UWE Bristol

Digital Built Environment (BIM) to Fabrication Skills Bootcamp

An interactive 10-week programme to equip professionals with the digital design and fabrication skills needed to transform the built environment using cutting-edge technologies.

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Equipping Built Environment Innovators to Lead Digital and Sustainable Transformation

The digital built environment is key to the West of England's low-carbon, innovation-led future. From BIM and parametric modelling to digital fabrication and sustainable design, this sector is driving greener construction, creating jobs, and transforming how we build.

UWE Bristol's Digital Built Environment (BIM) to Fabrication course equips professionals with the skills to design, prototype, and deliver smarter, more sustainable projects—supporting both the region's climate goals and economic growth.

Equipping Built Environment Innovators to Lead Digital and Sustainable Transformation

By combining a sustainable approach, project coordination, and fabrication technologies, the programme delivers skills essential for a resilient and future-focused regional economy.

Our 10-week, 90%-funded programme

By investing in the skills of digital construction professionals, we're building the future resilience, growth, and sustainability of one of the region's most critical sectors.
If you're ready to lead your built environment projects into a smarter, greener future, this Skills Bootcamp will help you get there.

Who is it for?

Digital construction professionals and innovators

This Skills Bootcamp is designed for architects, designers, engineers, and technologists working in the built environment. Whether you're part of an SME, a start-up, or a larger organisation, the course supports professionals looking to enhance their digital design, fabrication, and sustainability skills.

Benefits to you as an individual

- Gain hands-on experience with BIM, digital design, and fabrication workflows.
- Apply your new skills directly to a live project in your current role.
- Develop transferable digital and problem-solving skills for long-term career growth.
- Enhance your CV and career prospects with industry-relevant training.

Benefits to the employer

- Invest in the upskilling of your workforce with practical, job-focused training.
- See immediate workplace impact through live project application.
- Strengthen in-house digital capability to reduce reliance on external services.
- Improve efficiency and innovation across your organisation through new digital processes.

What will I learn?

Across the ten weeks you will explore topics including:

- Understanding Computational Architecture
- BIM in Design Coordination
- Digital Manufacturing and Fabrication
- Project Management
- Circular economy

Programme Structure

Live sessions

The programme is delivered through 10 full-day tutor-led interactive sessions, which will walk you through the different aspects of Understanding Computational Architecture, BIM in Design Coordination, and Digital Manufacturing and Fabrication.

Mentorship and 1:1 support

You'll have access to mentorship from experts to provide a space to discuss personal experiences and learning as you utilise your new skills and evaluate their impact. Additionally, our Skills Bootcamp Team will be there to support you throughout the programme.

Peer network

Access to a peer network and industry contacts through the live sessions and roundtable discussion.

Developing an action plan

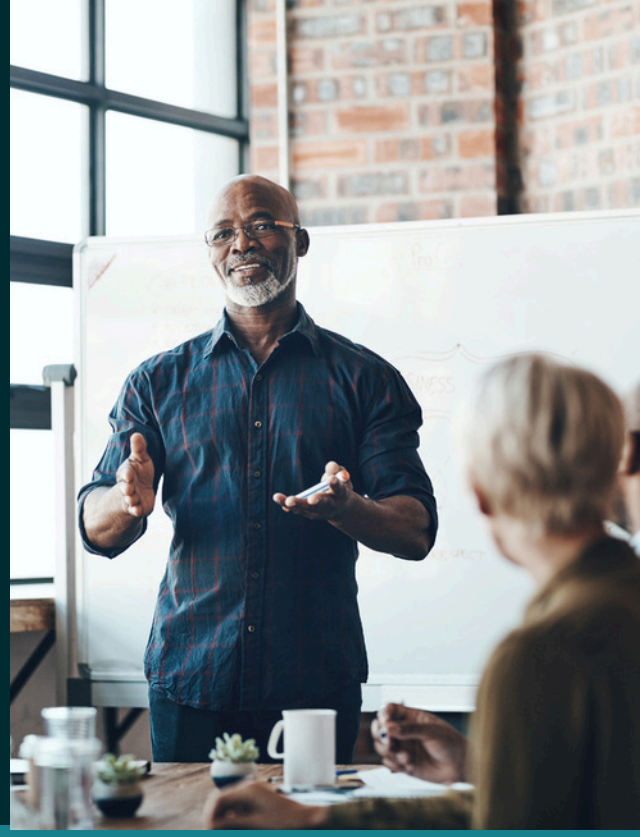
You'll develop an individual action plan to explore your goals, apply your learning and develop a clear roadmap to achieve them.

Session Outline

Session 1

Introduction to Programme and to Computational Architecture

This session kicks off the Skills Bootcamp with an introduction to the group, the course goals, and the exciting potential of computational design in the Architecture, Engineering, and Construction (AEC) sector. Participants will gain a foundational understanding of parametric modelling and explore how logic can drive design through a small project – the Rube Goldberg Challenge. The session includes a lecture on computational methods and their application in AEC, followed by a hands-on tutorial in Rhinoceros and Grasshopper, building key skills in digital parametric modelling workflows, applied to the design of a rooftop.



Session 2

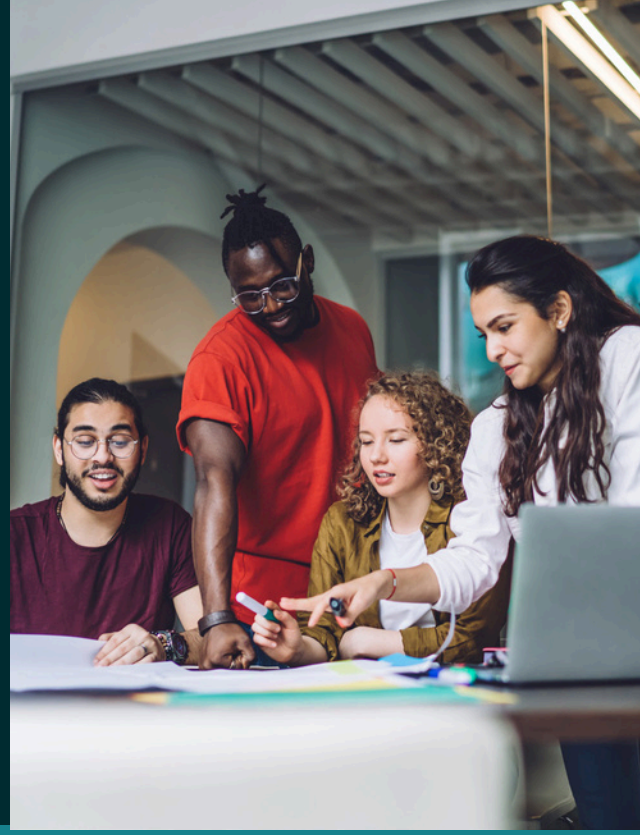
Digital strategies for simulation and analysis

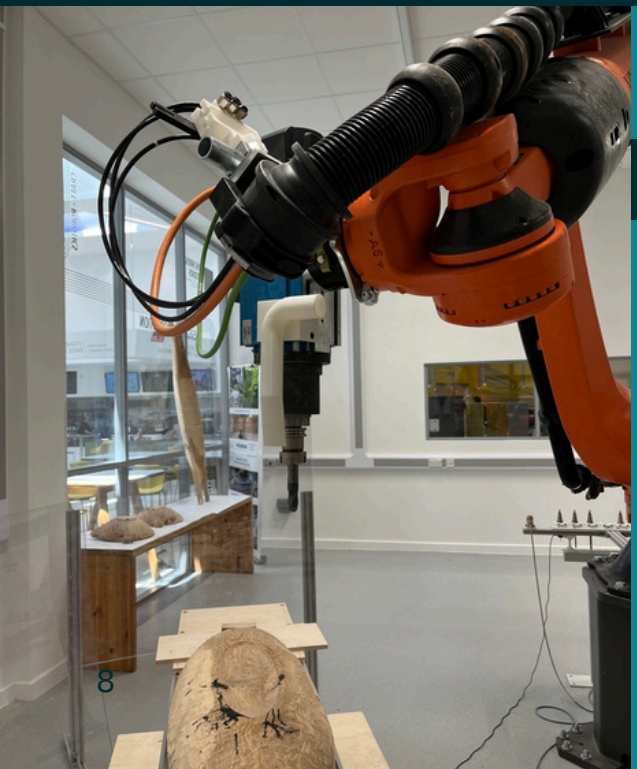
In this session you will deepen your parametric modelling skills and focus on using computational simulation and analysis to inform and drive design, building on the initial rooftop design. You will explore how data driven insights can guide design decisions and develop efficient modelling strategies that streamline the design to fabrication process. Through hands on practical's, you will apply physics-based simulation and analysis tools within parametric environments, enhancing your ability to create responsive design solutions, driven by environmental performance factors such as rainwater harvesting or solar power generation.

Session 3

Computational Design for Building Information Modelling

This session will explore computational rooftop designs focused on rainwater harvesting through advanced material optimisation. Participants will build on their Rhino and Grasshopper modelling skills, prioritising environmental aspects such as rainwater flow efficiency, sustainable material selection, and fabrication considerations. Leveraging BIM, designs will incorporate metadata on environmental performance (e.g., embodied carbon, water harvesting potential) and utilise in an exploration of interoperability solutions for interoperability. Participants will actively employ BIM for environmental data integration, clash detection with MEP services, and simulation-based validation, showcasing how computational design and BIM together enable more sustainable, coordinated, and digitally-informed architectural solutions.





Session 4

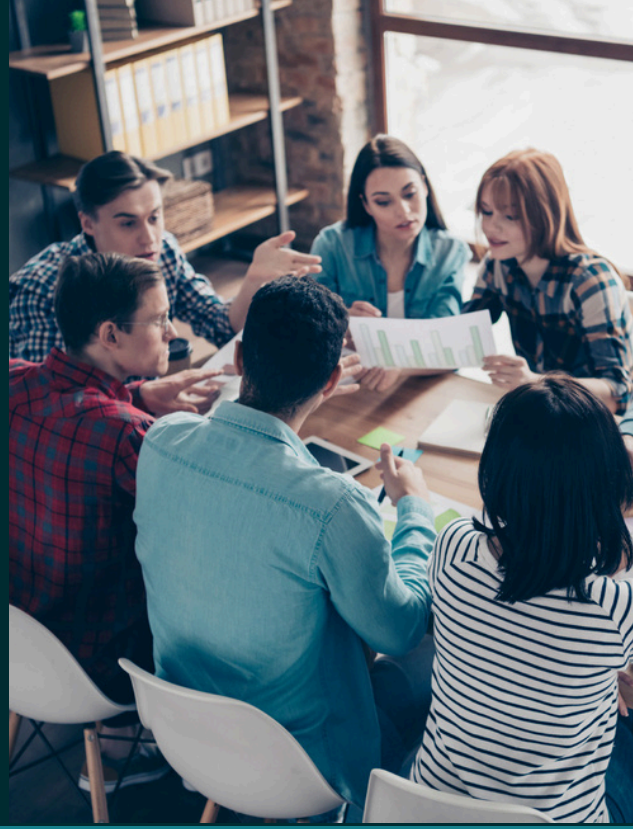
Industry perspectives on Digital Construction and Digital Manufacturing/Fabrication

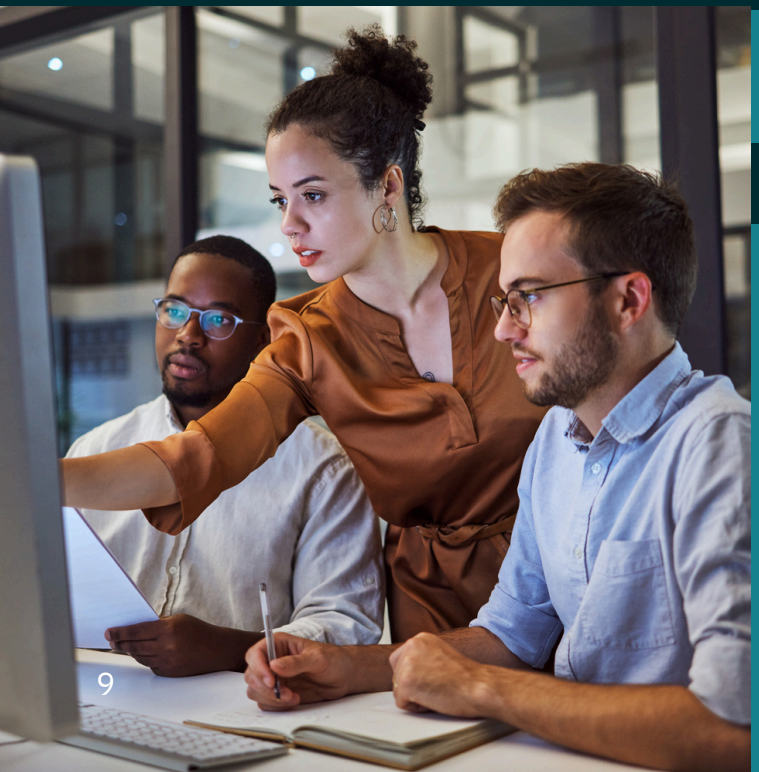
This session immerses learners in real-world applications of digital construction and manufacturing through direct engagement with industry perspectives. You will tour UWE Bristol's innovation spaces and research centres, including the Centre for Sustainable Planning and Environments, the Centre for Advanced Built Environment Research, and the Centre for Print Research (CFPR) and The Bridge Studios. The session will feature case studies that highlight how digital tools are used to solve practical challenges in the built environment sector. This face-to-face session aims to bridge academic learning with industry practice, offering valuable insights into current trends and technologies.

Session 5

Computational Design for Digital Fabrication

In this session, you will apply your parametric modelling skills within the context of digital fabrication. Through a combination of lecture and hands-on practical's, this session explores key fabrication processes used in construction and introduces the principles of Design for Manufacture and Assembly (DfMA). You will learn to identify and respond to real-world fabrication constraints, integrating these considerations into their design workflows to create smarter, buildable solutions using Rhinoceros and Grasshopper, e.g. to parametrically develop roof tile geometries.





Session 6

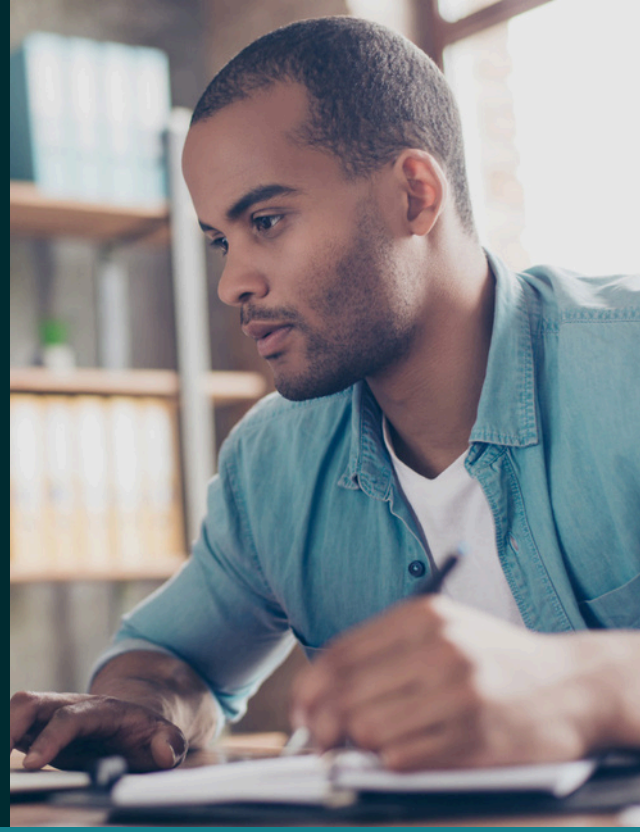
Embedded learning into Practice: Overcoming Barriers and Challenges

TThis reflective session gives you space to reflect on your personal growth and career development throughout the Skills Bootcamp. Using LEGO® Serious Play, you'll visualise common barriers to growth and experiment with creative problem-solving techniques. You'll review your action plan and review your personalised, practical goals to help embed your new knowledge into your role and business' objectives.

Session 7

Practice in physical making – generation of objects “Sculpted by the Machine”

This hands-on session explores the full digital to physical workflow, from scanning and modelling to preparing files for manufacture. Participants will learn to clean and analyse 3D files, solve common geometry issues, and understand how to generate and work with G-code for digital fabrication. Using tools such as Grasshopper and Fusion 360, they’ll create 3D models ready for production, while also gaining insights into advanced techniques like metal 3D printing and hybrid machining.



Session 8

Practice in physical making - individual project design brief

In this session, you will take on a personal design challenge, such as repairing a broken or missing part, using the skills and tools developed throughout the bootcamp. You will explore both additive and subtractive machining methods, selecting appropriate materials and fabrication techniques to realise their solution. This project-based approach encourages creative problem solving and hands on experimentation, reinforcing practical understanding of digital manufacturing processes.

Session 9

Challenge day – part 1 co-design workshop based on task “Rube Goldberg” challenge (CFPR and Bridge Studios)

In this fast-paced, collaborative session, you will work in small teams to design and build a physical contraption that solves a set challenge in an imaginative way, and building on concepts and solutions developed in previous sessions around rainwater harvest. Inspired by the Rube Goldberg concept, the workshop encourages creative problem solving, visual thinking, and rapid prototyping. In teams, you will focus on reproducibility, robustness, and effective use of materials and fixings, all within a fixed time frame putting your design, fabrication, and teamwork skills to the test.

Session 10

Challenge day follow up and feedback session, wrap up and celebration (CFPR and Bridge Studios)

This final session brings the bootcamp to a close with a showcase of the Rube Goldberg Challenge outcomes. You will present your projects through posters, demonstrations, and short reports, practising your communication and presentation skills. The session includes group critique, reflection on the design and making process, and feedback from peers and instructors culminating in a celebration of achievements and learning throughout the programme.

What is my Commitment as a Learner?

For our Skills Bootcamp you will be required to:

- Attend all live sessions, held in-person or online
- Complete self-study activities between sessions
- Commit to your action plan and set goals for personal development
- Provide mandatory personal and employment data for up to six months following completion of the Skills Bootcamp

What is my Commitment as an Employer?

Employers are able to utilise this Skills Bootcamp to upskill existing staff and provide development opportunities within their organisation. As an employer you will be expected to:

- Release your employee(s) to attend all sessions
- Provide opportunity in the workplace for your employee to develop skills acquired from the Skills Bootcamp
- Attend a short online employer interview to understand the Skills Bootcamp requirements and the employer agreement document
- Pay the 10% programme fee contribution
- Within 6 months of completion, provide one of the following:
  - A salary increase linked to new skills
  - An interview for a promotion or new responsibilities
  - Additional responsibilities aligned with their new skills
  - Evidence of role enhancement based on Skills Bootcamp learning

Programme Dates and Fees

October 2025 Cohort

Session 1	Mon 29 Sep, 09:30-16:30	Frenchay Campus (in-person)
Session 2	Mon 06 Oct, 09:30-16:30	Frenchay Campus (in-person)
Session 3	Mon 13 Oct, 09:30-16:30	Frenchay Campus (in-person)
Session 4	Mon 20 Oct, 09:30-16:30	Frenchay Campus (in-person)
Session 5	Mon 03 Nov, 09:30-16:30	Frenchay Campus (in-person)
Session 6	Mon 10 Nov, 09:30-16:30	Frenchay Campus (in-person)
Session 7	Mon 17 Nov, 09:30-16:30	Frenchay Campus (in-person)
Session 8	Mon 24 Nov, 09:30-16:30	Frenchay Campus (in-person)
Session 9	Mon 01 Dec, 09:30-16:30	Frenchay Campus (in-person)
Session 10	Mon 08 Dec, 09:30-16:30	Frenchay Campus (in-person)

Fees

This Skills Bootcamp is heavily subsidised, with the government covering 90% of the total cost for eligible learners applying through their SME employer. The full course fee is £4,509.5, but SME employers pay just 10% – only £450.95 per learner.

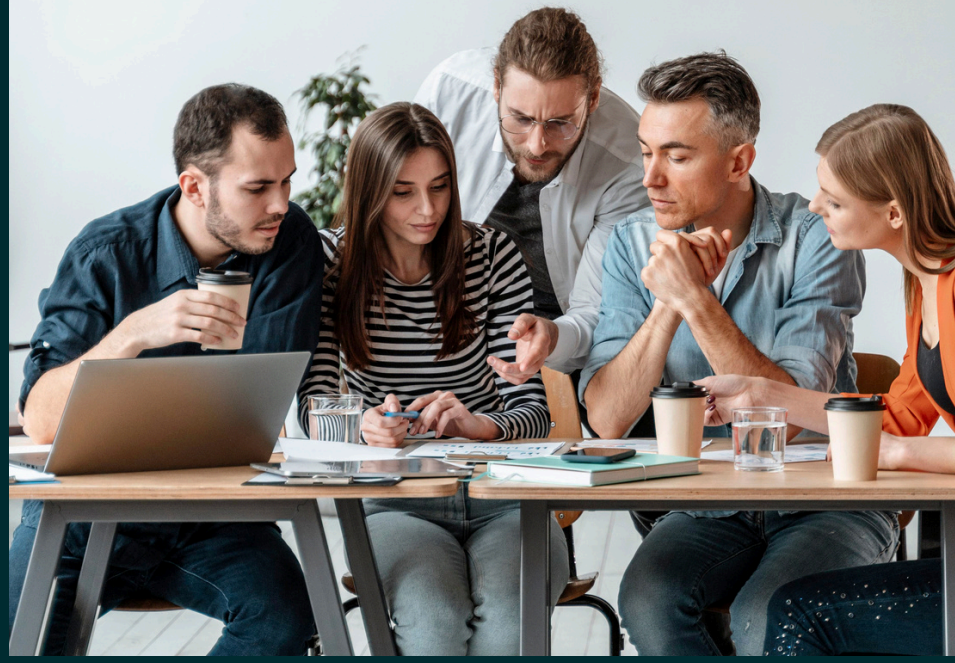
Please note: This Skills Bootcamp is currently open only to applicants sponsored by SME employers. If you're an independent learner or employed by a larger organisation, please contact us on *bootcamps@uwe.ac.uk* so we can notify you about future availability.

Funding Eligibility

Due to funding restrictions all learners must meet the following criteria:

- Be aged 19+ Live and/or work for an organisation based in Bristol, South Gloucestershire, Bath and North East Somerset or North Somerset (we will consider applicants living close to these boundaries)
- Not currently in full-time or part-time education
- Have the right to live and work in the UK
- Have not registered and attended (including partial completion) any other Skills Bootcamp in the current financial year from any provider
- Have your employer's agreement to attend and achieve the required outcomes

The Skills Bootcamps Programme is funded and managed by the West of England Mayoral Combined Authority, and delivered by UWE Bristol (The University of the West of England) and Sustainable Ventures.



Apply Now

If you have any questions, please email the team at bootcamps@uwe.ac.uk or call 0117 328 1357