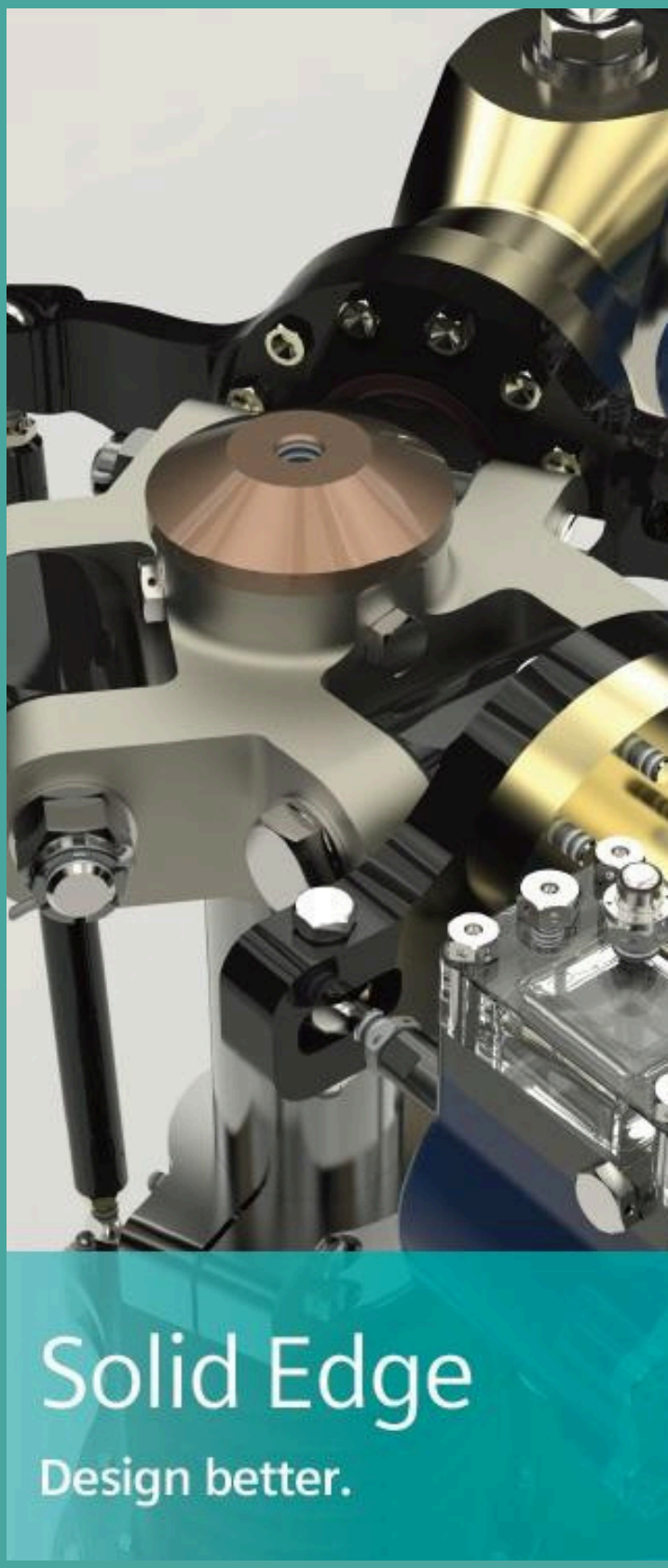
PLM RESOURCES GMBH

TRAINING CATALOG



SOLIDEDGE

INTRODUCTION

PLM RESSOURCES GMBH IS A COMPANY THAT BASES ITS FOUNDATIONS ON THE CONTRIBUTION OF ADDED VALUES TO ITS CUSTOMERS, HELPING THEM FOCUS ON ALL OF THEIR INTERNAL PROCESSES IN ORDER TO CONCENTRATE ON THE CONTINUOUS IMPROVEMENT OF THEIR PRODUCTS.

PLM RESOURCES, OFFICIAL PARTNER OF SIEMENS DIGITAL INDUSTRIES SOFTWARE IN NORTH AFRICA, AIMS TO OFFER A VARIETY OF SOFTWARES IN DIFFERENT AREAS SUCH AS TECNOMATIX, **TEAMCENTER**, SIMCENTER, NX AND SOLID EDGE.

SOLID EDGE

SOLIDEDGE

Solid Edge is a portfolio of affordable, easy-to-use software tools that address all aspects of the product development process. Solid Edge combines the speed and simplicity of direct modeling with the flexibility and control of parametric design – made possible with synchronous technology.

Initiation Solid Edge

ID : PLM-2056-ISE

Duration : 4 Days

Prerequisites: No 3D design prerequisites.Knowledge of the PC environment and Windows.

Overview: Acquire the skills to create parts with simple geometriessimple geometries, assemblies and 2D drawings. Master a robust and orderly design method Learn to manage CAD files**.**

TOPICS:

Day 1 :

- Discovering the Solid Edge interface.
- Creating drawings and sketches.
- Select and create new drawings.
- Draw sketches in these planes using the differentdifferent tools.
- Create a simple part (basics).
- Create volumes by extrusion and revolution drillings, fillets and chamfers.
- Define the material and properties of the part.

Day 2:

- Master the applied functions.
- Create hulls and drafts.
- Copy functions by symmetry or by matrix Modify the created functions.
- Manage the tree structure of a part.
- A robust design method.
- Choose an order of functions allowing a fast and error-free quick and error-free modification Rename and group functions Case studies.

- Creating an assembly.
- Master the different assembly relationships.
- Place parts by symmetry or matrix parts by symmetry or by matrix.
- Duplicate and clone components.

Day 3:

- Managing assemblies.
- Use display configurations.
- Create simplified assemblies simplified assemblies.
- Measurement tools.
- Check static and dynamic interference.
- Creating and dressing 2D drawings.
- Draw a part and an assembly.
- Create, dimension and annotate views.
- Place tables and a bill of materials.

Day 4 :

- Managing CAD files.
- Understand the links between files Use the design manager.
- Copy, rename and revise a component Create a Pack & Go.
- Create an assembly manual.
- Create an exploded view.
- Drawing an exploded view.
- Complete practical exercise.
- Create the parts, the assembly and the drawing of a simple mechanical assembly.
- Possibility to use a concrete example provided beforehand by the trainee.

SOLID EDGE 2D DRAFTING

ID : PLM-2056-SE2DD
Duration: 2 days
Prerequisites: No knowledge of CAD is required. Mastery of the basics of the Windows environment isessential**.**
Overview: Be able to produce design drawings of parts and mechanical parts and mechanical assemblies in 2D as well as to customize title blocks and parameterize drawing templates
TOPICS:
Day 1 :

- Discovering the user interface.
- Drawing in 2D.Study the drawing tools.
- Studying the modification tools.
- Placing geometric relations.
- Mastering the tools of dimensioning tools.
- Manage automatic dimensioning: Intellisketch.
- Creating 2D views.Work on the 2D model.
- Placing 2D model views. Use the " Grid " function **.**

Day 2:

- Dressing a drawing: dimensions and annotations.
- Define precision dimensions: tolerances Use prefixes.
- Place legends and speech bubbles.
- Set automatic property fields.
- Create weld and roughness symbols.
- Create weld and roughness symbols.
- Place axis lines and center marks.
- Block BOM.Optimize design time of drawings.
- Using blocks and symbols.
- Working with levels or layers.
- Importing and exporting.
- DXF and DWG files.
- Setting up Creating a custom title block

THE FUNDAMENTALS

ID : PLM-2022-FUND

Duration: 6 days

Prerequisites: No knowledge of CAD is required. Mastery of the basics of the Windows environment isessential.

Overview: Know how to create parts, assemblies and layouts of increasing of increasing complexity. Master an efficient and orderly design method. Learn to manage CAD files.

Day 1:

- Discovery of the Solid Edge interface.
- Creation of a part (basic notions).
- Master the concepts of planes and sketches.
- Create volumes by extrusion and revolution.
- Place holes, fillets and chamfers and chamfers.
- Define the material and properties of the properties of the part.
- Exercises Numerous practical cases of increasing difficulty allowing to Understand and master the organization of functions

Day 2 :

- Master the advanced functions.
- Discovery of hulls, sweeps, connections, ... Copy functions by symmetry or by matrix.
- Advice on design methodology.
- Choose an order of functions allowing a fast and error-free modification.
- Rename and group functions.Practical cases.
- Creating an assembly.Master the basic relationships.
- Place parts by symmetry or by matrix.
- Duplicate and clone components

Day 3:

- Creating an assembly (continued).
- Use display configurations.
- Check for static and dynamic interference.
- Creating and dressing 2D drawings.
- Create, dimension and annotate views.
- Place a bill of materials.Managing CAD files.
- Understand the links between files.Introduction to the design manager.

Day 4:

- Managing CAD files (continued).
- Use the Design Manager Copy, rename and revise a component.
- Create a Pack & Go Create complex shapes.
- Adding material by sweeping and splicing.
- Drafting and ribbing undercuts and ribs.
- Advanced die features.
- Design of parametric parts.Use variables and formulas.Create part families.

Day 5:

- Create a complex assembly.
- Master all assembly relationships. Design parameterized assemblies.
- Create parts in the context of an assembly.
- Create links between parts in an assembly.Concept of assembly families.
- Explode an assembly. Create an exploded view and draw it.

Day 6:

- Design of frames.
- Create the reference part and apply profiles.
- Introduction to Synchronous Technology. Modify a "dead body".
- Dimensioning in 3D, Setting up geometrical relationships.
- Use the Compass and design intentions.
- Combine and synchronous technology. Complete practical exercise.
- Make the parts, the assembly and the drawing of a simple mechanical mechanical assembly.
- Exercise based on a concrete example provided by the trainee.

THE FUNDAMENTALS – SHEET METAL

ID : PLM-2023-FUND
Duration: 6 days
Prerequisites: No 3D design requirements.
Overview: Know how to create parts, assemblies and drawings of increasing complexity. A focus is made on the design of sheet metal parts. Master an effective method of orderly design. Learn to manage CAD files.
TOPICS:
Day 1:

- Discovery of the Solid Edge interface.
- Creation of a sheet metal (basic concepts).
- Master the concepts of planes and sketches.
- Create sheets with the faces and folds functions.
- Add corner treatments Place holes.
- Define the gauge, the material and the properties of the sheet the unfolding of a sheet.
- Master the deformation functions.
- Place deformation functions.

Day 2:

- Mastering applied functions.
- Copying functions by symmetry or by matrix.
- Folding and collapsing folds.
- Cost estimation (from Classic).
- Advice on design methodology.
- Choose an order of functions that allows for quick and error-free modification. Creating an assembly.
- Master the basic assembly relationships.
- Place parts by symmetry or by matrix Duplicate and clone components

Day 3:

- Creating an assembly (continued).
- Use display configurations Check for static and dynamic interference.
- Creating and dressing 2D drawings.
- Create, dimension and annotate views.
- Place a bill of materials.
- Managing CAD files Understand the links between files,Introduction to the Design Manager.

Day 4:

- Managing CAD files (continued).
- Use the Design Manager Copy, rename and revise a component.
- Create a Pack & Go.
- Create complex sheets.
- Create hoppers (understanding options).
- Designing parametric sheets.
- Use variables and formulas Create part families.
- Discovering the part environment.
- The basic functions of the part environment Switching from a part to a sheet metal.

Day 5:

- Create a complex assembly.
- Master all assembly relationships.
- Design parameterized assemblies.
- Create parts in the context of an assembly.
- Create connections between parts in an assembly.
- Use assembly families.
- Exploded view and animation: assembly instructions.
- Create an exploded view and draw it.

Day 6:

- Frame design.
- Create the reference part and apply profiles.
- Introduction to Synchronous Technology.
- Modify a "dead body".
- Dimensioning in 3D, setting geometric relationships.
- Use the Compass and design intentions Combine ordered and synchronous. Complete practical exercise.
- Realize the parts, the assembly and the drawing of a simple mechanical set (if possible example of the trainee).

SYNCHRONOUS TECHNOLOGY

ID : PLM-2093-FUND
Duration: 3 days
Prerequisites: No 3D design requirements.
Overview: Acquire the skills to create parts with simple geometries simple geometries, assemblies and 2D drawings.Master a robust, orderly design method Learn to manage CAD files.

Day 1:

- Modeling without function history.
- Through 2 examples, understand the principle of direct editing on a simple part and its advantage on a complex part.
- Design in Synchronous.
- Locking a drawing.
- Understand how regions work Place ribs 3D.
- Create volumes by extrusion and revolution.
- Modify while respecting design intent.
- Modify by changing your design intent with the Solution Manager. Place holes, fillets and chamfers Synchronous limits and solutions: the mixed ordered/synchronous.
- Switch to Ordered Move to Synchronous.
- A robust modeling method mixingb and synchronous.

Day 2 :

- Modification of dead bodies.
- Recognition of drill holes, drill dies and chamfers.
- Imposing geometric dimensions and relationships.
- Synchronization in the assembly.
- Modification from the assembly.
- Impose dimensions and relationships from the assembly.
- Creating a synchronous part from the assembly.
- Functions applied in synchronous.
- Create shells and drafts.
- Copy functions by symmetry or by matrix.

Day 3 :

- Creation of a sheet metal with the Synchronous Technology.
- Mastering the addition of faces and folds.
- The advantages of synchronous technology: face orientation Mastering face following profile in synchronous. Place deformation functions.
- Mix part, sheet, ordered and synchronous. Transform a synchronous solid into an ordered sheet (ST8). Advanced functions.
- Live section. Inter-part copying. Copy and paste, detach and attach. Practical exercises. Possibility to work on concrete cases brought by the trainee. D

SURFACIQUE

ID : PLM-2023-SURF
Duration: 2 days
Prerequisites: No 3D design requirements.
Overview: Be able to design complex parts such as plastic parts such as plastic parts or foundry parts.Learn to validate the feasibility of a part using analysis tools.
TOPICS:
Day 1:

- Why surfaces?
- The limits of solid modeling for complex shapes.
- Obtaining a solid with surfaces: sewing, boolean, thickening, replacing face,Creating curves.
- Bspline curve in the sketch, offset and simplify.
- Curve by key points and according to table,Cross curve, Project and wrap sketch,Creation of surfaces.
- Surface by extrusion and revolution Surface by sweep.
- Bounded surface,Blue Technology,Bluedot Bluesurf.
- Various techniques through exercises.
- Copy without internal contour, shift.
- Adjusted surface,Extend / relimit / adjust.
- Displaying symmetry and reflections Body symmetry /function

Day 2:

- Mastering applied functions.
- Copying functions by symmetry or by matrix.
- Folding and collapsing folds.
- Cost estimation (from Classic).
- Advice on design methodology.
- Choose an order of functions that allows for quick and error-free modification. Creating an assembly.
- Master the basic assembly relationships.
- Place parts by symmetry or by matrix Duplicate and clone components symmetry.

Day 3:

- From surface to volume.
- Thickening Replace faces Sewing.
- Boolean operations. Continuity control and drafting.
- What is continuity in curvature or tangency?
- How to control it : the control handles How to check it, analyze it :zebra and comb.
- Control of continuity on the plane of symmetry Continuity leaveof curvature.
- Basic draft/advanced draft Analysis of drafts,Summary exercises

PRODUCT LINE MANAGEMENT

ID : PLM-2027-PLM
Duration: 2 days
Prerequisites: No 3D design requirements.
Overview: To be able to carry out complex assemblies controlled by one or more parameters and then develop a range of a range of products.
TOPICS:
Day 1:

- Design of parameterized parts.
- Order the functions of a part for robust parameterization.
- Rename pilot dimensions and add formulas.
- Use IF, INT and Limits functions.
- Pilot variables from a file.
- Excel Create part families.
- Use part copies.
- Create parameterized assemblies.
- Create assembly families Publish an associative member.
- Master the different types of inter-part links.
- Use inter-part copies.
- Use the technological functions of assembly Inserting an assembly copy.

Day 2:

- Manage CAD files.
- Understand the links between files Use the design manager.
- Copy, rename and revise a project.
- Organize your files to avoid duplication.
- Manage component revisions.
- Create a Pack & Go.
- Create a complete project.
- Create a project based on the client's files.

SYNCHRONOUS TECHNOLOGY

ID : PLM-2023-FUND
Duration: 3 days
Prerequisites: No 3D design requirements.
Overview: Acquire the skills to create parts with simple geometries simple geometries, assemblies and 2D drawings.Master a robust, orderly design method Learn to manage CAD files.

Day 1:

- Modeling without function history.
- Through 2 examples, understand the principle of direct editing on a simple part and its advantage on a complex part.
- Design in Synchronous.
- Locking a drawing.
- Understand how regions work Place ribs 3D.
- Create volumes by extrusion and revolution.
- Modify while respecting design intent.
- Modify by changing your design intent with the Solution Manager. Place holes, fillets and chamfers Synchronous limits and solutions: the mixed ordered/synchronous.
- Switch to Ordered Move to Synchronous.
- A robust modeling method mixingb and synchronous.

Day 2 :

- Modification of dead bodies.
- Recognition of drill holes, drill dies and chamfers.
- Imposing geometric dimensions and relationships.
- Synchronization in the assembly.
- Modification from the assembly.
- Impose dimensions and relationships from the assembly.
- Creating a synchronous part from the assembly.
- Functions applied in synchronous.
- Create shells and drafts.
- Copy functions by symmetry or by matrix.

Day 3 :

- Creation of a sheet metal with the Synchronous Technology.
- Mastering the addition of faces and folds.
- The advantages of synchronous technology: face orientation Mastering face following profile in synchronous. Place deformation functions.
- Mix part, sheet, ordered and synchronous. Transform a synchronous solid into an ordered sheet (ST8). Advanced functions.
- Live section. Inter-part copying. Copy and paste, detach and attach. Practical exercises. Possibility to work on concrete cases brought by the trainee.

KEYSHOT : PHOTOREALISTIC RENDERING AND ANIMATION

ID : PLM-2053-KPRA
Duration: 1 day
Prerequisites: No 3D design requirements.
Overview: Know how to create an exploded image, an animation and a photo-realistic rendering thanks to the Keyshot module (functionality available from ST7).
TOPICS:
Day 1:

- Introduction.
- The photo realism in 3D.
- The different effects: bevel, depth of field, specular map Environment and HDRI map, The sites for HDRI.
- Software interface,Libraries.
- Presentation of the interface.
- Import formats, Live linking, Keyshot resources,Navigations.
- Moving around in the 3D view, Handling 3D objects, Keyboard shortcuts.
- Materials management (assign, edit, copy/paste, unlink), Common parameters.
- Materials: axalta, cloth and leather, gem stones, glass, plastic, stone, toon, wood, metal, miscellaneous.
- Mold tech Light materials: ies, aera, point light.
- Materials: translucent, liquids, paint, Caustics.
- The colors in the library The tool " material sets " The cloud Textures,Texture parameters, texture plating.
- Textures bump and normal map, Opacity map, Specular map,Label,Procedural texture,The scene tree.
- Hide/show elements, Create a group, Multi-selection, Duplication, Multi-copy.
- Environment,Adjust perspective, Camera, Depth of field, Settings,Rendering.
- Still images ,Quality and rendering settings,Animations.
- Importing an animation from Solid Edge.
- Animation properties, Toolbar and interface.

XPRESROUTE

ID : PLM-2023-KPRA
Duration: 1 day
Prerequisites: No 3D design requirements.
Overview: Learn how to create a trajectory within an assembly and apply a network of tubes to it using fittings from Standard Parts or from your own library**.**
TOPICS:
Day 1:

- Reminder on the Assembly environment.
- Modeling a piping system in an assembly. Create 2D or 3D trajectories.
- Assign pipes to a path Modify end conditions Change end conditions.
- Impose a length on a flexible element.
- Create adaptive adaptive hoses (from 2019) Re-route a path (from 2019) path (from 2019).
- Define a piping system using the wizard. Assign fittings and attributes.
- Export pipe report. 3D sketches.
- Use the 3D sketching environment. Drawing and reporting.
- Retrieve pipe length and bending information BOM: pipe specific information.
- Application exercises/miscellaneous questions.

SOLID EDGE P&ID DESIGN

ID : PLM-2023-SEP&IDD
Duration: 1 day
Prerequisites: No 3D design requirements.
Overview: Be able to create a hydraulic diagram with P&ID
TOPICS:
Day 1:

- Discovery of the P&ID interface.
- Main menu, toolbar, selection menu, workspace Creation of a new project.
- Drawing tools.
- Creation of pipe lines Selection and modification tools modification tools Parameter control Symbols and components.
- Use of the symbol library and the Component Database.
- Creation of lists.
- Importance of the TAG number Component lists (BOM).
- Modifying the displayed information.
- Pipe class management Use the Pipe tool.
- Specification Editor Create/Modify a pipe class.
- Conversion to PDF.

SOLID EDGE PIPING DESIGN

ID : PLM-2024-SEPD
Duration: 2 days
Prerequisites: No 3D design requirements.
Overview: Be able to generate a piping system with the Piping Design.
TOPICS:
Day 1:

- Discovering the Piping Design interface.
- Inserting components Using the Piping window.
- Place part function. Generate the piping network.
- XpresRoute, PathXpres, 3D Line Segment Pipe Piping paths.
- Associate the pipe line. Isometric drawings.
- Create basic isometric drawings Create spool isometric drawings isometric planes.

Day 2:

- Managing pipe classes.
- Use the Pipe Specification Editor tool.
- Create/Modify a pipe class.
- Allow or not allow a space for welding.
- Use a pipe class. Insert components automatically.
- Create and use a new component.
- Component Wizard tool. Add a component in the DataBase.
- Insert a new component. Complete practical exercise.
- Create a pipe class and use it to create a pipe network.

MODULAR PLANT DESIGN: P&ID AND PIPING DESIGN

ID : PLM-2024-MPDP&IDPD
Duration: 3 days
Prerequisites: No 3D design requirements.
Overview: Be able to create a hydraulic diagram with P&ID, create the links with the 3D model and generate the piping system with Piping Design.
TOPICS:
Day 1:

- Discovery of the P&ID interface.
- Creation of a schema.
- Create a new project.
- Drawing tools (creation of pipe lines, component insertions).
- Selection tools.
- TAG number and parameters.
- Inserting lists.
- Component lists (BOM). Conversion to PDF.

Day 2:

- Discovery of the Piping Design interface.
- Create links between P&ID and Piping Design.
- Use the To-Do ListP&ID tool. Insert components.
- Place fittings in CAD Create a sub-assembly in CAD.
- Generate the piping network.
- XpresRoute, PathXpres, 3D Line Segment Pipe Paths.
- Associate the pipe line. Isometric planes.
- Create basic isometric planes Create spool isometric planes.
- Pipe class management Use the Pipe Specification tool.
- Editor Create/Modify a pipe class.
- Allow or not allow a space for welding.
- Use a pipe class. Insert components automatically.

Day 3:

- Create and use a new component.
- Component Wizard tool.
- Adding a component in the DataBase Inserting a new component.
- Complete practical exercise.
- Create a hydraulic diagram on P&ID, make the links with the 3D and generate the piping network in Piping Design.

SOLID EDGE ELECTRICAL

ID : PLM-2024-SEE
Duration: ***4 days***
Prerequisites: No 3D design requirements.
Overview: Be able to create a complete electrical diagram with Wiring Design, create the connections with the with 3D modeling with Solid Edge Electrical Routing and a beam diagram with Harness Design.
TOPICS:
Day 1:

- Discover the Solid Edge Electrical interface.
- Create a new project.
- Organization of the different diagrams.
- User management.
- Discussion of the software's scope and limitations.

Day 2:

- Focus on the symbol library.
- Creation of symbols and editing of the library.
- Explanation of the different objects present in the software.
- Introduction to the creation of electrical diagrams on Wiring Design.
- Partial exercises to work on specific cases.

Day 3:

- Focus on Wiring Design Creation of a complete Analysis of its operation,Export to Solid Edge.
- Use of the gateway between Solid Edge and Solid Edge Electrical.
- Presentation of Solid Edge Electrical Routing.

Day 4:

- Focus on the harness module.
- Manual creation of harnesses.
- Automatic creation from an already established schematic of a harness diagram with information about the wires, lengths colors.
- Complete exercise and assessment of the software.

SOLID EDGE WIRING DESIGN

ID : PLM-2023-SEE
Duration: 3 days
Prerequisites: No 3D design requirements.
Overview: Be able to create a complete electrical diagram with Wiring Design with Wiring Design and create the connections with the 3D modeling with Solid Edge Electrical Routing.

Day 1:

- Discover the Solid Edge Electrical interface.
- Create a new project. Organization of the different diagrams.
- User management. Discussion of the software's scope and limitations.

Day 2:

- Focus on the symbol library.
- Creation of symbols and editing of the library.
- Explanation of the different objects present in the software.
- Introduction to the creation of electrical diagrams in Wiring Design.
- Partial exercises to work on specific cases.
- Creation of a complete electrical diagram Analysis of its how it works.

Day 3:

- Exporting to Solid Edge.
- Use of the gateway between Solid Edge and Solid Edge Electrical.
- Presentation of Solid Edge Electrical Routing.
- Complete exercise and assessment of the software.
- Review of all the knowledge.

SOLID EDGE HARNESS DESIGN

ID : PLM-202-SEHD
Duration: 2 days
Prerequisites: No 3D design requirements.
Overview: Be able to make a beam diagram with Harness Design.
TOPICS:
Day 1:

- Discover the Solid Edge Electrical interface.
- Create a new project.
- Organization of the different diagrams.
- User management.
- Discussion of the scope of the software and its limitations.
- Focus on the symbol library.
- Creation of symbols and editing of the library.
- Explanation of the different objects present in the software.
- Initiation to the creation of beam diagrams on Harness Design.
- Partial exercises to work on specific cases.
- Creation of a complete beam diagram.

Day 2:

- Focus on Harness Design.
- Exercises of increasing difficulty allowing you to understand everything that can be done with the software.
- Complete exercise and assessment of the software.
- Review of all the knowledge acquired during the rest of the the rest of the training

SOLID EDGE ROUTING

ID : PLM-2023-SER
Duration: 1 day
Prerequisites: No 3D design requirements.
Overview: Be able to define and modify the trajectory of wires, cables and strands Know how to import and export data to electrical CAD software. Produce a "nail board" type wiring plan.
TOPICS:
Day 1:

- Reminder on the Assembly environment.
- Modeling electrical wiring in an assembly.
- Create 2D or 3D paths.
- Create wires, cables and strands.
- Assign terminals to parts.
- Use the bundle wizard to define wiring Export the BOM of connectors.
- 3D sketches.
- Use the 3D sketching environment.
- Generating the nail board (from ST5).
- Drawing an electrical wiring Adjusting the wiring paths wiring paths.
- Add the connectors plans Annotate the plan.
- Create the conductor table.
- Application exercises / Various questions.

SOLID EDGE SIMULATION

ID : PLM-2023-SES
Duration: 2 days
Prerequisites: No 3D design requirements**.**
Overview: Learn how to validate the design of parts and assemblies in the Solid Edge environment : definition of boundary conditions, meshing, interpretation results.
Know how to perform a thermal analysis in stationary, transient stationary, transient and coupled.
TOPICS:
Day 1:

- What is a finite element simulation?
- Principles of finite element analysis Equations of strength of materials Description of the different types of analysis.
- The dangers of over-interpretation of results.
- Calculating the deformation of a part Creating a static structural analysis Put in data.
- Create an automatic mesh Analyze and validate the results Create a report. Prepare a model for the calculation.
- Create simplified models of parts and assemblies.
- Extract the median surface of a sheet or a part.
- Redraw surfaces to create contacts Use symmetries to simplify symmetries to simplify the calculation,Refine a mesh.
- Merge bodies to create mesh connections.
- Calculate the deformation of an assembly Create connectors between connectors between components Use connectors bolt connectors.
- Use a mixed surface/volume mesh Analyze the results.

Day 2:

- Buckling and modal analysis,Principle and interest of a modal analysis. Realization and interpretation of a modal analysis.
- Realization and interpretation of a buckling analysis Realization of a frame analysis of a frame analysis.
- Thermal calculation,The principles of heat exchange.
- Create a thermal analysis in stationary regime Create a thermal analysis in transient thermal analysis Perform a coupled thermal/structural analysis Dynamic response calculation.
- Principles of a vibration study. Vibration analysis on a structure. Resonance and fatigue analysis of a system.
- Optimization. Optimizing a shape and its mass.
- Minimize a displacement, a constraint Modify a natural frequency Application exercises / Various questions.

CINÉMATIQUE POUR SOLID EDGE

ID : PLM-2043-CPSE
Duration: 1 day
Prerequisites: No 3D design requirements.
Overview: Perform kinematic calculations of rigid bodies in order to dimension a spring, to calculate the power of a motor, to motor, to define a cam or to determine the functional loads functional loads for a finite element calculation.
TOPICS:
Day 1:

- Introduction to Kinematics.
- The principle of solid dynamics calculation A simple example Construction of a mechanism Define fixed and moving parts Specify the mechanical links Apply a motion.
- Obtaining the reactions of forces.
- Advanced tools.
- Place springs and dampers Apply forces and moments Create 3D contacts.
- Plot trajectories, velocities and accelerations.
- Transfer results to a finite element simulation.
- Couple dynamic analysis with static deformation analysis in Solid Edge Simulation.
- Application exercises/miscellaneous questions.

FLOEFD – INITIATION

ID : PLM-2623-CPSE
Duration: 2 days
Prerequisites: No 3D design requirements.
Overview: Perform kinematic calculations of rigid bodies in order to dimension a spring, to calculate the power of a motor, to define a cam or to determine the functional loads functional loads for a finite element calculation.
TOPICS:
Day 1:

- Discovery of the user interface.
- Preparation of the model.
- Simplification of the model.
- Check the geometry, search for leaks and create plugs.
- Choose the study to be carried out.
- Mastering the pre-processing.
- Creation of an analysis.
- Definition of the calculation domain.
- Insert boundary conditions.
- Define porous media and heat sources.
- Inserting objectives for the study.
- The mesh. Generate a mesh.
- Procedure and tools for mesh refinement.
- Mastering post-processing.
- Display of results: visualization planes, surface visualization, streamlines.
- Export of results to Excel.
- Animation of results and creation of video.

Day 2:

- Project management and calculations Clone a project.
- Grouped launch. Follow-up of the calculation on line.
- Use of the technical database (porous media, fans, materials...).
- Control parameters of the calculation.
- Study of different types of flows Thermal study with radiation.
- Study of rotating regions (pumps, fans, ...).
- Study of free surface (tank emptying, ...).
- Study in transient regime. Study of particles.
- Optimization of a model Study of the variation of a value on a model.
- Optimization of a model according to a target. Comparison of the new model with the previous one. Application exercises / Various questions

FEMAP – INITIATION

ID : PLM-2823-CPSE
Duration: 4 days
Prerequisites: No 3D design requirements.
Overview: Prepare a model, run simulations and interpret results.
TOPICS:
Day 1:

- Discovering the Graphical Interface Navigate the menus, icon bars, status bar, graphical status bar, graphical windows, etc.
- Selection methods,Selection windows, graphic selection options, snapping and input options.
- Units General information and unit systems.
- Coordinate systems Definitions and creation of coordinate systems.
- Groups General description, creation, activation, display and operations.
- As well as the referenced groups.
- Display parameters View & Visibility menu, icon bars, colors, transparency etc**.**

Day 2:

- Pre-processing.
- Geometry: Importing CAD files, The work plan. The creation, modification and use; curves, surfaces and solids.
- Additional operations on geometry.
- Cleaning, modification and deletion of geometries in surface and volume.
- Materials & properties: Definition, types, application,modification and display.

Day 3:

- Pre-processing (continued) Meshing: General information on element types. Geometric meshes; tetrahedral and hexahedral meshes.
- Surface and line meshes linear mesh.
- Non-geometric meshing and specif elements.
- Model verification: Quality of the elements,normals, edges & free surfaces, as well as free surfaces, as well as coincident nodes & elements and measurement tools.
- Loading & boundary conditions: Definition, types, application, modification and display. Contacts: Contact elements: types/regions/properties.
- Creating and matching of con- tacts (connectors).
- Non-linearity in contacts.

Day 4:

- Analysis Theory of Nx Nastran, dataset and Nx Nastran files, types of analysis, multiple loading cases of multiple loadings, parameters and an example of linear static analysis.
- Post-processing Overview of the tools: Postprocessing Toolbox, deformed, contour, cuts, cut scale management, data table, graphical exports graphical exports etc.