MOBILITY FRIENDS TRAINING CENTER • COURSE PROGRAM

STEM AND TECHNOLOGICAL INNOVATION

3D Modeling and Printing

INTRODUCTION TO 3D PRINTING: DESIGN, MATERIALS, AND TECHNIQUES

Your Mobility Partner

PIC Number: 948037649 | **Organisation ID:** E10207576

COURSE OVERVIEW

This course offers a comprehensive introduction to 3D printing technology and its applications. Participants will learn the fundamental concepts of additive manufacturing, including the different types of 3D printers, materials, and design considerations. The course combines theory with hands-on practice, guiding learners through the entire 3D printing workflow—from creating or sourcing 3D models to preparing files for printing and post-processing printed objects. By the end of the course, participants will have the knowledge and skills to confidently create and produce simple 3D printed items for various purposes.

TARGET AUDIENCE

This course is designed for anyone interested in starting with 3D printing, regardless of background or experience. It is perfect for students, professionals, hobbyists, and educators who want to understand the basics of 3D printing technology, including design principles, materials, and printing processes. Participants will gain practical skills to create and produce simple 3D printed objects, applicable to a variety of personal, academic, or professional projects.

REQUIREMENTS

To take part in the course, participants must meet the following requirements:

- Have at least a B1 level of English (independent user);
- Complete and submit the registration form before the start of the training;
- Bring a laptop or tablet to use during the sessions;
- Commit to active participation and attend at least 80% of the course.

COURSE OBJECTIVES

The objectives of the course are:

- Understand the basic principles of 3D printing and additive manufacturing.
- Identify different types of 3D printing technologies and materials.
- Use basic 3D modeling tools or sources to create printable designs.
- Prepare 3D models for printing using slicing software.
- Operate a 3D printer safely and efficiently.
- Perform post-processing techniques to finish printed objects.

CONTACTS AND REGISTRATION

For registrations, additional information, or budget requests, please contact our team by email at trainingcourses@mobilityfriends.org or visit our website at www.mobilityfriends.org .

LEARNING OUTCOMES

Upon successful completion of this course, learners will be able to:

1. Explain the fundamentals of 3D printing and the different additive manufacturing methods.
2. Distinguish between common 3D printing materials and their uses.
3. Create or source basic 3D models suitable for printing.
4. Use slicing software to prepare models for printing.
5. Set up and operate a 3D printer safely and effectively.
6. Perform common post-processing tasks such as cleaning and finishing prints.
7. Troubleshoot basic printing issues and optimize print quality.
8. Apply 3D printing techniques to real-world projects and problem-solving.

METHODOLOGY

The course is structured around a rigorous methodology that combines theoretical exposition, practical work, and applied demonstrations. This approach ensures a thorough understanding of the subject matter and its direct application in real-world contexts.

Theoretical sessions provide essential foundations, while practical work and demonstrations facilitate the development of technical skills and familiarity with the specific tools and procedures relevant to the course.

Continuous monitoring through individualized feedback allows for tracking learners' progress and ensures the achievement of the set objectives, preparing participants to face professional challenges with competence and precision.

ASSESSMENT

Assessment is carried out continuously throughout the course, using a holistic and learner-centered approach that reflects both participation and performance. Each participant is evaluated based on their overall engagement, regular attendance, punctuality, interest in the topics covered, ability to apply knowledge during practical tasks, and interaction with peers in individual and group activities.

The evaluation process includes a variety of classroom-based tasks (oral and written), short daily assignments, role-plays, and simulations. Trainers provide ongoing, individualized feedback to support progress and encourage active learning.

A Certificate of Participation is awarded to participants who attend at least 80% of the sessions and demonstrate consistent involvement and commitment during the training.

DURATION

The standard duration of our course is 20 hours (5 days), designed to ensure comprehensive and effective learning. However, this duration can be adjusted, in specific cases, to meet the particular needs of each group, in order to optimize outcomes and better suit the training context.
For further details or to discuss a customized schedule, please get in touch with us.

PRICE AND FUNDING

Each quotation is personalized and depends on several factors, such as the number of participants, the number of training hours, the location of the course, and any additional services requested (accommodation, transport, meals, cultural activities, etc.).
To receive a tailored quotation for your group, please get in touch with us.
The training can be funded through programs such as Erasmus+ (KA1 – Learning Mobility), among other European support mechanisms. For more information about funding, participants should contact their sending organization or their country's National Agency directly.

LOCATION AND COURSE LANGUAGE

We have training rooms in several cities in Mainland Portugal, such as Barcelos (headquarters), Braga, Póvoa de Varzim, and Porto. We also have spaces in the islands of Madeira (Funchal) and the Azores (Ponta Delgada). Additionally, we have facilities in Valencia, Spain.
The course is delivered in English.

CERTIFICATION

A Certificate of Participation is awarded to participants who attend at least 80% of the sessions and demonstrate consistent engagement and commitment throughout the training. Upon completion of the course, a formal certification ceremony will take place, during which the certificates will be presented to the participants.

OTHER SERVICES

To enrich the training experience, Mobility Friends offers a range of additional services, subject to availability and additional cost, which can be arranged for individual participants or groups.
Services include:

- Accommodation in partner residences or hotels
- Meals (lunch and/or dinner)
- Transfers between the accommodation and the training room
- Airport transfers
- Cultural visits

All services are subject to availability and must be requested in advance. For more information and personalised quotes, please contact our team.

COURSE CONTENTS

MODULE 1: INTRODUCTION TO 3D PRINTING

- Overview of additive manufacturing and 3D printing history.
- Key concepts and terminology.
- Different types of 3D printing technologies (FDM, SLA, SLS, etc.).
- Applications and industries using 3D printing.

MODULE 2: MATERIALS FOR 3D PRINTING

- Common 3D printing materials (PLA, ABS, resin, nylon, etc.).
- Material properties and selection criteria.
- Environmental and safety considerations.

MODULE 3: BASICS OF 3D MODELING FOR PRINTING

- Introduction to 3D modeling software (SketchUp, Tinkercad, Fusion 360, etc.).
- Creating simple 3D models suitable for printing.
- Understanding design constraints for 3D printing (overhangs, supports, wall thickness).

MODULE 4: PREPARING MODELS FOR PRINTING

- Introduction to slicing software (Cura, PrusaSlicer, etc.).
- Importing and preparing models.
- Setting print parameters: layer height, infill, supports, print speed.
- Exporting G-code files for the printer.

MODULE 5: OPERATING 3D PRINTERS

- Overview of common 3D printers (desktop FDM printers).
- Printer setup and calibration.
- Loading materials and starting a print job.
- Monitoring the printing process.

MODULE 6: POST-PROCESSING TECHNIQUES

- Removing supports and cleaning prints.
- Sanding, painting, and finishing options.
- Troubleshooting common post-processing issue.

MODULE 7: FINAL PROJECT - DESIGN, PRINT, AND PRESENTATION

- Planning and designing a simple functional or decorative 3D object.
- Applying design principles learned in previous modules.
- Preparing the model and printing it on a 3D printer.
- Post-processing the printed object.
- Presenting the final project, reflecting on challenges and learning outcomes.

*Please note that program content may be subject to change based on input from our trainers.

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