

Under Construction

Key Skills Making Top Professionals
in Construction and Habitat 4.0

This product/ Intellectual Output corresponds to the full structure and contents of the 7 e-learning courses developed in the Project “Under Construction”, which are available for free attendance at the project’s e-Learning platform, here:

<https://underconstruction.learning-platform.eu/>

Courses training materials may also be provided on demand, by using the email:

info@underconstructionkeyskills.eu

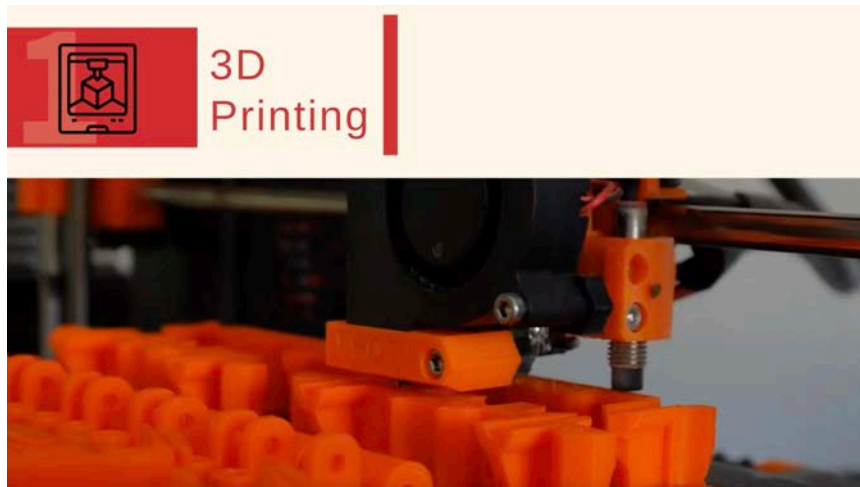


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Course: 3D Printing



- **Pillar 1: Communication (Soft Skills - Interpersonnal)**
 - Module 1: Communication & Teamwork
 - Unit 1: Communication in the workplace
 - Unit 2: Teamwork
 - Module 2: Communication with the 3-D Printing Client
 - Unit 1: Understanding the Clients' Needs
 - Unit 2: Communicating 3D Printing Challenges and Constraints
- **Pillar 2: Problem Solving and 3D Printing**
 - Module 1: Problem solving
 - Unit 1: Problem solving reasoning
 - Unit 2: Problem solving in the workplace
 - Module 2: Problem solving in 3D Printing
 - Unit 1: Equating the best Printing Solution (Material & Process)
 - Unit 2: Identifying Errors and Equating Alternative Solutions
- **Pillar 3: Operating the 3D Printer**

- **Module 1: Getting to know the 3D Printer**
 - Unit 1: Printer features & characteristics
 - Unit 2: 3D Printer technical problems and support
- **Module 2: Operating the 3D Printer**
 - Unit 1: Adjusting & Re-adjusting the Printing Parameters)
 - Unit 2: Remotely operating the 3D Printer

Course: Carpentry



- **Pillar 1: Creative and divergent thinking**
 - Module 1: Technical solutions that meet the client's needs
 - Unit 1: Types of materials used
 - Unit 2: Conservation and rehabilitation techniques
 - Module 2: Development of aesthetical appealing work
 - Unit 1: Interior Design
 - Unit 2: Market Trends
 - Module 3: Problem solving in the Professional Context
 - Unit 1: Technical problems
 - Unit 2: Organizational problems
- **Pillar 2: Flexibility**
 - Module 1: Teamwork
 - Unit 1: Concept of team in the work context
 - Unit 2: Roles of the team members
 - Unit 3: Planning the teamwork
 - Module 2: Interpersonal relationships

- Unit 1: Identifying the importance of communication
- Unit 2: Identifying the elements in communication
- Unit 3: Verbal and non-verbal language
- Module 3: Conflict Management
 - Unit 1: Identifying the different types of conflict
 - Unit 2: Identifying forms of dealing with conflicts
 - Unit 3: Ability to deal with a conflict
- **Pillar 3: Materials and technical solutions**
 - Module 1: Wood and derivatives
 - Unit 1: Technical characteristics
 - Unit 2: Sustainability
 - Module 2: New types of wood treatments
 - Unit 1: Acetylation
 - Unit 2: Thermal treatment
 - Module 3: New construction-related technical solutions available in the market
 - Unit 1: Fixing
 - Unit 2: Technical solutions in the field of work health and safety
 - Unit 3: Machines and equipment

Course: Bricklaying



- **Pillar 1: Thinking skills**
 - Module 1: Critical thinking
 - Unit 1: The definition and purpose of critical thinking
 - Unit 2: How or in which situations is critical thinking relevant?
 - Module 2: Problem solving
 - Unit 1: What is problem solving?
 - Unit 2: Key steps in the creative troubleshooting process?
 - Module 3: Creativity
 - Unit 1: What is creativity?
 - Unit 2: Methods fostering creativity
 - Unit 3: How or in which situations is creativity solving relevant?
- **Pillar 2: Interpersonal skills**
 - Module 1: Communication colleague and customer
 - Unit 1: What is communication?
 - Unit 2: Basic principles of communication
 - Unit 3: Open and closed questions

- Unit 4: Tips for speaking and listening
- Unit 5: Observing and interpreting
- Module 2: Teamwork
 - Unit 1: What is teamwork?
 - Unit 2: How or in which situations is teamwork relevant for bricklaying?
 - Unit 3: Basic principles of teamwork
- Module 3: Training and coaching
 - Unit 1: Learning style
 - Unit 2: Conversation techniques
 - Unit 3: Training and coaching
- **Pillar 3 - Technical skills**
 - Module 1: Basic and advanced knowledge restoration mason
 - Unit 1: Bricklayer (general)
 - Unit 2: Constructions in the neo-gothic
 - Unit 3: Historical binders
 - Unit 4: Bricks and masonry bonds
 - Unit 5: Neo-gothic architecture in Europe
 - Unit 6: Space-extension constructions (vaults)
 - Unit 7: Case Saint Urbanus church
 - Unit 8: Finishing of masonry
 - Unit 9: Industry 4.0 for the construction and masonry industry
 - Module 2: Bricklayer Restoration: Practical Assessment
 - Unit 0: Explanation Practical Assessment
 - Unit 1: Installation of work space for masonry
 - Unit 2: Perform simple masonry work
 - Unit 3: Makes masonry
 - Unit 4: Provides architectural facilities
 - Unit 5: Adds joints
 - Unit 6: Covers masonry finishing
 - Unit 7: Cleans up the workplace

Course: Wall & Floor Tiling



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 - Unit 5: Observing and interpreting
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 - Unit 2: How or in which situations is teamwork relevant for bricklaying?
 - Unit 3: Basic principles of teamwork
 - Module 3: Training and Coaching
 - Unit 1: Learning style
 - Unit 2: Conversation techniques
 - Unit 3: Training and coaching

- **Pillar 3 - Basic and advanced knowledge tiles**
 - Module 0: Introduction to the pillar
 - Module 1: Technical skills I
 - Unit 1: What does a tile maker do?
 - Unit 2: Tiling more than gluing and cutting
 - Unit 3: Basic tool for the professional tile setter
 - Unit 4: Ceramic tiles and natural stone
 - Module 2: Technical skills II
 - Unit 1: How to design and fit movement joints
 - Unit 2: Trowel siz
 - Unit 3: Prepare substrates and wet proof systems
 - Module 3: Technical skills III
 - Unit 1: Gluing and finishing of tiles
 - Unit 2: Tool for large size tiles
 - Unit 3: How to drill holes in tiles

- Module 4: Products and processes in industry 4.0
 - Unit 1: What impact has industry 4.0 for the construction area?
- Module 5: Practical assessment
 - Unit 0: Explanation Practical Assessment
 - Unit 1: Setting up the organisation and work place
 - Unit 2: Checking and preparing substrates

Course: Cabinetmaking



- **Pillar 1: Fundamentals of the digital factory as an answer to Industry 4.0**
 - Module 1 The Digital Factory
 - Unit 1: Digital Transformation. Introduction to the concept of Industry 4.0
 - Unit 2: The importance of digital transformation in a world of data
 - Unit 3: Industry 4.0: the connected industry
 - Unit 4: Smart factory. Reference model
 - Unit 5: Digital maturity
 - Module 2 Key Enabling Technologies (KETs)
 - Unit 1: Introduction to the concept of Key Enabling Technologies
 - Unit 2: Collaborative platforms
 - Unit 3: Business solutions
 - Unit 4: Robotics
 - Unit 5: Industrial Internet of Things (IIOT)
 - Unit 6: Big Data
- **Pillar 2: Raw materials processing and production processes**

- Module 1 Work organization and management
 - Unit 1: Health and safety legislation at work
 - Unit 2: Organization of production in furniture manufacturing industries
- Module 2 Raw materials
 - Unit 1: Characterization of necessary materials in the manufacture of furniture
 - Unit 2: Eco-sustainable materials. Eco-design
- Module 3 Production processes
 - Unit 1: Production processes in furniture manufacturing
 - Unit 2: Machinery and tools
 - Unit 3: Production control and Human resources management
 - Unit 4: Quality management. ISO standards
- **Pillar 3: Key soft skills for workplace success**
 - Module 1 Effective communication and teamwork
 - Unit 1: Communication at the workplace
 - Unit 2: Conflict management and teamwork
 - Unit 3: Creativity and innovation techniques
 - Module 2 Emotional Intelligence and work environment
 - Unit 1: Emotional Intelligence and work environment

Course: Design Technologies

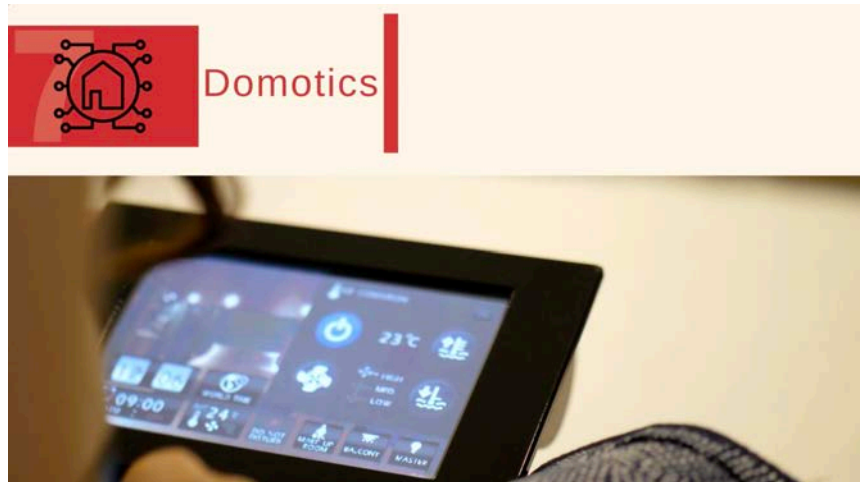


- **Pillar 1: Communication Skills**
 - Module 1: Basic concepts for correct professional interpersonal communication
 - Unit 1: How communicate into every context: verbal /nonverbal
 - Unit 2: Communication and Conflict Management
 - Unit 3: How to improve your communication performance and solve conflicts
 - Module 2: Effective communication and activelistingening techniques
 - Unit 1: What is active listening
 - Unit 2: Key active listening techniques
 - Unit 3: Sum up Exercises (on line practices?)
 - Module 3: Contexts of use of active listening and cases
 - Unit 1: Why is Active Listening Crucial to Business Success?
 - Unit 2: Active listening at work
 - Unit 3: Improve yourself with 3 case studies
- **Pillar 2: Thinking Skills**

- Module 1: Excursus on psycho-cognitive theories on creative thinking
 - Unit 1: Principal Theories about creativity
 - Unit 2: Creative path elaboration models
 - Unit 3: Learning Styles
- Module 2: Role of creativity in work and growth contexts
 - Unit 1: The "construct of creativity"
 - Unit 2: creativity as a skill
 - Unit 3: Creativity at work: problem solving and brainstorming
- Module 3: Evaluating Creativity?
 - U1: testing your creativity
 - U2: Attempting to measure
 - U3: some exercises to improve creativity

- **Pillar 3: Aesthetic understanding**
 - Module 1: How to find inspiration
 - Unit 1: How does inspiration work?
 - Unit 2: The concept of beauty
 - Unit 3: Useful bibliography for designers
 - Module 2: Current trends
 - Unit 1: Excursus on the history of design
 - Unit 2: The concept of design: from manufacturing to the web
 - Unit 3: Stories of designers between crafts and art
 - Module 3: Practical exercises for the development of aesthetic forms
 - Unit 1: Basic drawing and colour techniques
 - Unit 2: How to observe the world and the use of geometric shapes

Course: Domotics



- **Pillar 1: Principles of Domotic**
 - Module 1: Applications of domotic systems
 - Unit 1: Domotics systems and its main applications
 - Unit 2: Types of domotics installations
 - Module 2: Industrial Domotics
 - Unit 1: Internet of Things (IoT)
 - Unit 2: Cloud Computing
 - Unit 3: Machine Learning
 - Unit 4: Cyber security
 - Unit 5: Automation
 - Module 3: Other related concepts
 - Unit 1: Remote control from inside/outside home
 - Unit 2: AAL for elderly people (Ambient Assisted Living)
 - Unit 3: Smart Building
- **Pillar 2: Standards of Domotic systems**
 - Module 1 Communication protocols to interconnect devices

- Unit 1: Standards/Communication protocols
- Unit 2: LPWAN (Low Power Wide Area Network)
- Unit 3: Identification of communication needs
- Module 2 Analysis and design of a domotic system
 - Unit 1: Main elements of domotic systems
 - Unit 2: Network typology
 - Unit 3: Microprocessors
 - Unit 4: Programming and start-up
 - Unit 5: Databases and servers
 - Unit 6: Identification of system requirements
- **Pillar 3: Key soft skills for workplace success**
 - Module 1 Effective communication and teamwork
 - Unit 1: Communication at the workplace
 - Unit 2: Conflict management and teamwork
 - Unit 3: Creativity and innovation techniques
 - Module 2 Emotional Intelligence and work environment
 - Unit 1: Emotional Intelligence and work environment