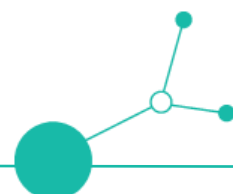


Re/Upskilling Programs PP5

D 2.1.1





General introduction

The Re/UpSkilling Program developed by PP5 - NOI Techpark's Maker Space - is part of the broader DiSTT Digital Skills Transformation Toolkit (DiSTT Toolkit), a comprehensive set of tools and learning formats co-designed by the project partners to address digital fabrication skill gaps across Central Europe. The main goal of the DiSTT Toolkit is to empower educators and innovation spaces (such as FabLabs and Makerspaces) to deliver impactful, high-quality training formats that are responsive to emerging industrial needs and accessible to a wide range of adult learners.

The program developed by PP5 focuses on digital manufacturing and prototyping, with a strong emphasis on hands-on learning and real-world applications. Its objective is to support individuals—particularly those with a technical or craft background—in acquiring or updating key digital and technological skills relevant for today's evolving labour market. The initiative builds upon the Maker Space's established expertise in digital fabrication and its network of experts in CAD, CAM, IoT, simulation, electronics, and product development. The program particularly addresses SMEs, micro enterprises and artisans in South Tyrol, including those located in remote valley areas and other geographically disadvantaged territories with more limited access to specialised training and innovation services.

As outlined in Deliverable D.2.1.1 of the DiSTT project, the program includes a modular training pathway combining technical foundation courses ("Learn-it!") with practice-based sessions ("Make-it!"), supported by bilingual delivery (Italian/German) and embedded pre/post assessment. The curricula were developed based on extensive stakeholder consultation, survey results, expert interviews, and a strategic analysis of regional skill gaps.

In line with the project's transnational ambition, the PP5 program is designed to be transferable and adaptable, offering a valuable contribution to the DiSTT Toolkit and providing a scalable model for other innovation-oriented learning hubs across Europe.



PP5 RE/UPskilling program

title of the program:

DIGITAL MANUFACTURING FOR CRAFTS & TECHNOLOGY

DISCOVER NEW DIGITAL MANUFACTURING TECHNOLOGIES, APPLY THEM PRACTICALLY, AND INTEGRATE THEM INTO YOUR DAILY WORK - WITH THE FIRST FIVE FREE COURSES AT THE MAKER SPACE!

The Maker Space at NOI Techpark will offer as pilots at least six new courses and workshops—available in both Italian and German—and completely free of charge. With a strong practical focus, the courses provide specific skills in digital manufacturing, including CAD, electronic prototyping, simulation, 3D printing and CNC machining.

Target group PP5:

The primary target group for the PP5 training program consists of individuals—employees, jobseekers, trainees, or artisans—interested in acquiring or updating digital manufacturing skills to work more effectively within companies, especially SMEs. The program primarily targets SMEs, micro enterprises and artisans in South Tyrol, with particular attention to businesses and participants located in remote valley areas and other geographically disadvantaged territories, where access to specialised training, digital expertise and innovation services may be more limited. Compared to the initial application phase, this definition has been further refined to better reflect the regional context and the real profiles of applicants. The approach adopted is inclusive, with particular attention to learners who may not have a formal academic background but bring strong motivation and practical orientation.

Participation in the training is voluntary and based on a short online application with self-assessment of prior knowledge. The modular structure allows each participant to choose the most suitable path, attending up to three workshops. This flexibility encourages engagement across different profiles and experience levels, while also ensuring that the offer remains accessible and relevant. In addition to supporting individual learning progress, the opportunity to attend multiple workshops fosters continuity and belonging. Participants can return, reconnect with trainers and peers, deepen their confidence with the Maker Space environment, and become part of a growing learning community. This setting promotes informal exchange, collaborative learning, and the creation of valuable professional and personal connections across backgrounds.

PP5 pedagogical approaches to the Re/Up program

The PP5 program applies a **modular, learner-centered, and practice-based methodology**, enabling each participant to create their own training path through the combination of different module types and difficulty levels (basic, intermediate, advanced). The two main module types are:

- **Learn-it!** - Foundational technical modules focused on CAD, simulation, electronics, digital fabrication, CNC and CAM. While more structured, they combine short frontal inputs with a strong



emphasis on hands-on exploration and peer exchange.

- **Make-it!** - Hands-on project workshops where participants develop a functional object (e.g., tool tray, smart docking station) using various digital tools and fabrication techniques.

The pedagogical framework includes:

- **Project-based learning** - Each Make-it! module is built around a complete prototype with a real-world function.
- **Self-directed learning** - Participants are encouraged to use the Maker Space independently after the course, thanks to the “Maker for a Project” app system (2 weeks).
- **Scaffolded instruction** - Learn-it! modules provide accessible entry points while offering deeper learning opportunities for more advanced participants.
- **Formative assessment** - Each module includes initial and final questionnaires to evaluate individual learning progress in a comparable, structured manner.
- **Bilingual delivery** - All workshops are offered in both Italian and German to meet the needs of South Tyrol’s multilingual population.

PP5 program main stakeholders

The PP5 program was developed in dialogue with key regional stakeholders who helped refine the training concept and ensure its local relevance:

- lvh.apa - South Tyrol’s largest association of craft and service businesses (mostly German-speaking).
- CNA-SHV - The regional body representing Italian-speaking artisans and small businesses.
- Office for Apprenticeship and Master Craftsperson Training (Autonomous Province of Bozen-Bolzano) - Responsible for dual education and vocational training in the German-language school system.

These actors were actively involved during the design phase, providing feedback and supporting communication and outreach to potential participants. Their input helped shape the modular structure and reinforce the program’s alignment with labour market needs.

PP5 main purpose of the program

The PP5 program aims to bring the opportunities of digital fabrication closer to people in the region, equipping them with practical, future-oriented skills for personal and professional development. The training supports innovation within SMEs and professional context by empowering individuals—regardless of background—to design, prototype, and implement solutions that bridge craftsmanship and new technologies.

The focus is not only on teaching specific software or machines but also on enabling participants to **understand how to apply digital tools meaningfully** in their work contexts. It fosters confidence in working with technology, encourages curiosity, and promotes an open, maker-oriented mindset.

PP5 clear learning outcomes

Participants will develop both technical and soft skills through a hands-on, problem-oriented approach that encourages experimentation, teamwork, and practical application. The program is designed to help



individuals understand the potential of digital fabrication technologies and how to integrate them into their professional activities through reskilling and upskilling.

Through the completion of one or more modules, participants will:

- Acquire technical competencies in skills like CAD, digital fabrication, electronics, and CNC/CAM workflows
- Gain confidence in using fabrication tools and prototyping methods
- Learn to move from design idea to tangible product using digital technologies
- Understand how to approach real-world problems using a design thinking and maker mindset
- Practice collaboration and exchange in a shared innovation space

Learning is designed to be **measurable and transferable**, with evaluation tools adapted to each module's content and language version.

PP5 target competencies

Main technical competencies:

- **CAD Design:** 2D and 3D modeling using Fusion 360; generation of fabrication-ready files
- **CAM & Simulation:** G-code creation, visualization, and basic mechanical simulations using open-source tools
- **Digital Fabrication:** Safe and effective use of laser cutters, 3D printers, and CNC milling machines (wood and metal)
- **Electronics & IoT:** Setup and programming of Arduino-based systems; sensor-actuator integration
- **Prototyping:** Translation of design into functional prototypes with user-centered logic and iterative refinement

Transversal (soft) skills:

- **Problem-solving:** Addressing design and fabrication challenges creatively and practically
- **Collaboration:** Working effectively with peers and experts in workshop environments
- **Iterative mindset:** Testing, learning from errors, and improving through cycles of making
- **Open Knowledge Use:** Leveraging open-source models and tools to build and customize solutions
- **Communication:** Presenting ideas, prototypes, and outcomes in a clear, visual, and engaging way

General Skill List (According to the Blueprint)

3D Printing / Additive Manufacturing	Operating 3D printers 3D modeling and slicing software (e.g., Cura, PrusaSlicer) Maintenance and troubleshooting of 3D printers
Laser cutting (CNC cutting)	Operating laser cutters Vector graphic design for laser cutting Material selection and settings adjustment
CNC Machining	Operating CNC machines (e.g., routers, mills) CAM software (e.g., Fusion 360, Mastercam, RhinoCAM, SprutCAM) Toolpath generation and machine setup



3D scanning	Operating 3D Scanners Scanning Techniques Post-Processing Scans Integration with CAD Applications of 3D Scanning
2D & 3D design (and computer simulation)	2D and 3D CAD software (e.g., AutoCAD, SolidWorks, Tinkercad) Parametric design, Algorithmic design Technical drawing and blueprint creation
Electronic prototyping platforms & IoT	Programming microcontrollers (e.g., Arduino, Raspberry Pi) Sensor integration and interfacing IoT (Internet of Things) development PCB design Basic electronics (Ohm's Law, components identification) Soldering and PCB fabrication Circuit design and simulation software (e.g., KiCad, Eagle)
Digitally assisted crafting	Woodworking (e.g., sawing, drilling, joining) Metalworking (e.g., welding, machining) Plastics fabrication (e.g., cutting, forming)
Makers soft skills	Effective communication of ideas and concepts Prototype iteration and improvement Documentation and presentation skills Teamwork and collaboration Design thinking



PP5 developed Program Curricula

Program formats

PP5 - NOI Techpark's Maker Space - developed its re/upskilling program based on the findings of Activity A1.1 (needs analysis and stakeholder consultation), the shared Blueprint structure (Activity A1.3), and the internal (and NOI Techpark) expertise in digital fabrication, education, and training. The result is a modular, multilingual, and user-driven training offer focused on digital manufacturing and prototyping.

Each module was designed to be independent yet interconnected, allowing participants to define their learning path based on personal goals and entry level. The program specifically addresses skills gaps identified among artisans, SMEs, and technical professionals in the region, with an emphasis on hands-on learning, digital tools, and application-oriented outcomes.

The PP5 program adheres to the common structure and quality standards outlined in the DiSTT Blueprint but tailors key elements to the Maker Space context and the regional needs of South Tyrol.

1. Module Outline

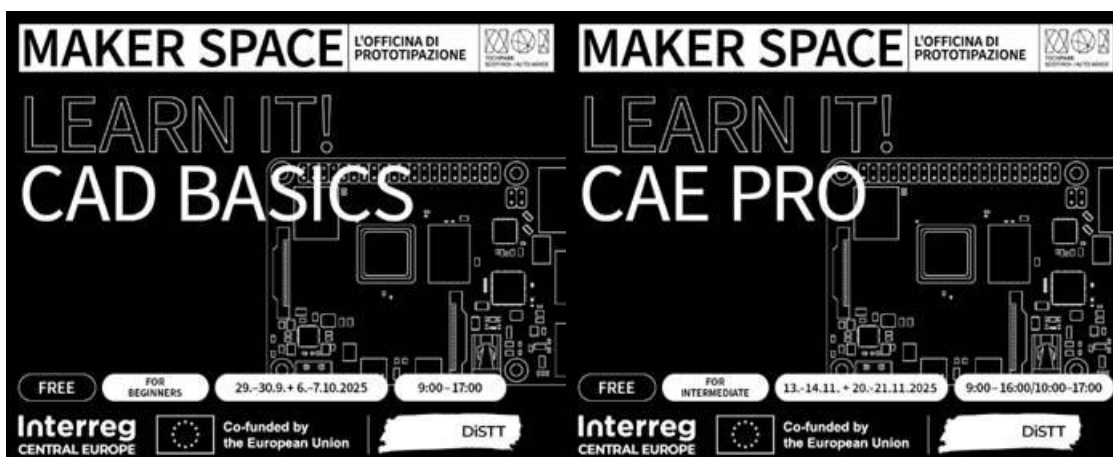
Each module includes a clear definition of:

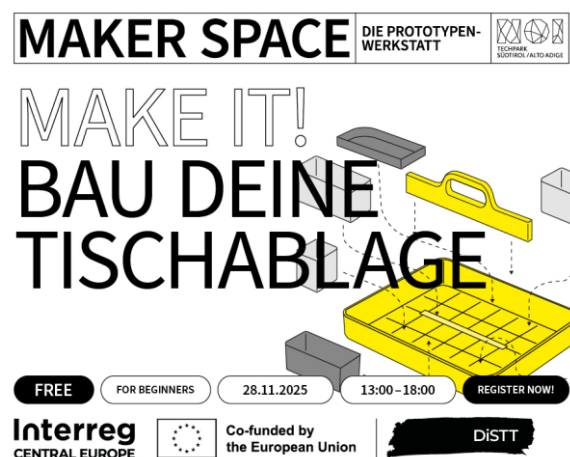
- Title and duration (1 to 4 full days)
- Target audience and prerequisites
- Learning objectives and expected outcomes
- Topics covered and tools used

2. Graphical Template

PP5 uses a customized bilingual visual identity, consistent with the overall DiSTT branding. Course materials follow a clean, accessible layout, adapted to the communication styles of Italian- and German-speaking audiences.

Here some examples:





3. Learning Activities

Workshops combine:

- Short introductions
- Hands-on guided exercises
- Open-ended design and fabrication tasks
- The balance is adapted to each module (e.g., more conceptual in “Learn-it!”, more practical in “Make-it!”).

4. Instructor Guidelines

PP5 developed internal notes and checklists for trainers, including:

- Learning goals & skills
- Key steps for delivery
- Troubleshooting common issues
→ Trainers include both internal Maker Space staff and selected external experts (CAE, CAM/CNC modules).

5. Assessment Criteria

Each module integrates:

- Pre- and post-questionnaires, adapted to the topic. Participant feedback forms integrated in the post-assessment questionnaire
- Observation and final prototype evaluation (especially in Make-it!)



6. Support Materials

The Make-It modules include:

- Customizable working files (e.g., CAD files, Arduino sketches)
- Step-by-step guides and templates
- Equipment use instructions

7. Language and Vocabulary

PP5 offers full bilingual delivery (Italian and German). An English version of materials is available on request for transnational visibility.

8. Quality Assurance Checklist

The Maker Space team created an internal validation process, including:

- Module review before/before delivery
- Trainer briefing/debriefing before and after each pilot for improvement tracking
- Checklist of workshop materials

The overall structure and pedagogical framework outlined above is implemented through a set of carefully developed training modules, each addressing specific skill gaps and learning objectives. The following section provides a detailed overview of the individual workshops that make up the PP5 training offer.

LEARN-IT! CAD Basics

Level: Basic

Duration: 3-4 days (24-32 hours)

Format: Full-day sessions, in-person

Languages: Italian and German

Overview: Whether for craftsmanship, product design or personal tinkering - CAD is the tool of choice when it comes to precise digital construction. In this course, you'll learn how to create 2D sketches and 3D models using industry-standard software (Fusion 360), how to document and export your projects - and how to bring them to life with a 3D printer.

Workshop title	LEARN IT! - CAD Basics From Idea to 3D Model
Target audience	Beginners and non-experts (employees, artisans, jobseekers, students) who want to acquire foundational CAD skills for creative or professional purposes
Prerequisites	No prior CAD experience required. Basic digital skills (file handling, mouse/keyboard navigation) are helpful
Purpose & Learning Outcomes	Participants will: • Understand key concepts of parametric design and the difference between 2D and 3D representations. • Create technical drawings, assemblies, and models using Fusion 360. • Apply constraints, dimensions, and design logic to their sketches. • Prepare CAD models for use in 3D printing or laser cutting workflows. • Export files in fabrication-ready formats (e.g., STL, DXF).



Program Format	3-4 days, 24-32 hours (more or less final practice), in-person. Sessions include a mix of frontal instruction, live demonstration, and guided exercises, with individual and group support throughout.
Skill Gaps	• Lack of familiarity with CAD tools and concepts • Insecurity in using digital design software • Limited awareness of how to move from idea to prototyping
Learning Activities	• Progressive design exercises (from simple to more complex) • Instructor-led demonstrations using real-world examples • Collaborative problem-solving and discussion • Design and refinement of a personal project
Assessment	Participants complete a structured pre/post self-assessment aligned with the module's learning objectives. Informal feedback is provided throughout the course, with optional presentation of final designs.
Roles & Support	Maker Space team as trainer
Feedback	Collected via anonymous questionnaire and verbal debriefing.
Showcase or Closure	Completion of individual 3D-printable model.
Documents, support materials	Presentation in powerpoint and printed exercises
Language:	Italian and German (2 separate editions)

LEARN-IT! CAE & Simulation

Level: Intermediate
Duration: 3-4 days (28-32 hours)
Format: Full-day sessions
Languages: Italian and German

Overview: Fluid mechanics, structural analysis, and simulation: this course focuses on product optimization using open-source tools. Participants will learn how to perform complex simulations with various software—from mesh generation to solver configuration and final evaluation. The course is designed for those who already have some experience with CAD systems and wish to deepen their knowledge.

Workshop title	LEARN IT! - CAE Pro Test the design before building it
Target audience	Individuals with prior experience in CAD who want to explore simulation techniques to validate and improve their designs – including engineers, designers, technicians, and advanced makers.



Prerequisites	Basic knowledge of CAD (attendance of the LEARN IT! course “CAD Basics” recommended)
Purpose & Learning Outcomes	• Understand core principles of CAE and digital simulation. • Set up, run, and interpret simulations for common design cases. • Apply mesh generation and solver tools to test physical behavior of parts. • Evaluate and improve design feasibility through analysis. • Use results to drive iterative design decisions.
Program Format	3-4 days, 28-32 hours, in-person. The course balances theoretical insight with applied exercises, providing space for experimentation with different analysis strategies.
Skill Gaps	• Low awareness of CAE and its applications • Lack of analytical design mindset • Limited exposure to simulation-based validation tools
Learning Activities	• Case studies on typical simulation scenarios • Guided software demonstrations (e.g., FreeCAD, SimScale, CalculiX) • Hands-on simulation setup and result interpretation • Critical analysis of designs based on physical performance data
Assessment	Participants complete a structured pre/post self-assessment aligned with the module’s learning objectives. Informal feedback is provided throughout the course, with optional presentation of final designs.
Roles & Support	External expert + team Maker Space as support
Feedback	Collected via anonymous questionnaire and verbal debriefing.
Showcase or Closure	Completion of individual projects
Documents, support materials	Presentation in powerpoint & PDF
Language:	Italian and German

LEARN-IT! Arduino & Electronics

Level: Basic

Duration: 1 day (8 hours)

Format: Full-day session

Languages: Italian and German



Overview: Microcontrollers, circuit design, sensors and actuators, displays and radio modules: In this course, you'll discover smart, interactive electronic systems and applications for the Internet of Things (IoT) and build functional prototypes with Arduino - hands-on and beginner-friendly.

Workshop title	LEARN IT! - Arduino & Electronics Build smart systems with microcontrollers and sensors
Target audience	Beginners interested in electronics and interactive systems for prototyping in a professional context
Prerequisites	none - technical interest is a plus
Purpose & Learning Outcomes	Participants will: • Understand the basic principles of electricity, circuits, and microcontrollers • Assemble simple circuits and control them using Arduino • Work with digital and analog sensors and actuators • Write and upload basic code to perform interactive tasks • Build some functional, sensor-based IoT prototypes
Program Format	1 day interactive lesson, 8 hours (9:00-17:00), in-person.
Skill Gaps	• Lack of exposure to electronics and embedded systems • Low confidence in working with technical tools and wiring • No or limited previous experience with open-source hardware and programming
Learning Activities	• Interactive introduction to Arduino and circuit design • Modular hands-on exercises (e.g., blinking LEDs, reading sensors, controlling motors) • Prototyping and troubleshooting • Exploration of real-world applications
Assessment	Pre/post self-assessment questionnaire tailored to the learning objectives.
Roles & Support	Maker Space team as trainer
Feedback	Collected via anonymous questionnaire and verbal debriefing.
Showcase or Closure	Working Arduino-based prototypes.
Documents, support materials	PPT slides, kits, example code.
Language:	Italian and German (2 separate editions)



LEARN-IT! CAM & CNC - Wood and Metal (combined)

Level: Advanced

Duration: 2-3 days (16 - 20 hours)

Format: Full-day sessions

Languages: Italian and German

Overview: This advanced-level workshop offers an integrated introduction to CAM (Computer-Aided Manufacturing) and CNC (Computer Numerical Control) machining, covering both **wood** and **metal** milling applications. Starting from a ready CAD file, participants will be guided through toolpath creation, simulation, safety procedures, and hands-on operation of CNC machines in both materials. The course combines theory with real machine practice, equipping participants with an end-to-end understanding of digital milling workflows, tool and material selection, and safe setup.

Workshop title	LEARN-IT! CNC-CAM - From Design to Milling (Wood & Metal)
Target audience	Intermediate users interested in CAM and CNC machine use for professionals purposes
Prerequisites	Basic familiarity with CAD software is required (participation in LEARN-IT! CAD Basics or equivalent experience is recommended).
Purpose & Learning Outcomes	• Understand the functioning, setup, and potential of CNC milling machines in both woodworking and metalworking environments • Learn CAM workflows: from digital file preparation to machine operation • Generate toolpaths using CAM software and simulate machining processes • Gain awareness of safety protocols, material properties, and tool selection strategies • Execute simple operations independently on CNC routers and mills
Program Format	2-3 days of intensive training (16-20 contact hours), including guided hands-on activities. All sessions are delivered in person in dedicated metal and wood workshops at the Maker Space.
Skill Gaps	• Lack of hands-on CNC experience • Limited understanding of CAM tools and simulation software • Unfamiliarity with safety protocols and tool/material compatibility in milling workflows
Learning Activities	• CAM software tutorials (e.g., Fusion 360 or similar) • Toolpath generation and simulation • Machine setup for wood and metal milling • Supervised milling of basic components • Troubleshooting and process refinement
Assessment	Pre/post self-assessment questionnaire tailored to the learning objectives.
Roles & Support	Maker Space team with support from wood and metal shop experts.
Feedback	Collected via anonymous questionnaire and verbal debriefing.
Showcase or Closure	Milled component



Documents, support materials	Presentation in powerpoint (incl. goals, timeline...)
Language:	Italian and German

MAKE-IT! Desk Organizer

Level: Basic

Duration: 6 hours, in-person.

Format: Full-day sessions & separate sessions

Languages: Italian and German

Overview: “Whether it’s a workbench, laboratory, or office: In this workshop, you’ll develop a custom tool tray that you design, 3D print, and laser cut yourself. For tools, cables, test tubes, or office supplies - whatever you need will have its place.” This introductory hands-on workshop focuses on designing and fabricating a personalized **desk organizer** using digital fabrication technologies. Participants will go through the full design-to-production workflow, combining **2D and 3D design**, **laser cutting**, and **3D printing**. The final product can be adapted to store office items, cables, tools, or lab equipment - entirely based on individual needs and preferences.

Workshop title	MAKE IT! - Build Your Desk Organizer Everything in Its Right Place - with Your Self-Made Tool Tray
Target audience	Beginners interested in exploring digital prototyping and fabrication techniques through a practical, creative project.
Prerequisites	No prior experience required. A general technical curiosity is an advantage.
Purpose & Learning Outcomes	• Learn to translate practical needs into a digital design • Use 2D and 3D tools to develop fabrication-ready files • Operate laser cutters and 3D printers to produce and assemble a custom tray • Understand key concepts in digital workflows, CNC-based design, and rapid prototyping
Program Format	Context/structure: Project Sprint + Mentoring Format Duration: three intensive days, 4 weekly mentoring follow ups delivery mode: in person, powerpoint output, physical prototyping if applicable
Skill Gaps	hands-on interactive workshop
Learning Activities	Planning & rapid prototyping, design adaptation, CNC machining, 3D printing, assembly.
Assessment	Pre/post self-assessment questionnaire tailored to the learning objectives.
Roles & Support	Maker Space team trainers.



Feedback	Collected via anonymous questionnaire and verbal debriefing.
Showcase or Closure	Each participant completes a fully functional, customized desk organizer , which they take home as a concrete result of their new skills.
Documents, support materials	Customizable starter files, step-by-step guides & slides, sample models, and references to open-source designs and customization examples.
Language:	Italian and German (2 separate editions)

MAKE-IT! Smart Docking Station

Level: Intermediate

Duration: 2 sessions (6 hours total)

Duration: 8 hours, in-person.

Format: Full-day session or separate sessions

Overview: This intermediate workshop guides participants through the design and fabrication of a **smart docking station**, integrating **digital fabrication techniques** and **basic electronics**. From casing design to component layout and Arduino programming, participants will build a fully functional device tailored to their needs. The workshop encourages **interdisciplinary problem solving** across design, fabrication, and IoT.

Workshop title	MAKE IT! - Build Your Charging Station Smart Charging Station - Self-Built with Wood, 3D Printing & Arduino
Target audience	Participants with prior experience in digital design and a basic understanding of Arduino/electronics, looking to explore integrated product prototyping.
Prerequisites	Basic CAD knowledge and familiarity with Arduino programming and electronics
Purpose & Learning Outcomes	Participants will: • Learn how to design and fabricate enclosures for electronic devices • Develop a simple electronic system using Arduino, sensors, or LEDs • Integrate design, coding, and fabrication into a single functional prototype • Understand basic soldering, cable management, and casing strategies
Program Format	Context/structure: Project Sprint + Mentoring Format Duration: three intensive days, 4 weekly mentoring follow ups delivery mode: in person, powerpoint output, physical prototyping if applicable
Skill Gaps	• Integration of design and function in physical products • Limited experience with casing design and electronics housing



	Hands-on use of microcontrollers in applied prototyping
Learning Activities	- Guided design and file preparation - Hands-on fabrication (laser cutting, 3D printing) - Arduino setup and component wiring - Assembly and testing of final prototype
Assessment	Pre/post self-assessment questionnaire tailored to the learning objectives.
Roles & Support	Maker Space team trainers.
Feedback	Collected via anonymous questionnaire and verbal debriefing.
Showcase or Closure	Completed desk tray for personal use.
Documents, support materials	Customizable starter files, step-by-step guides & slides, sample models, and references to open-source designs and customization examples.
Language:	Italian and German (2 separate editions)



PP5 developed Instructional Design tools

To support an engaging and accessible learning experience, PP5 has developed a set of instructional design tools that reflect the hands-on, learner-centered, and modular philosophy of the DiSTT Toolkit. These tools are specifically tailored to the content and objectives of each module—ensuring that materials are always functional, targeted, and never excessive or generic.

Each workshop comes with a compact and focused package of resources aligned with its learning goals, including:

- Slide decks with essential visual content and guidance for instructors
- Printed worksheets and short handouts to support in-session exercises
- Starter files and example code (e.g., CAD templates, Arduino sketches) directly usable by learners
- Step-by-step guides for technical workflows or procedures
- Tool and safety instructions for machine-based activities in the Maker Space

The approach is intentionally non-academic and avoids traditional classroom dynamics. Instead of lengthy lectures or large volumes of written material, participants are offered a compact mix of:

- Short inputs and live demonstrations
- Structured hands-on exercises
- Opportunities for peer exchange, questions, and immediate feedback

This style is adapted to the real needs and rhythm of the participants, many of whom are artisans, employees, jobseekers, or professionals returning to training. The instructional format emphasizes practicality and relevance, fostering curiosity and autonomy in a friendly, workshop-like setting.

All modules are conducted in person, in small groups, and in either Italian or German depending on the edition. In the next project phase—particularly as part of the SkillNest app development—PP5 plans to consolidate and share these instructional resources as open, adaptable templates for reuse across other FabLabs and learning spaces.

PP5 developed Assessment tools

In order to assess participants' skills before entering the training modules and evaluate their learning after completing them, PP5 has developed a structured and modular set of assessment tools that serve both **diagnostic** and **formative** purposes.

The first evaluation moment occurs already **before enrolment**. Instead of offering direct course registration, PP5 has implemented an **application-based approach**. Interested individuals are asked to submit a request to participate, during which they complete a short **self-assessment form**. This includes questions about their prior experience, familiarity with the topic, learning goals, and intended professional use of the skills. This process allows facilitators to **evaluate the alignment** between the participant's background and the target profile of each module, helping to form more **coherent and effective learning groups**—a particularly important aspect given the broad heterogeneity of applicants (e.g., students, jobseekers, professionals, artisans).

Each module then includes a **pre- and post-assessment questionnaire** tailored to its specific content, but developed with a **common structure and logic**. The questionnaires are built around 4-5 **key learning**



objectives per module and invite participants to **self-assess their confidence and familiarity** with the related skills or concepts on a **Likert scale**. While the questions are adapted to the content of each workshop (e.g., CAD modeling, Arduino programming, CNC workflows), their formulation follows a **standardized pattern** to support **comparability across modules and over time**.

This dual assessment approach enables:

- Insight into participants' baseline knowledge and learning needs
- Better alignment of expectations and content delivery
- Reflection on learning progress and outcomes
- Continuous improvement of the training offer

This approach ensures alignment with the pedagogical principles of the program, fostering **learner awareness**, promoting **reflective learning**, and providing trainers with **actionable feedback**. The standard format also allows for tracking perceived progress in both technical skills and transversal capacities, such as autonomy and confidence in using digital tools.

At this stage, the tools are used primarily in **digital questionnaire format**, complemented by informal observations and open discussions at the end of each module. **No formal grading** is applied; the emphasis is placed on learning reflection, not performance.

In the upcoming phases—especially during the development of the **SkillNest app**—PP5 will consolidate and publish these tools as **transferable templates**, including example question sets, reflective prompts, and usage guidelines. The goal is to enable other educators and facilitators to **reuse and adapt** these tools across various learning contexts, while maintaining a **modular, comparable, and quality-assured** framework for digital skills assessment.