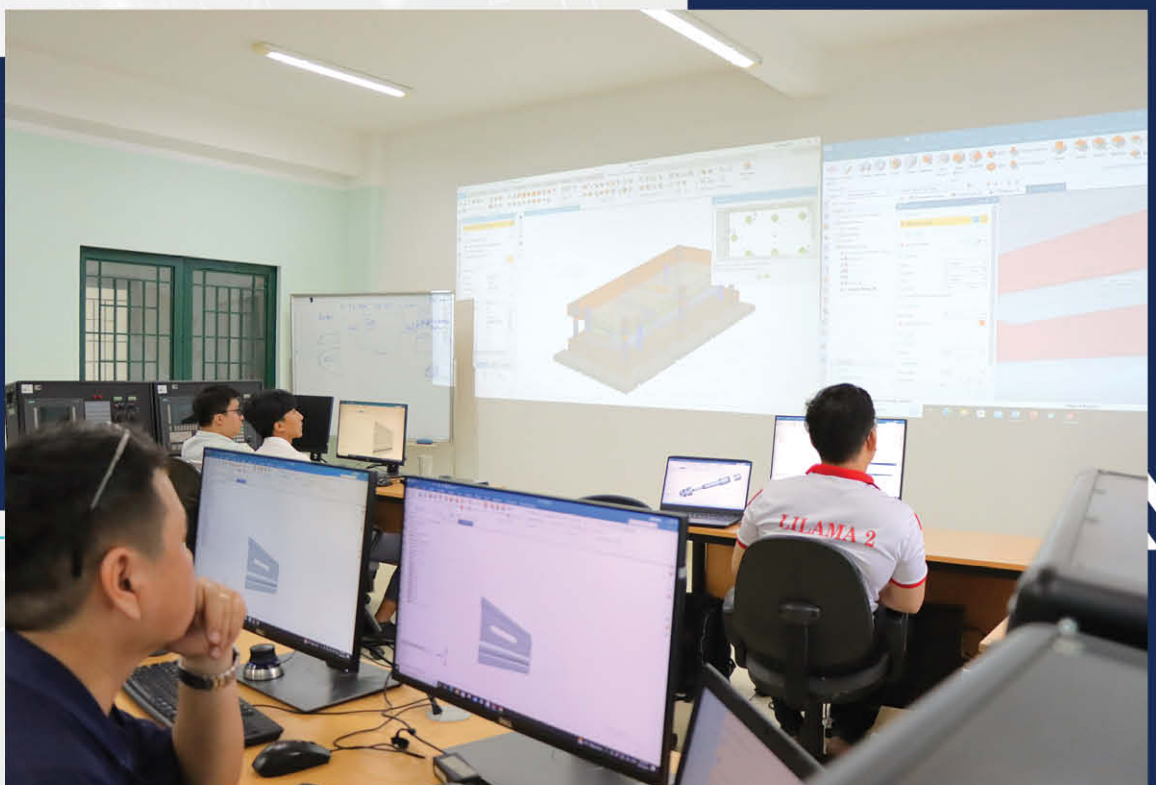
COURSE SUMMARY

- NX software overview
- 2D design with NX
- 3D design with NX
- Export 2D drawings from 3D drawings with NX
- Practice with exercises/ projects



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST MEET THE MENTIONED ENTRY REQUIREMENTS OF TRAINING MODULE – MD02





ADVANCED SHEET METAL DESIGN WITH NX: TOOLS AND TECHNIQUES



COURSE SYMBOL
MD02 – TC2



DURATION
40 HOURS



COURSE OBJECTIVES
BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Analyse the sheet metal model, the process of creating products from sheet metal
- Understand the material standards applied in sheet metal
- Make drawings and modify commands with NX software to create sheet metal product models
- Draw simple and complex sheet metal product models with NX software
- Create technical drawing from sheet metal with NX software



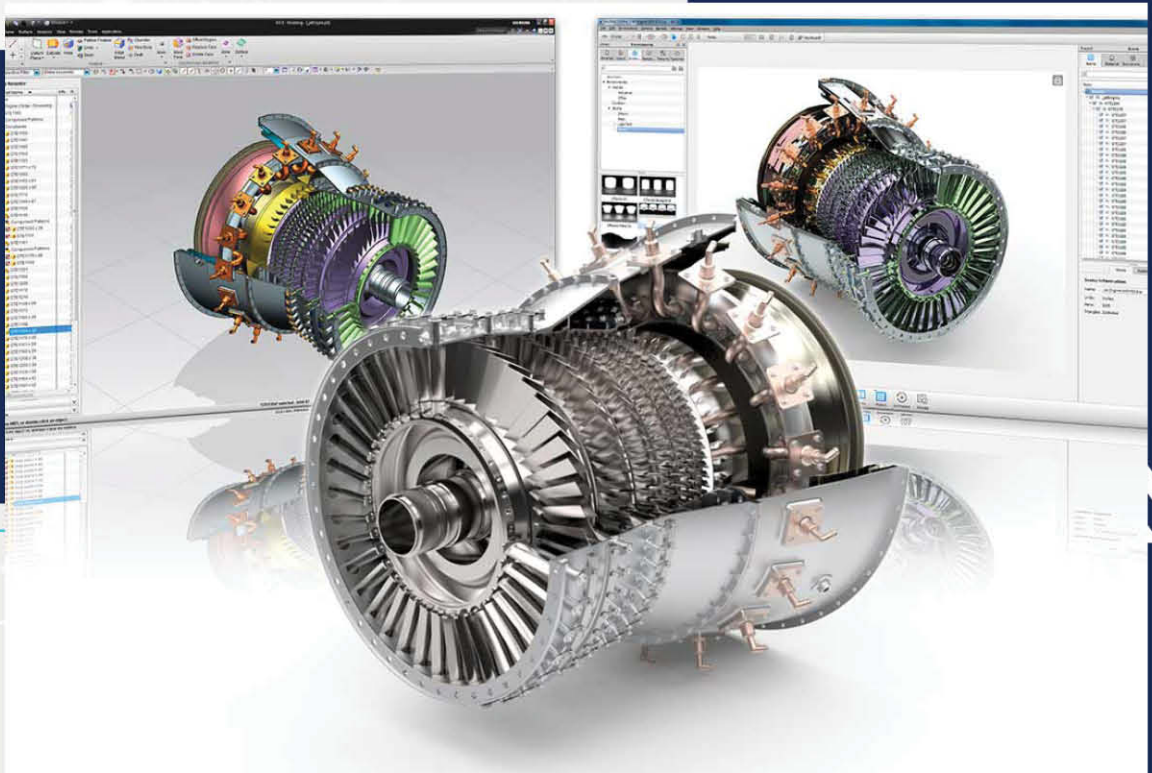
COURSE SUMMARY

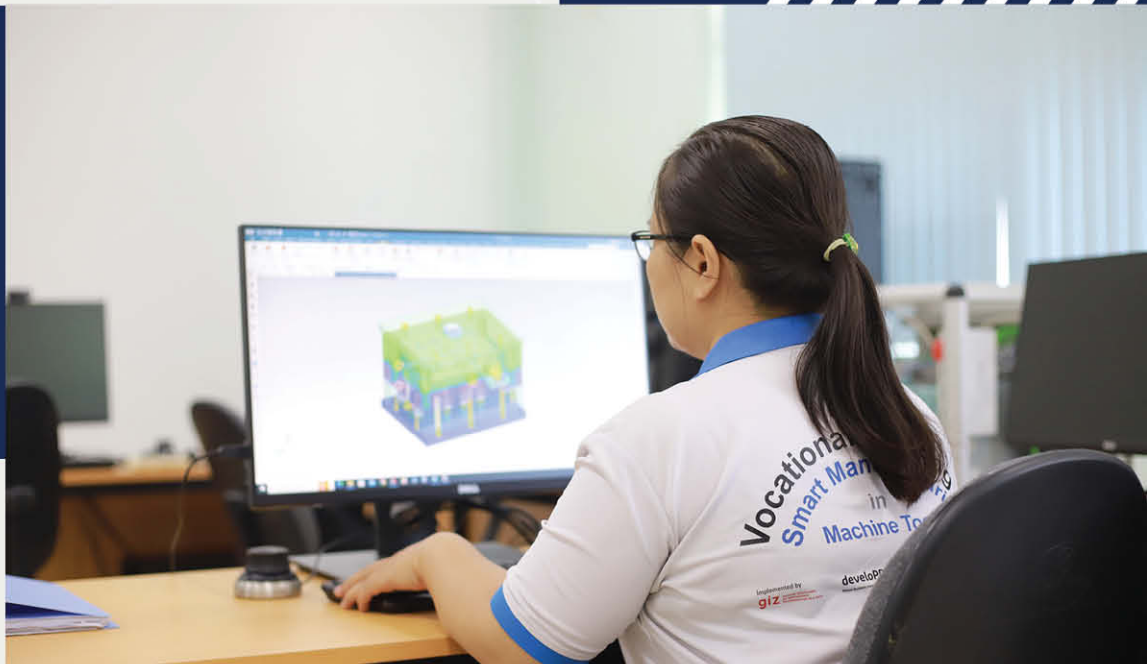
- Getting started with Sheet Metal with NX software
- Sheet metal material standards and features
- Designing tools for sheet metal parts and their features
- Advanced commands for sheet metal and modification commands
- Creating technical drawing for sheet metal on NX software
- Practice with exercises/ projects



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD02-TC1: FUNDAMENTALS OF 2D & 3D DESIGN AND ASSEMBLY.





DESIGN PLASTIC INJECTION MOLDS ON NX SOFTWARE: FROM CONCEPT TO DETAILING



COURSE SYMBOL

MD02 – TC3



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Understand the overview of mold design and manufacturing technology
- Analyse the structure and classification of plastic injection molds
- Practice the process of designing and manufacturing plastic injection molds
- Understand the design standards of plastic injection molds
- Calculate the technical parameters of plastic injection molds
- Perform automatic mold design steps on NX software
- Implement the simulation process to analyze and optimize the mold design process with NX software
- Apply the management of mold data after design (BOM)
- Export drawings to manufacture mold details



COURSE SUMMARY

- Overview of NX mold
- Creating a mold design project
- Definition of withdrawal direction
- Definition of core and cavity
- Partition face definition
- Flexible Mold Separator
- Inserting base mold parts
- Subtraction of the parts in the mold
- Material management (BOM)
- Creating 2D drawings for mold details
- Practice with exercises/ projects



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD02-TC2: ADVANCED SHEET METAL DESIGN WITH NX: TOOLS AND TECHNIQUES.





DESIGN THE PRESS DIES WITH NX PROGRESSIVE DIE WIZARD: STREAMLINING WORKFLOW



COURSE SYMBOL

MD02 – TC4



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the concept of sheet presswork technology and classify different types of this technology
- Analyse the functions of the components that make up a common press die
- Explain the use of support commands of the PDW tool/module
- Use the commands of the PDW tool/module to design a complete set of progressive press die
- Solve application exercises with the help of the PDW tool/module



COURSE SUMMARY

- Overview of press mold
- Overview of NX PDW
- Design of punch and die structure
- Design of base mold structure
- Practice with exercises/ projects



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD02-TC3: DESIGN PLASTIC INJECTION MOLDS ON NX SOFTWARE: FROM CONCEPT TO DETAILING





INTEGRATED NX EASY FILL: PLASTIC INJECTION MOLD DESIGN THROUGH SIMULATION



COURSE SYMBOL

MD02 – TC5



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Read and analyse simulation and analysis results
- Analyse the causes and find ways to fix design errors
- Plan the process of simulating plastic flow with NX software
- Export the report of simulation results of plastic injection mold with NX software.



COURSE SUMMARY

- Overview of NX Easy Fill
- Product analysis process on NX Easy Fill
- Practice with exercises/ projects



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE MD02-TC4:
DESIGN THE PRESS DIES WITH NX PROGRESSIVE DIE WIZARD:
STREAMLINING WORKFLOW







TC1

INNOVATIVE MECHANICAL DESIGN

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



AUTODESK AUTOCAD



2D MECHANICAL DESIGN: MASTERING AUTOCAD



COURSE SYMBOL

TC1 – 01



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the functions and uses of 2D drawing commands and adjustment commands
- Design all types of 2D drawings in the mechanical field
- Manage line types according to the standards
- Analyse all types of dimensions according to standards
- Utilise 2D library in AutoCAD software
- Create the text in AutoCAD
- Develop dimensions and tolerances on drawings.



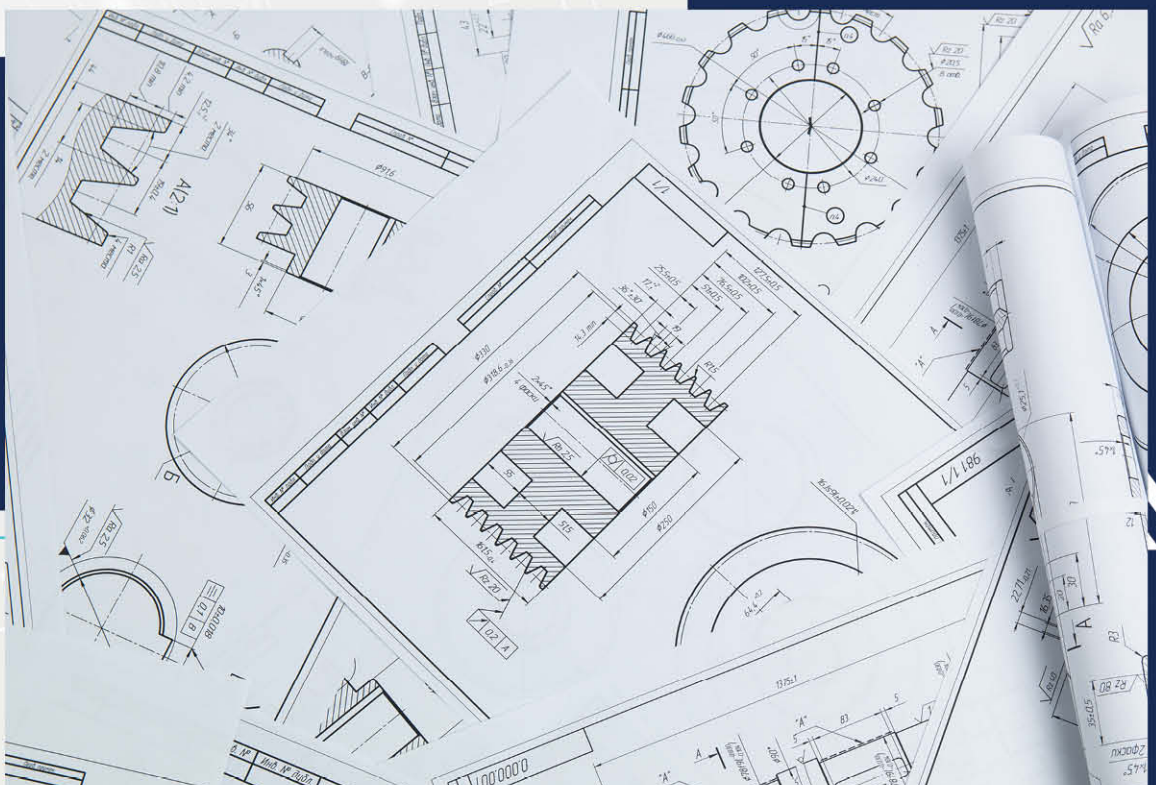
COURSE SUMMARY

- General introduction to AutoCAD
- Point snap tracking methods and object selection methods
- Drawing commands
- Editing commands
- Management of objects in drawings
- Hatch - Text editing
- Inputs for developing dimensions and tolerances on drawings
- Printing of 2D drawings



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE BASIC KNOWLEDGE OF DRAWING TECHNIQUES AND DESIGN TOLERANCES.





MECHANICAL DESIGN WITH SIEMENS NX



COURSE SYMBOL

TC1 - 02



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Develop product drawings in 3D models from simple to complex ones with NX software
- Export 2D technical drawings for 3D models with NX software
- Assemble the subassembly models
- Simulate the operation of the subassembly models



COURSE SUMMARY

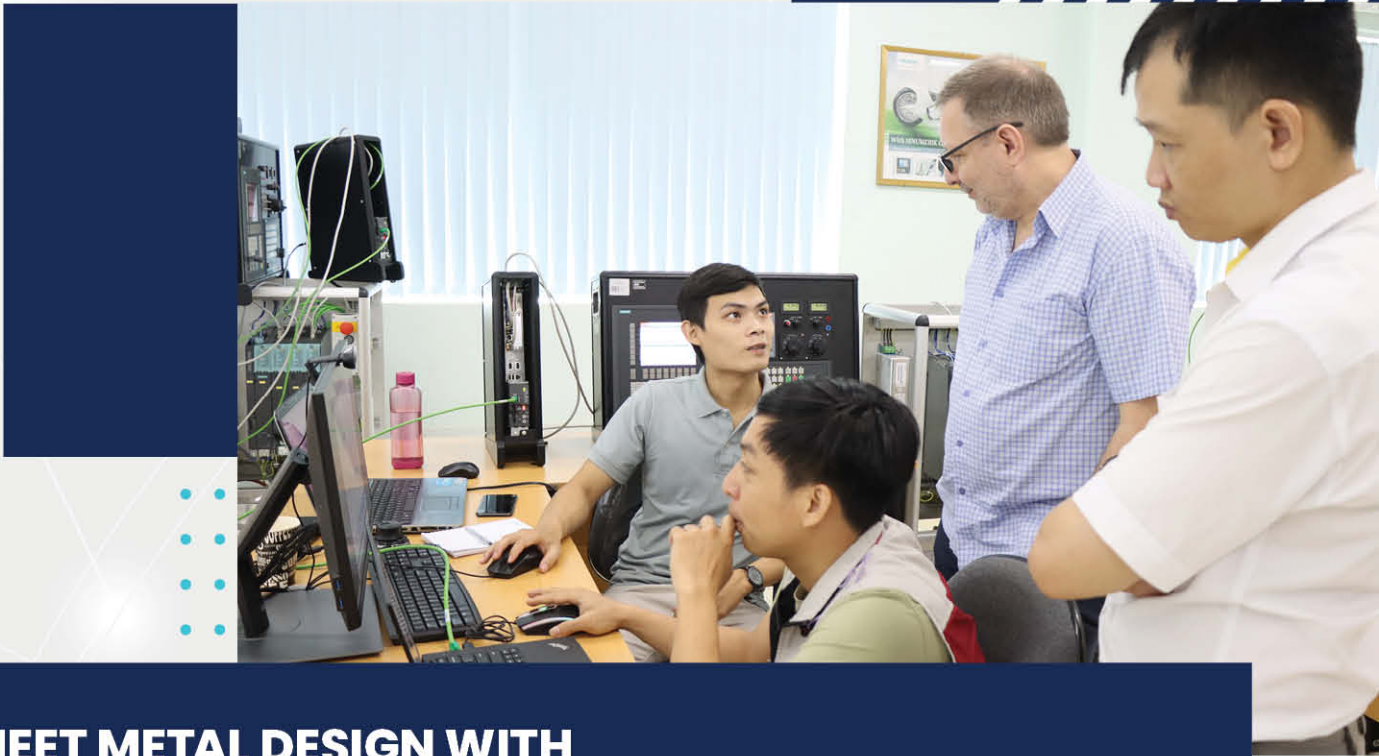
- Introduction to the NX Software
- Basic technology for design with NX
- Development of product drawings in 2D, 3D details models from simple to complex ones with NX software
- Exporting 2D technical drawings for 3D models with NX software
- Subassembly making and simulation of the subassemblies in operation



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE BASIC KNOWLEDGE OF DRAWING AND DESIGN TECHNIQUES WITH AUTOCAD.





SHEET METAL DESIGN WITH SIEMENS NX



COURSE SYMBOL

TC1 – 03



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the sheet metal model, the process of creating products from sheet metal
- Acknowledge the standards for material used in sheet metal
- Develop technical drawings for sheet metal with NX software
- Develop the drawing commands and edit commands with NX software to create sheet metal product model
- Design and edit commands to create simple and complex sheet metal products with NX software
- Use commands developed from NX software to expand into sheet metal



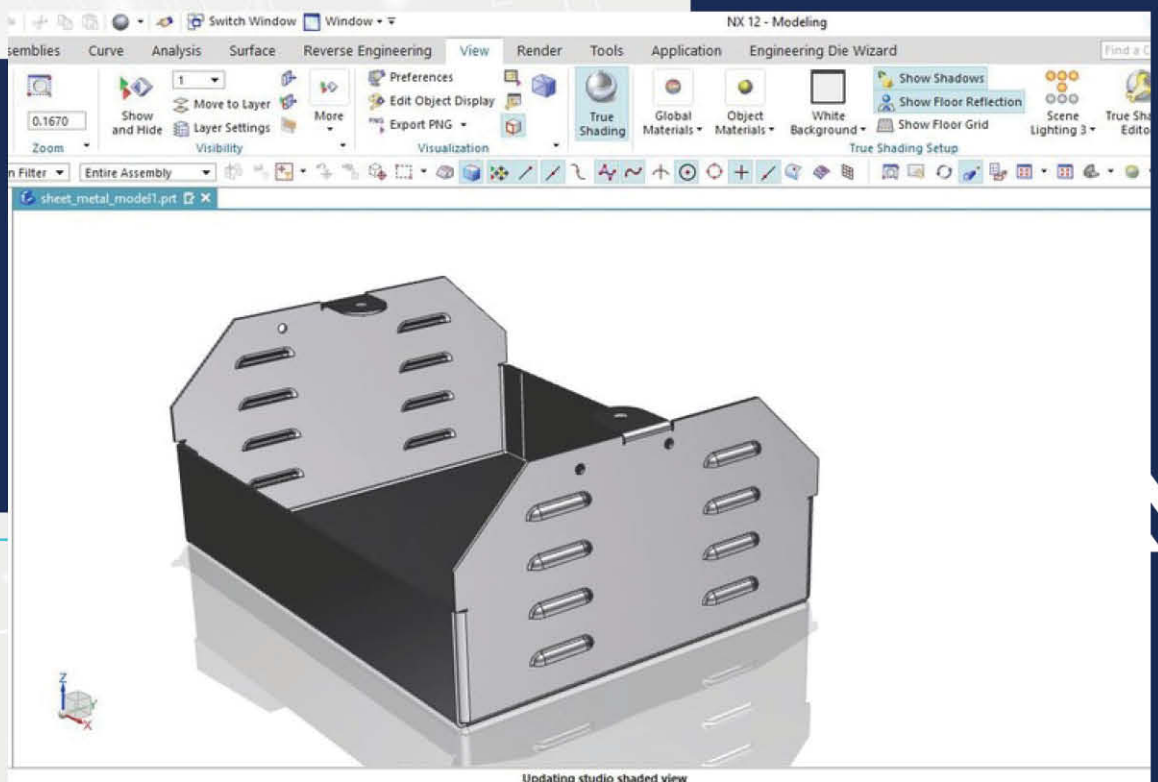
COURSE SUMMARY

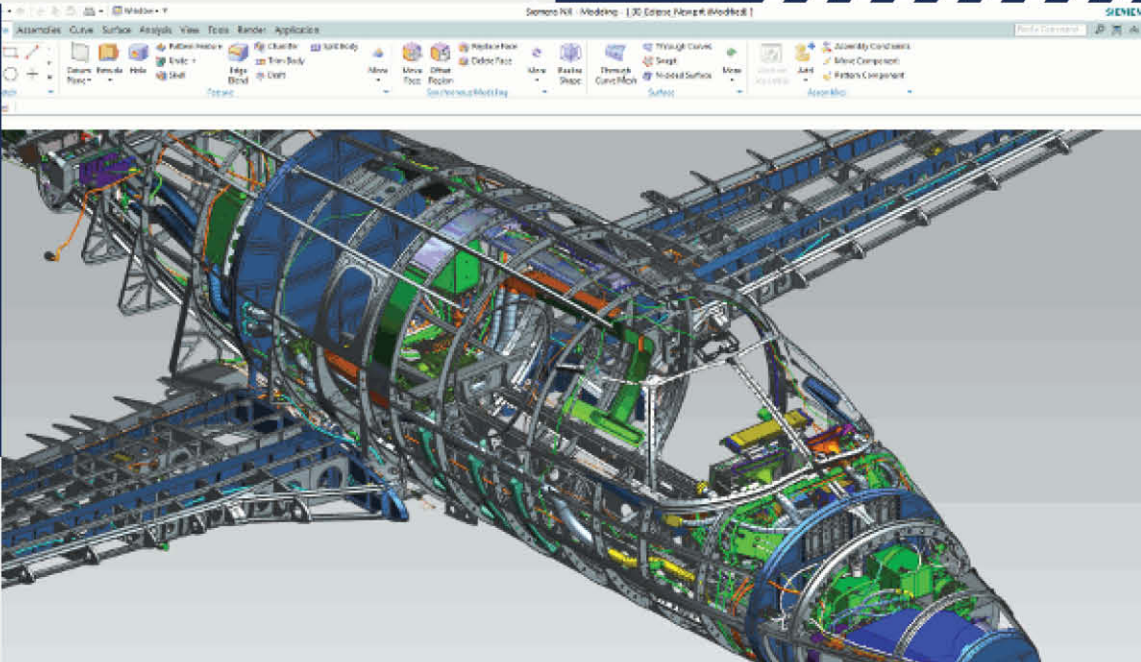
- Overview of sheet metal design with NX software
- Standards for sheet metal materials and their properties
- Basic sheet metal design tool and related geometry elements
- Advanced sheet metal design tool and editing tools
- Create technical drawings for sheet metal with NX software



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE TC1-02 MECHANICAL DESIGN WITH SIEMENS NX.





**PROGRESSIVE DIE DESIGN:
STREAMLINING WORKFLOW WITH SIEMENS NX**



COURSE SYMBOL
TC1 - 04



DURATION
80 HOURS



COURSE OBJECTIVES
BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the concept of plate stamping technology and classify types of stamping press technology
- Analyse the functions of the components that make up a common stamping press die set
- Utilise the supporting commands of the PDW tool
- Solve the application exercises with the support of the PDW tool
- Manage mold data after design (BOM)
- Export the drawings to manufacture die parts.



COURSE SUMMARY

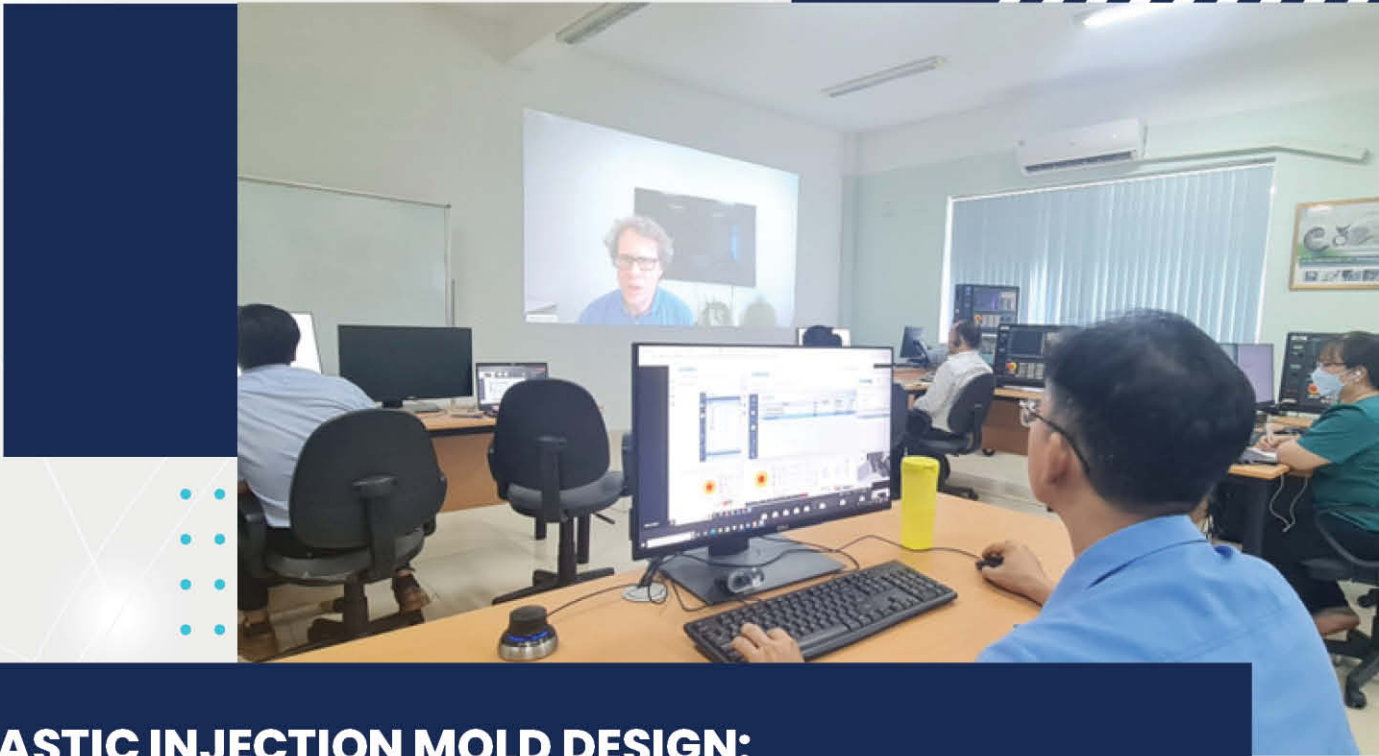
- Overview of press die and press die design
- Overview of NX PDW
- Design of progressive die wizard with NX
- Application in reality with assignments or projects



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE TC1-02 MECHANICAL DESIGN WITH SIEMENS NX.





**PLASTIC INJECTION MOLD DESIGN:
FROM CONCEPT TO PRODUCT WITH SIEMENS NX**



COURSE SYMBOL
TC1 – 05



DURATION
80 HOURS



COURSE OBJECTIVES
BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Design complete mold parts on NX software
- Manage manufacturing materials for a mold manufacturing project
- Plan the quotation for the process of manufacturing a complete set of molds
- Calculate and adjust mold details with NX software



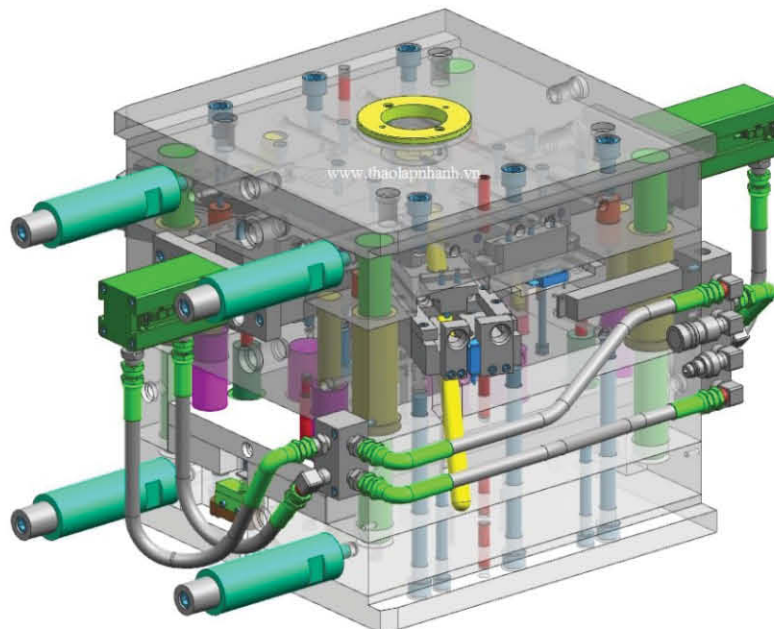
COURSE SUMMARY

- Overview of NX MOLD
- Installing, setting up and management of machining data with NX
- Development of mold design projects
- Inserting standard mold details
- Creating hole machining cycles



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE TC1-02 MECHANICAL DESIGN WITH SIEMENS NX.





TC2

PROGRAMMING, SIMULATION AND MACHINE OPERATION OF CNC TURNING

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH SHOPTURN



COURSE SYMBOL

TC2 – 01



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT, THE TRAINEES WILL BE ABLE TO



- Present the interface and application of ShopTurn software with SINUTRAIN
- Develop the basis of geometry in CNC turning programming
- Analyse the technological parameters in CNC turning programming
- Plan the necessary equipment on CNC lathes such as machine control panel, tool magazine, set up tool, set up workpiece, etc
- Measure tool length and set up zero point for workpiece on simulated CNC lathe simulation
- Create programmes and manage CNC turning programme with ShopTurn software on SINUTRAIN
- Programme, simulate manufacturing products machined on CNC lathe with ShopTurn software on SINUTRAIN
- Export the programme to the CNC lathe to make the product and make correct tool during the machining process



COURSE SUMMARY

- Introduction to the ShopTurn software on SINUTRAIN
- Fundamentals in writing CNC programming
- Analysis of equipment on CNC lathe
- Programming, simulation and machining on virtual CNC lathe with ShopTurn software on SINUTRAIN



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE A BASIC KNOWLEDGE OF MECHANICAL TURNING TECHNOLOGY.





PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH G-CODES (SINUMERIK 840D)



COURSE SYMBOL

TC2 – 02



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT, THE TRAINEES WILL BE ABLE TO



- Present the interface and application of SINUTRAIN software
- Develop the basis of geometry in CNC turning programming
- Analyse the technological parameters in CNC turning programming
- Plan the necessary equipment on CNC lathes such as machine control panel, tool magazine, set up tool, set up workpiece, etc.
- Measure tool length and set up zero point for workpiece on CNC lathe simulation
- Create programmes and managing CNC turning programmes on SINUTRAIN software
- Programme, simulate manufacturing product machined on virtual CNC lathe with G_CODE SIEMENS 840D
- Export the programmes to the CNC lathe to make the product and make correct tool during the machining process



COURSE SUMMARY

- Introduction to the G_CODE SIEMENS 840D programming language
- Fundamentals of writing CNC programming
- Analysis of equipment on CNC lathe
- Programming, simulation and machining on virtual CNC lathe with G_CODE SIEMENS 840D.



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE A BASIC KNOWLEDGE OF MECHANICAL TURNING TECHNOLOGY.





**PROGRAMMING, SIMULATION AND OPERATION
OF VIRTUAL MULTI-AXIS CNC TURNING MACHINES
WITH SHOPTURN (C OR/AND Y AXIS)**



COURSE SYMBOL

TC2 - 03



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the plans in the process of programming multi-axis CNC lathe with driving tools.
- Analyse the interface, advantages, disadvantages and applications of ShopTurn software in multi-axis turning (C and Y axes).
- Plan the necessary equipment on CNC lathes such as machine control panel, tool management panel, how to install tools and install workpieces, etc. on multi-axis CNC lathes.
- Programme, machining and plan drilling and milling operations with C and Y axis on G17 and G19 plans



COURSE SUMMARY

- The basics of multi-axis CNC turning
- Programming of the control tools (Driven tools) on the front surface
- Programming of the control tools (Driven tool) on the cylindrical surface
- Programming, simulation and multi-axis machining (C and Y axes) on virtual CNC lathe with ShopTurn software



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE TC02-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH SHOPTURN.





PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL MULTI-AXIS CNC TURNING MACHINES WITH G-CODES (SINUMERIK 840D, C OR/AND Y AXIS)



COURSE SYMBOL

TC2 - 04



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the plans in the process of programming multi-axis CNC lathe with driving tools
- Analyse the interface, advantages, disadvantages and applications of G_CODE SIEMENS 840D in multi-axis turning (C and Y axes)
- Plan the necessary equipment on CNC lathes such as machine control panel, tool management panel, how to install tools and install workpieces, etc. on multi-axis CNC lathe
- Programming, machining and make the drilling and milling operations with C and Y axis on G17 and G19 plans



COURSE SUMMARY

- Fundamentals of multi-axis CNC turning
- Programming of the control tools (Driven tools) on the front surface
- Programming of the control tools (Driven tool) on the cylindrical surface
- Programming, simulation and multi-axis machining (C and Y axes) on virtual CNC lathe with G_CODE SIEMENS 840D



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE TC02-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH G-CODES (SINUMERIK 840D)







TC3

PROGRAMMING, SIMULATION AND MACHINE OPERATION OF CNC MILLING

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



**PROGRAMMING, SIMULATION AND OPERATION
OF VIRTUAL 3-AXIS CNC MILLING MACHINES
WITH SHOPMILL**



COURSE SYMBOL

TC3 – 01



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the interface and application of SINUTRAIN software
- Develop the basis of geometry in CNC milling programming
- Analyse the technological parameters in CNC milling programming
- Plan the necessary equipment on CNC Milling machines such as machine control panel, tool magazine, setting up tool, setting up workpiece, etc
- Measure tool length and setting up zero point for workpiece on CNC Milling simulation
- Create programmes and manage CNC milling programmes on SINUTRAIN software
- Programming, simulating manufacturing product machined on virtual CNC Milling machine with SHOPMILL SIEMENS 840D
- Exporting the programmes to the CNC Milling machine to manufacture the product and make correct tool calibration during the machining process



COURSE SUMMARY

- Introduction about the SHOPMILL SIEMENS 840D programming language
- Basics technology in developing CNC programming
- Analysis of equipment on CNC Milling machine
- Programming, simulation and machining on virtual CNC Milling with SHOPMILL SIEMENS 840D



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE BASIC KNOWLEDGE OF MECHANICAL MILLING TECHNOLOGY





**PROGRAMMING, SIMULATION AND OPERATION
OF VIRTUAL 3-AXIS CNC MILLING MACHINES
WITH G-CODES (SINUMERIK 840D)**



COURSE SYMBOL

TC3 - 02



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the interface and application of SINUTRAIN software
- Analyse the basis of geometry in CNC milling programming
- Develop the technological parameters in CNC milling programming
- Plan the necessary equipment on CNC milling machines such as machine control panel, tool magazine, setup tool, setup workpiece, etc.
- Measure tool length and set up zero point for workpiece on CNC milling machine simulation
- Develop programmes and manage CNC milling programmes with SINUTRAIN software
- Programme, simulate for manufacturing products on virtual CNC milling with G_CODE SIEMENS 840D
- Export the programme to the CNC milling machines to manufacture product and calibrate the correct tool during the machining process



COURSE SUMMARY

- Introduction to the G_CODE SIEMENS 840D programming language
- Basic technology for developing CNC programming
- Planning for equipment on CNC milling machines
- Programming, simulation and machining on virtual CNC milling machine with G_CODE SIEMENS 840D



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE BASIC KNOWLEDGE OF MILLING MECHANICAL MILLING TECHNOLOGY.





PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3+2-AXIS CNC MILLING MACHINES WITH SHOPMILL



COURSE SYMBOL

TC3 - 03



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Present the interfaces and applications of SINUTRAIN software
- Analyse the basis of geometry in CNC milling programming
- Develop the technological parameters in CNC milling programming
- Plan the necessary equipment on CNC milling machine such as machine control panel, tool magazine, setup tools, setup workpieces, etc.
- Measure tool length and set up zero point for workpiece on CNC milling simulation
- Create programmes and manage CNC milling programmes with SINUTRAIN software
- Programme, simulate for manufacturing product on virtual CNC milling machines with SHOPMILL SIEMENS 840D
- Export the programmes to the CNC milling machines to manufacture the products and calibrate the correct tools during the machining process



COURSE SUMMARY

- Introduction about the SHOPMILL SIEMENS 840D programming language
- Basic technology for developing CNC programming
- Planning of equipment on CNC milling machines
- Programming, simulation and machining on virtual CNC milling machines with SHOPMILL_SIEMENS 840D



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE TC3-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH SHOPMILL





PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3+2-AXIS CNC MILLING MACHINES WITH G-CODES (SINUMERIK 840D)



COURSE SYMBOL

TC3 - 04



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Present the interfaces and applications of SINUTRAIN software
- Analyse the basis of geometry in CNC milling programming
- Develop the technological parameters in CNC milling programming
- Plan the necessary equipment on CNC milling machine such as machine control panel, tool magazine, setup tools, setup workpieces, etc.
- Measure tool length and set up zero point for workpiece on CNC milling simulation
- Create programmes and manage CNC milling programmes with SINUTRAIN software
- Programme, simulate for manufacturing product on virtual CNC milling machines with G_CODE SIEMENS 840D
- Export the programmes to the CNC milling machines to manufacture the products and calibrate the correct tools during the machining process



COURSE SUMMARY

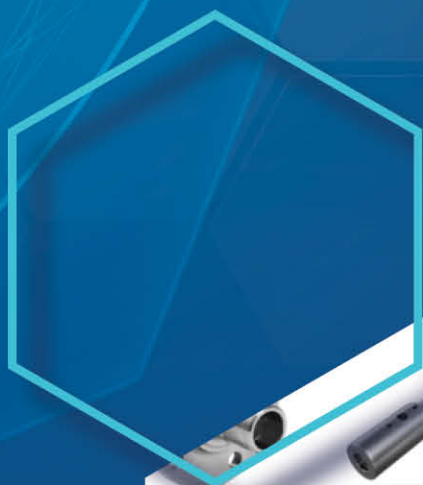
- Introduction about the G_CODE SIEMENS 840D programming language
- Basic technology for developing CNC programming
- Planning of equipment on CNC milling machines
- Programming, simulation and machining on virtual CNC milling machines with G_CODE _ SIEMENS 840D



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE TC3-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH G-CODES (SINUMERIK 840D)







OPERATION OF CNC TURNING MACHINES (SINUMERIK 828D CONTROLLER)



COURSE SYMBOL

TC4 – 01



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Present the structure of a 2-axis CNC turning machine
- Demonstrate the process of operating and machining products on CNC turning machines
- Analyse errors when programming parts and when operating and machining on the machine
- Assess safety risks when working on machines, thereby providing measures to prevent them.
- Utilise commands and machining cycles of the SINUMERIK 828D control system to program and machine parts according to required drawings
- Operate 2-axis CNC turning machine according to procedures and safety assurance for human and machines
- Mount cutting tools, jigs and workpieces on the machine according to technical requirements
- Set up workpiece offset as required
- Measure and enter cutting tool parameters into machine memory
- Machining products according to technical requirements.



COURSE SUMMARY

- Overview of CNC turning machine
- Programming of turning technology with SINUMERIK 828D control system
- Operation of CNC turning machine
- Machining parts on CNC turning machine.

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE FOLLOWING TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX; TC2-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH SHOPTURN; AND TC2-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH G-CODES (SINUMERIK 840D)





OPERATION OF CNC TURNING MACHINES (SINUMERIK 840DSL CONTROLLER)



COURSE SYMBOL

TC4 – 02



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the structure of a 2-axis CNC turning machines
- Demonstrate the process of operating and machining products on CNC turning machines
- Analyse errors when programming parts and when operating and machining on the machine
- Assess risks that cause unsafety when working on machines, thereby providing measures to prevent them.
- Utilise commands and machining cycles of the SINUMERIK 840D control system to programmes and machine parts according to required drawings
- Operating 2-axis CNC turning machine according to procedures and ensure safety for human and machines
- Mount cutting tools, jigs and workpieces on the machine according to technical requirements
- Set up workpiece offset as required
- Measure and enter cutting tool parameters into machine memory
- Manufacture products according to technical requirements.



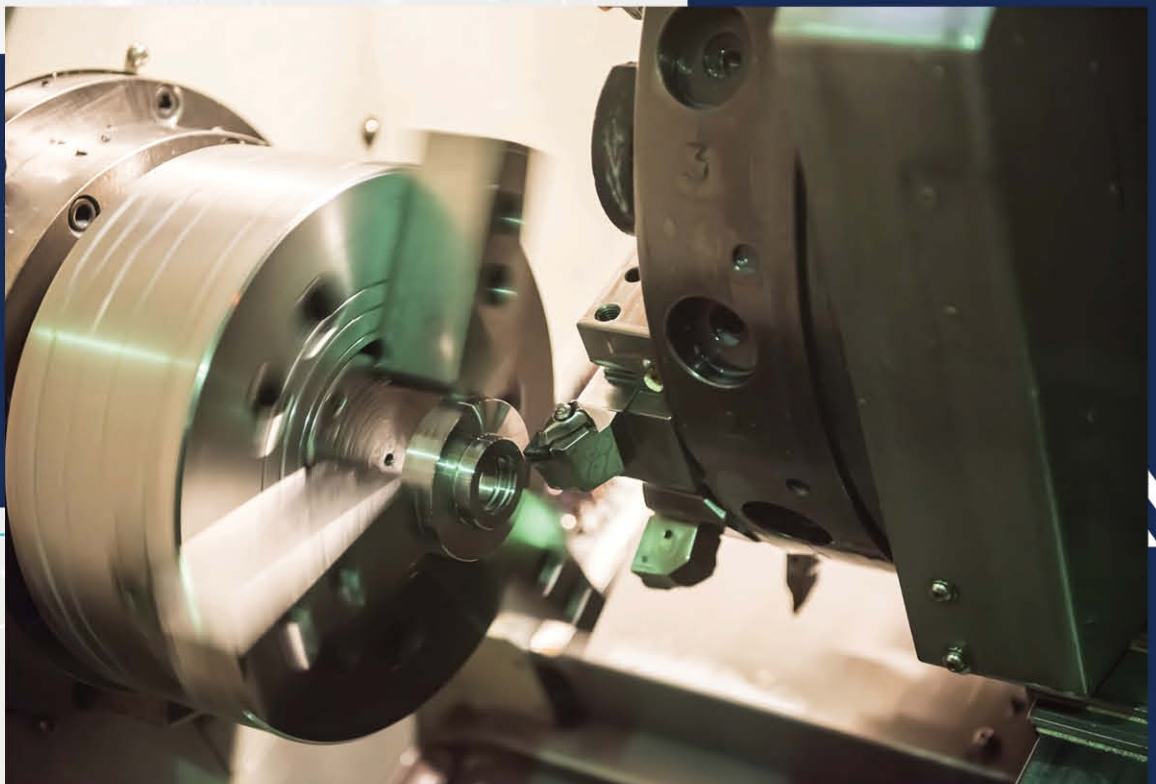
COURSE SUMMARY

- Overview of CNC turning machine
- Programming of turning technology with SINUMERIK 840D control system
- Operation of CNC turning machine
- Manufacturing of parts on CNC turning machine.

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE FOLLOWING TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX; TC2-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH SHOPTURN; AND TC2-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH G-CODES (SINUMERIK 840D).







TC5

SINUMERIK OPERATE – MILLING

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



OPERATION OF CNC MILLING MACHINES (SINUMERIK 828D CONTROLLER)



COURSE SYMBOL

TC5 – 01



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the structure of a 3-axis CNC milling machines
- Demonstrate the process of operating and machining products on CNC milling machines
- Analyse errors when programming parts and when operating and machining on the machines
- Assess safety risks that cause of unsafety when working on machines, thereby providing measures to prevent them.
- Utilise commands and machining cycles of the SINUMERIK 828D control system to program and machine parts according to required drawings
- Operate 3-axis CNC milling machine according to procedures and ensure safety assurance for human and machines
- Mount cutting tools, jigs and workpieces on the machine according to technical requirements
- Set up workpiece offset as required
- Measure and enter cutting tool parameters into machine memory
- Manufacture products according to technical requirements.



COURSE SUMMARY

- Overview of CNC milling machine
- Programming of milling technology with SINUMERIK 828D control system
- Operation of CNC milling machine
- Manufacturing of parts on CNC milling machine.

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE FOLLOWING TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX; TC3-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH SHOPMILL; TC3-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH G-CODES (SINUMERIK 840D)





OPERATION OF CNC MILLING MACHINES (SINUMERIK 840DSL CONTROLLER)



COURSE SYMBOL

TC5 – 02



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Present the structure of a 3-axis CNC milling machines
- Demonstrate the process of operating and machining products on CNC milling machines
- Analyse errors when programming parts and when operating and machining on the machines
- Assess risks that cause unsafety when working on machines, thereby providing measures to prevent them.
- Utilise commands and machining cycles of the SINUMERIK 840D control system to program and machine parts according to required drawings
- Operate 3-axis CNC milling machine according to procedures and ensure safety for human and machines
- Mount cutting tools, jigs and workpieces on the machine according to technical requirements
- Set up workpiece offset as required
- Measure and entering cutting tool parameters into machine memory
- Manufacture products according to technical requirements.



COURSE SUMMARY

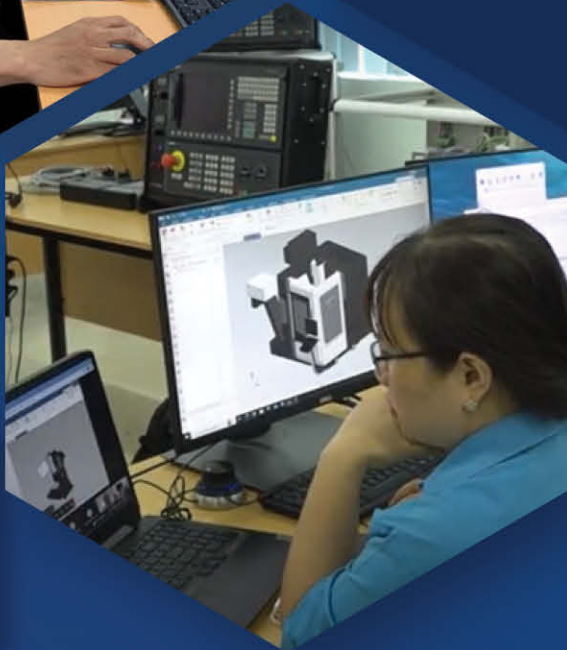
- Overview of CNC milling machine
- Programming of milling technology with SINUMERIK 840D control system
- Operation of CNC milling machine
- Manufacturing of parts on CNC milling machine.

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE FOLLOWING TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX; TC3-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH SHOPMILL; TC3-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH G-CODES (SINUMERIK 840D)







TC6

NX CAD/CAM SOFTWARE APPLICATION

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



PROGRAMING OF 3-AXIS CNC MILLING MACHINES WITH NX



COURSE SYMBOL

TC6 – 01



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Programme for machining with 3-axis CNC milling machines.
- Manufacture with 2D process and 3D process
- Manage and calibrate automatic processes with NX software.
- Manage and monitor the manufacturing and machining processes with 3-axis CNC milling machines.



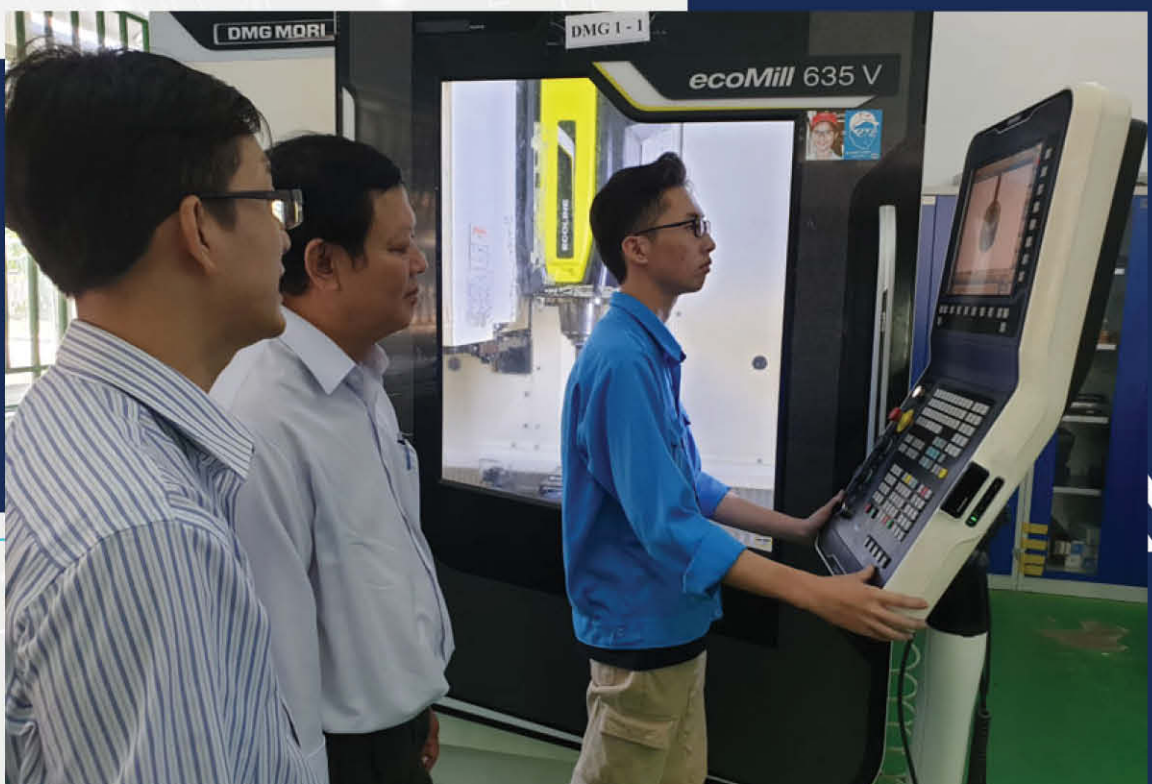
COURSE SUMMARY

- Overview of NX _CAM
- Installation, setting up and management of data machined with NX
- Programming of 2D manufacturing process
- Programming of 3D manufacturing process
- Development of hole machining cycles
- Optimisation of machining programmes

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE FOLLOWING TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX; TC3-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH SHOPMILL; TC3-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH G-CODES (SINUMERIK 840D)





PROGRAMING OF MULTI-AXIS CNC MILLING MACHINES WITH NX



COURSE SYMBOL

TC6 - 02



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Programme for machining 3-axis, 4-axies, and 5-axies CNC milling machines.
- Manufacture with 2D process, 3D process, mold machining, complex multi-surface machining, turbine blade machining, etc.
- Manage and calibrate automatic processes with NX software.
- Manage and monitor the manufacturing and machining processes with 3-axis, 4-axis, and 5-axis CNC milling machines.



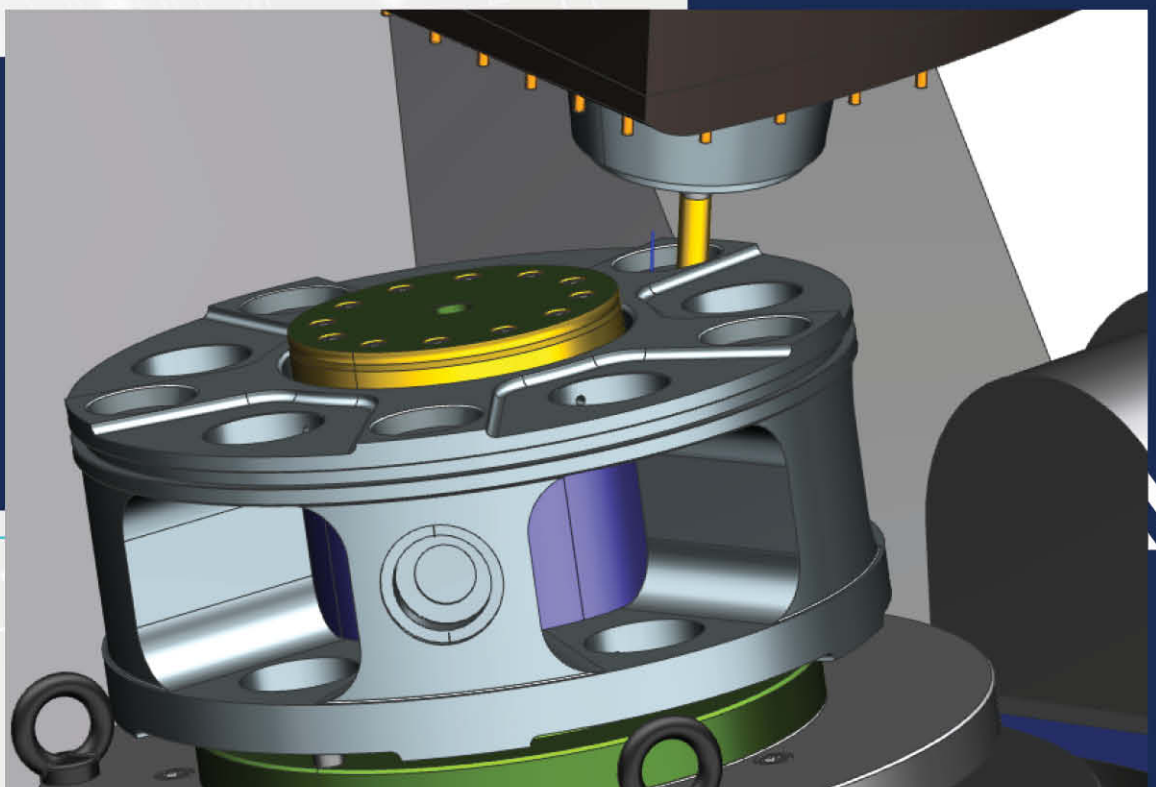
COURSE SUMMARY

- Overview NX _Multi-axis CAM
- Install, set up and manage machining data on NX
- 4-axis CNC milling programming techniques
- 5-axis CNC milling programming techniques
- Combined turning and milling machining programming technique.



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSE:
TC6-01: PROGRAMING OF 3-AXIS CNC MILLING MACHINES WITH NX





PROGRAMMING OF CNC TURNING MACHINES WITH NX



COURSE SYMBOL

TC6 – 03



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Use the functions and contents of the turning CAM on NX software
- Select the machine to create the required machining tasks
- Determine the machine coordinate system (MCS)
- Analyse the geometry to be used for turning
- Create workpieces to simulate when programming for machining
- Create devices for clamping workpieces
- Define the area of touch collision when simulating machining
- Use cutting tools from the library of NX software
- Create a cutting tool with the correct parameters according to the machining process to use when programming
- Create CNC turning technology operations with NX software
- Export G_code of operations from NX software
- Edit, simulate the machining programmes on CNC lathe machines



COURSE SUMMARY

- Overview of turning CAM on NX software
- Determination of the machining profiles
- Selection of the cutting tools
- Creation of turning operations with NX software
- Generation of NC code and simulation on CNC lathes machines

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE FOLLOWING TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX; TC02-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH SHOPTURN; OR TC02-02: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 2-AXIS CNC TURNING MACHINES WITH G-CODES (SINUMERIK 840D).







TC7

SINUMERIK – SERVICE & COMMISSIONING

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



BASIC SERVICE AND COMMISSIONING OF SINUMERIK 828D



COURSE SYMBOL

TC7 – 01



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT, THE TRAINEES WILL BE ABLE TO

- Present and connect the components that make up the SINUMERIK 828D system.
- Determine the status of the CNC controller through the status of the LED. Diagnose the Axis & Drive functions.
- Set the different access levels using a password or key switch, changing the protection level of individual NC programs and setting the time and date for the system.
- Communicate and remotely operate the 828D controller using a computer.
- Activate and customise machine data, axis data and drive data.
- Enable licensing options and manage the licence key using the SINUMERIK HMI.
- Backup and restore the machine and system data according to each data layer of the 828D and system image.
- Create and edit the PLC programs of SINUMERIK 828D system.
- Configure, activate and set up the attributes of messages and alarms.
- Set up the CNC machine maintenance tasks.



COURSE SUMMARY

- Overview of SINUMERIK 828D System.
- Analysis of NC connections and diagnostics, axis and drive diagnostics
- Determination of access levels, time and date settings.
- Analysis of service and commissioning tools
- Machine and setting data.
- Data management, license and option management.
- Development of PLC programmes, alarms and messages
- Setup of service planner



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE A BASIC KNOWLEDGE ABOUT THE OPERATION OR MAINTENANCE OF CNC MACHINES.





BASIC SERVICE AND COMMISSIONING OF SINUMERIK 840D SL



COURSE SYMBOL

TC7 - 02



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present and connect the components that make up the Sinumerik 840Dsl system.
- Determine the status of the CNC controller through the status of the LED. Diagnose the Axis & Drive functions.
- Set the different access levels using a password or key switch, change the protection level of individual NC programs and set the time and date for the system.
- Communicate and remotely operate the 840Dsl controller using a computer.
- Activate and customise machine data, axis data and drive data.
- Enable licensing options and Manage the licence key using the SINUMERIK HMI
- Backup and restore the machine and system data according to each data layer of the 840Dsl and system image.
- Create Ghost file for WIN 10 on PCU50.
- Create and edit the PLC programs of SINUMERIK 840Dsl system by Tia Portal software.
- Configure, activate and setting the attributes of messages and alarms.



COURSE SUMMARY

- Overview of SINUMERIK 840Dsl System
- Analysis of NC connections and diagnostics, axis and drive diagnostics
- Determination of accessing levels, time and date settings.
- Analysis of service and commissioning tools
- Machine and setting data.
- Data management. License and option management.
- Development of PLC programmes, alarms and messages
- Setup of service planner.

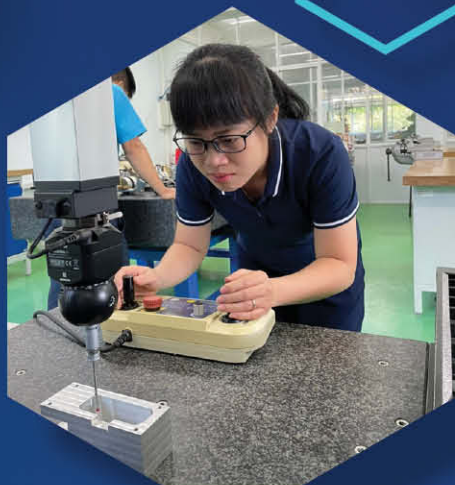


ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE A BASIC KNOWLEDGE ABOUT THE OPERATION OR MAINTENANCE OF CNC MACHINES.







TC8

MECHANICAL MEASURING TECHNIQUES

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



MEASURING MECHANICAL PRODUCTS WITH UNIVERSAL MEASUREMENT INSTRUMENTS



COURSE SYMBOL

TC8 – 01



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Read detailed mechanical product drawings.
- Determine the uses, structures and know how to use universal measuring instruments.
- Decide on steps to measure products using measuring tools.
- Select measuring tools that match the drawing requirements.
- Utilise universal measuring tools to measure dimensions as required.
- Maintain measuring tools according to the manufacturer's requirements.
- Evaluate measured results compared to allowable tolerances



COURSE SUMMARY

- Basic concepts of measurement techniques.
- Measurement of length dimensions.
- Checking geometric shapes and positions.
- Checking threads and roughness.



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST HAVE KNOWLEDGE OF TOLERANCES, MATERIALS AND TECHNICAL DRAWINGS.





MEASURING MECHANICAL PRODUCTS WITH CO-ORDINATE MEASUREMENT MACHINE (CMM)



COURSE SYMBOL

TC8 - 02



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Read and analyse detailed product drawings.
- Determine the uses, structure and operating principles of CMM machines.
- Demonstrate the steps to operate a CMM machine.
- Programme basic and advanced measuring programmes on CMM machines.
- Operate CMM machines ensuring safety principles.
- Export and print results after measurement.
- Evaluate the results after measurement compared to the drawing requirements



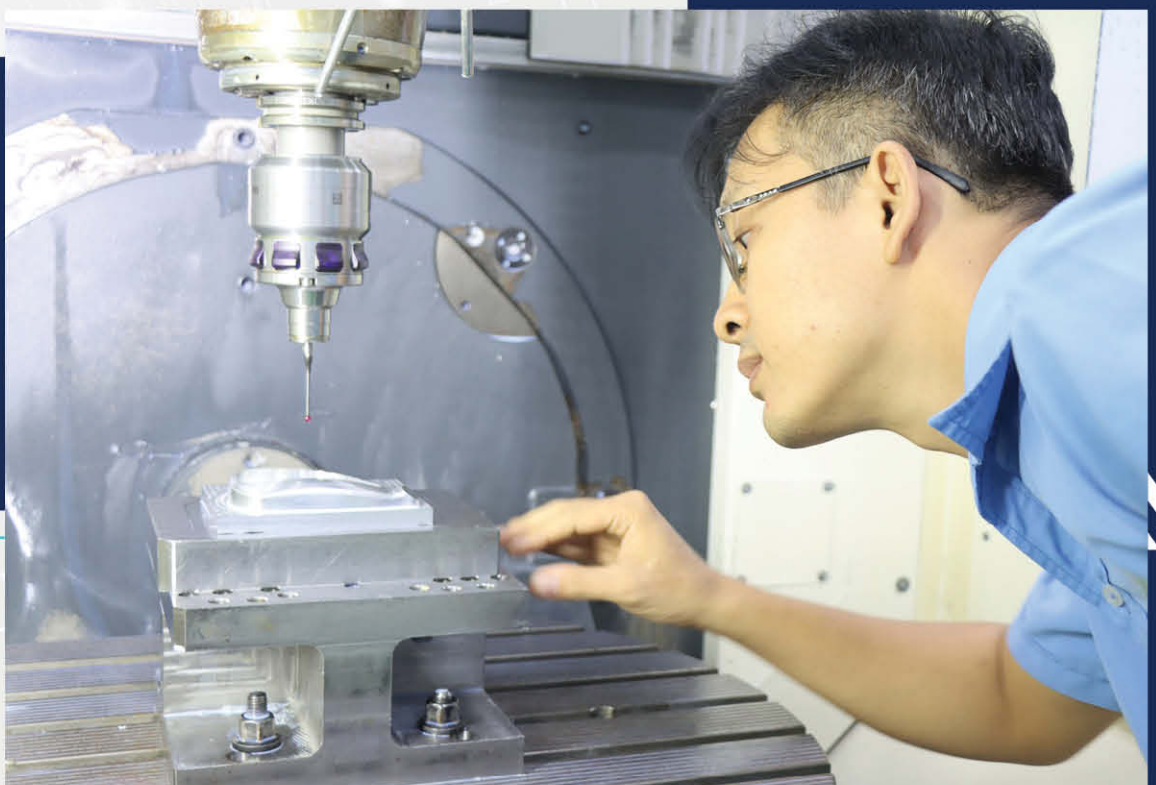
COURSE SUMMARY

- Introduction about CMM machines and activating CMM machines.
- Setup of machine configuration and creation of standards.
- Programming for manual measurement programmes.
- Programming for automatic measurement programmes.
- Report tolerances and print measurement results

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST HAVE KNOWLEDGE OF TOLERANCES, MATERIALS AND TECHNICAL DRAWINGS; AND COMPLETE THE FURTHER TRAINING TC8-01: MEASURING MECHANICAL PRODUCTS WITH UNIVERSAL MEASUREMENT INSTRUMENTS.





APPLYING MCOSMOS ON MEASUREMENT OF CAD DATA-COMPARED MECHANICAL PRODUCTS WITH COORDINATE MEASUREMENT MACHINE



COURSE SYMBOL

TC8 - 03



DURATION

40 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO

- Read and analyse detailed product drawings.
- Present the concept and uses of CAT1000PS in MCOSMOS
- Analyse the steps to import a 3D model into the measurement programmes and set up a coordinate system to coordinate between real details and the 3D model.
- Plan detailed measurement programming steps with 3D models.
- Import the 3D model into the measurement programme and set up a coordinate system to coordinate between real details and the 3D model.
- Programme real detailed measurements on 3D models.
- Operate CMM machines to ensure safety principles.
- Export and print results after measurement.
- Evaluate the results after measurement compared to the drawing requirements.



COURSE SUMMARY

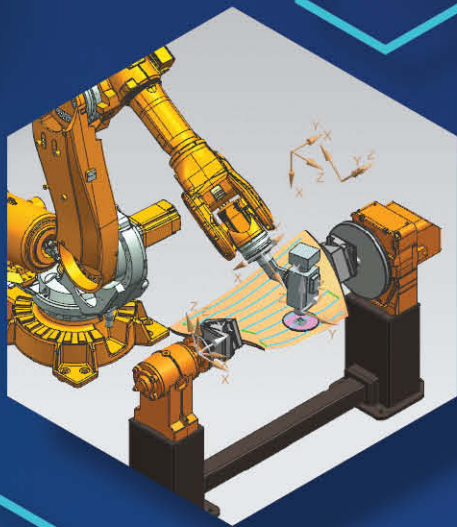
- Overview of CATI000PS software.
- Programming of detailed measurement programmes with 3D models.
- Calculation of tolerances and exporting of measurement results

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST HAVE KNOWLEDGE OF TOLERANCES, MATERIALS AND TECHNICAL DRAWINGS; AND COMPLETE THE FURTHER TRAINING TC8-01: MEASURING MECHANICAL PRODUCTS WITH UNIVERSAL MEASUREMENT INSTRUMENTS, TC8-02: MEASURING MECHANICAL PRODUCTS WITH CO-ORDINATE MEASUREMENT MACHINE (CMM)





TC9

INDUSTRIAL ROBOT AND ADDITIVE MANUFACTURING TECHNOLOGY

SHORT-TERM TRAINING COURSES BY SPECIALISED TOPICS



FUNDAMENTALS OF ADDITIVE MANUFACTURING PROCESSES – DESIGN, PLANNING AND IMPLEMENTATION



COURSE SYMBOL

TC9 – 01



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Construct complex components by CAD
- Develop parametrical data sets for digital 3D-models
- Comply to and apply design principles for additive manufacturing
- Research and select the right processes for additive manufacturing
- Convert and modify 3D-data sets according to respective AMP
- Plan the steps for specific manufacturing procedures
- Set up machines and equipment for manufacturing
- Apply procedures of AMP, detailed component manufacturing, and assess the work results
- Adjust and optimise the procedure parameters
- Control, monitor and document the processes, implement quality assurance measures
- Take measures to correct errors and defects and make documentation
- Maintain and secure data and the technical documents of configuration and modification management
- Comply and apply the specific regulations for occupational health and safety and environment protection
- Convert 3D data to programmes used for 3D printers
- Develop models for printing
- Customise existing 3D models
- Prepare and set up the printers for manufacturing
- Optimise topology of detailed components
- Check and assess the print results



COURSE SUMMARY

- Development of 3D-Part models with NX
- Fundamentals of additive manufacturing processes
- Design principles and design options for additive manufacturing
- Preparation for additive manufacturing
- Process of additive manufacturing of components
- Post-processing of additive manufactured detailed parts
- Occupational safety and environmental protection
- Topology optimisation of detailed parts



ENTRY REQUIREMENTS

THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX





FUNDAMENTALS OF PROGRAMMING INDUSTRIAL ROBOTS AND SIMULATION WITH DIGITAL TWINS



COURSE SYMBOL

TC9 – 02



DURATION

80 HOURS



COURSE OBJECTIVES

BY THE END OF THIS TRAINING UNIT,
THE TRAINEES WILL BE ABLE TO



- Present the basic NX functions and the basic steps to create a CAM files
- Distinguish the differences between robots and CNC machines
- Explain the functions of postprocessors for robots
- Analyse the steps to load and use robot models in Run MyVirtual Machine
- Distinguish the differences between VNCK and Run MyVirtual Machine
- Present examples of robotic usage in AMP
- Utilise types of typical robot control and functions of machine tool builder
- Decide the procedures in using machine tool builder for specific application
- Plan the steps to solve the required assignments
- Evaluate technical solutions for virtual and actual robots
- Develop examples of milling technology using robots
- Programme detailed parts with NX and Run MyVirtual Machine
- Select the right simulation types depending on the application cases
- Create programmes for AMP with robots and printing head
- Use and modify libraries for machines and tools.



COURSE SUMMARY

- Review of fundamentals of Siemens NX and CNC milling
- Programming for technology steps of milling and drilling with NX
- Development of Run MyVirtual Machine with robots
- Fundamentals of AMP with robots
- Advanced Programming for robots in Run MyVirtual Machine
- Development of Machine Libraries with NX
- Application assignments/ projects

ENTRY REQUIREMENTS



THE PARTICIPANTS MUST SUCCESSFULLY COMPLETE THE FOLLOWING TRAINING COURSES: TC1-02: MECHANICAL DESIGN WITH SIEMENS NX, AND TC3-01: PROGRAMMING, SIMULATION AND OPERATION OF VIRTUAL 3-AXIS CNC MILLING MACHINES WITH SHOPMILL, AND TC6-01: PROGRAMING OF 3-AXIS CNC MILLING MACHINES WITH NX.





LILAMA 2 TRAINERS

Our seasoned trainers possess extensive expertise in programming and operation of CNC machines, with a strong background in further training industry technicians and engineers in the domain of numerically controlled machine tools. They are proficient in designing and implementing NX CAD/CAM systems as well as offering consultancy services and commissioning support for renowned companies, specialising in SINUMERIK Technologies, the industrial robot and additive manufacturing technologies.

During training sessions, these professionals prioritise imparting real-world knowledge derived from their professional experiences, fostering an environment that encourages open dialogue and collaboration. Participants are welcome to contribute suggestions, often leading to discussions on topics beyond the standard curriculum, which address specific aspects of their work.

Upon completion of courses, collaborations between LILAMA 2 and industrial facility representatives emerge in areas such as projects, modernisation, and commissioning lines, fostering the integration of advanced technologies with energy efficient and climate relevant topics or robotics and additive manufacturing applied in smart factories. The partnerships would contribute to an inclusive, green and digital transition of the manufacturing industry in Viet Nam.





D-TEC

DIGITAL TECHNOLOGY EDUCATION CENTRE



CONTACT US

Book a course directly via **www.dtec.lilama2.edu.vn** or contact us at **dtec@lilama2.edu.vn** or **+84 251 355 8700** to speak with one of our training team. For more information, please visit our website regularly. Here you will find up-to-date information about course schedules, descriptions, registration, training fees, location and contact information.

You are very welcome to visit us at:

Digital Technology Education Centre (D-TEC)

CNC building, Campus A, LILAMA 2

Km32, National Highway 51, Long Phuoc, Long Thanh District, Dong Nai Province, Vietnam



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Tel: **+84 251 355 8700**

Some of Our Partnerships



SCHAEFFLER



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BECAIMEX



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