
Modular and Offsite Construction Course: Choosing and Procuring Alternative Building Systems

9 – 13 May 2027
Cairo





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Programme Summary

Modular and offsite construction is the subject of this one-week training course for directors of construction, housing and infrastructure delivery, ending in a technology selection and procurement plan for one project. Delivery leaders are asked to choose between precast, steel frame, timber, modular and other systems, often with thin comparative evidence. The programme moves from system characteristics to cost, programme, carbon and risk comparison, factory and site controls, and contracting, using housing and infrastructure cases. Mars Training Centre UK delivers this programme on modular and offsite construction to mixed-organisation cohorts.

The Business Case

Choosing a building system early fixes much of a project's cost, duration and risk profile, yet the choice is often made on habit or on a supplier's presentation. A shared comparison method lets directors test options against the same criteria, challenge claims and approve a procurement route with the trade-offs recorded.

- Delivery Programme: Shortens as factory and site activities are sequenced and interfaces are resolved before award.
- Whole-Life Cost: Becomes visible as capital cost, logistics, maintenance and end-of-life are compared on one basis.
- Delivery Risk: Falls as supplier capacity, quality control and transport constraints are tested before contract.

Principles and Evidence Base

- ICC/MBI 1200: Frames planning, design, fabrication and assembly for off-site construction, applied in Sessions 1 and 3.
- ICC/MBI 1205: Frames regulatory review and inspection of off-site construction, applied in Session 3.
- Design for Manufacture and Assembly Principles: Test whether a design suits factory production, applied in Sessions 2 and 3.
- Whole-Life Costing Principles: Compare options over their service life rather than first cost alone, applied in Session 2.



Intended Participants

- Directors who approve the construction method for housing, public buildings and infrastructure programmes.
- Delivery leaders who prepare options papers and defend the chosen system to boards and funders.
- Heads of procurement who tender for offsite manufacturers and structure supply contracts.
- Development and asset leaders who carry the long-term performance of the finished buildings.

Typical sectors include housing development, public works, education and health estates, and utilities.

Learning Outcomes

1. Participants will be able to classify alternative building systems by how they are made, moved and assembled.
2. Participants will be able to compare systems on cost, programme, quality, carbon and risk using one scoring basis.
3. Participants will be able to evaluate a design for its suitability for factory production and site assembly.
4. Participants will be able to diagnose supplier capacity, logistics and interface risks before award.
5. Participants will be able to construct a procurement route and contract allocation for a chosen system.
6. Participants will be able to justify a technology choice to a board using recorded evidence.

Programme Structure

Day 1: Modular and Offsite Construction Systems Compared

What does each alternative building system offer, and where does it fit?

- System Family Map
- Precast and Light Steel Frame Profiles
- Timber and Insulated Concrete Form Profiles
- Three-Dimensional Printed and Earth-Based Walling Profiles
- Volumetric and Panelised Fit Matrix

Day 2: Cost, Programme and Carbon Comparison

How are options compared fairly on money, time and carbon?

- Whole-Life Cost Model
- Programme Compression Test
- Embodied Carbon Comparison Sheet
- Quality and Defect Profile
- Option Scoring Matrix



Day 3: Design, Factory and Site Controls

What must be controlled between the factory gate and the finished building?

- Design for Manufacture and Assembly Review
- Factory Quality Control Plan
- Transport and Crane Logistics Plan
- Site Interface and Tolerance Register
- Inspection and Regulatory Review Route

Day 4: Procurement and Risk Allocation

How is the chosen system bought, and who carries which risk?

- Supplier Capacity and Capability Assessment
- Procurement Route Options Table
- Risk Allocation Register
- Warranty and Defect Liability Terms
- Payment and Stage Gate Structure

Day 5: Technology Selection Plan for One Project

Do the comparison, control and procurement records support one defensible choice?

- Applying the Session 1 System Family Map
- Testing the Session 2 Option Scoring Matrix
- Reviewing the Session 3 Factory Quality Control Plan
- Checking the Session 4 Risk Allocation Register
- Completing the Technology Selection and Procurement Plan

Methodology

The programme uses a structured exercise method built on a shared case of a housing or infrastructure project that must choose a building system. Participants build each artefact on prepared project data, then adapt it to a project of their own and test it with peers.

- Suggested activity: Scoring three building systems against cost, programme, carbon and risk.
- Suggested activity: Reviewing a design for factory production and listing the changes needed.
- Suggested activity: Presenting a procurement route and risk allocation to a mock approval board.



Capstone Output

Each participant completes a technology selection and procurement plan for one project. It holds a system comparison, an option scoring matrix, a factory and site control plan, a risk allocation register and a procurement route. The plan is used at work to brief the delivery team and to obtain approval for the chosen system.

Frequently Asked Questions

Is modular and offsite construction training suitable for leaders without an engineering background?

Yes. Modular and offsite construction is taught through cases and templates, assuming experience in delivering buildings or infrastructure but no design or engineering qualification.

Which standards does modular and offsite construction training rest on?

Modular and offsite construction training draws on ICC/MBI 1200 and ICC/MBI 1205 for off-site construction, together with design for manufacture and assembly and whole-life costing principles.

How is the plan from modular and offsite construction training used at work?

You use the technology selection and procurement plan to brief the delivery team, obtain board approval for the chosen system and set supplier requirements.

How does modular and offsite construction differ from construction site management training?

Modular and offsite construction centres on choosing and procuring factory-made systems, while construction site management training covers crews, daily control and on-site programme delivery.