



Diploma in Product Design and Technological Innovation

Total duration: 120 hours

Modality: On-demand

Software: 3DEXPERIENCE®

Module I. Collaborative Environment and Project Management (9 hours)

Objective: Participants will learn to manage design projects in digital collaborative environments. Emphasis is placed on role management, version control, and efficient communication. A simplified case study of a conceptual product will be presented, prioritizing the understanding of collaborative workflow.

Key topics:

Creating and managing workspaces.

Roles and permissions.

Version control and revisions.

Team workflow and effective collaboration.

Module II. Component Modeling (18 hours)

Objective: Master basic and parametric solid modeling tools, applying flexible methodologies that facilitate modifications and information sharing.

Key topics:

Sketching and constraints.

Basic operations: Pad, Pocket, Shaft, Groove, Hole, Fillet, Chamfer.

Bodies and Boolean operations.

Best practices for flexible and reusable modeling.

Module III. Assembly Modeling and Review (12 hours)

Objective: Build and review subassemblies and complete assemblies, efficiently managing constraints and detecting interferences.

Key topics:

Component and subassembly insertion.

Constraints: Coincidence, Contact, Offset.

Interference detection and consistency analysis.

Basic assemblies for industrial practice.

Module IV. Definition Drawing Generation (12 hours)

Objective: Generate essential technical definition drawings, including dimensions, tolerances, and key annotations, prioritizing what is necessary for manufacturing and communication with manufacturers.

Key topics:

Principal views, orthogonal projections, and basic sections.

Functional Dimensioning

Critical symbols and annotations.

Standard formats in ISO/ASME systems.

Module V. Modeling Components with Complex Geometry (24 hours)

Objective: Create parts with advanced geometry using Generative Shape Design (GSD) and complex surfaces. Emphasis is placed on geometric continuity (G0, G1, G2) and essential advanced modeling practices without overloading students with less critical tools.

Key Topics:

Essential 2D and 3D curves.

Surfaces: Sweep, Loft, Blend, multisection, etc.

Continuity analysis (G0, G1, G2).

Basic Fillet and Join techniques on complex surfaces.

Integration with solids and preparation for assemblies.

Module VI. Finite Element Analysis (CAE) - Static Loading (12 hours)

Objective: Perform basic structural analysis to validate the functionality and safety of metal and plastic parts, focusing on essential concepts and guided practice.

Key Topics:

Model preparation for analysis.

Definition of materials and loads.

Basic meshing and boundary conditions.

Interpretation of results: stresses, deformations, safety factor.

Module VII. Milling Machine Machining (15 hours)

Objective: Transform digital models into physical parts using milling. Practice with simple parts is prioritized to consolidate manufacturing concepts and tolerance control.

Key Topics:

Model preparation for machining.

Tool selection and basic cutting parameters.

Simplified machining sequences.

Critical tolerance control and dimensional verification.

Module VIII. Final Integration Project (18 hours)

Objective: Apply all acquired knowledge to a comprehensive design project, prioritizing a practical and achievable scope within the available time, including modeling, assemblies, drawings, basic analysis, and machining.