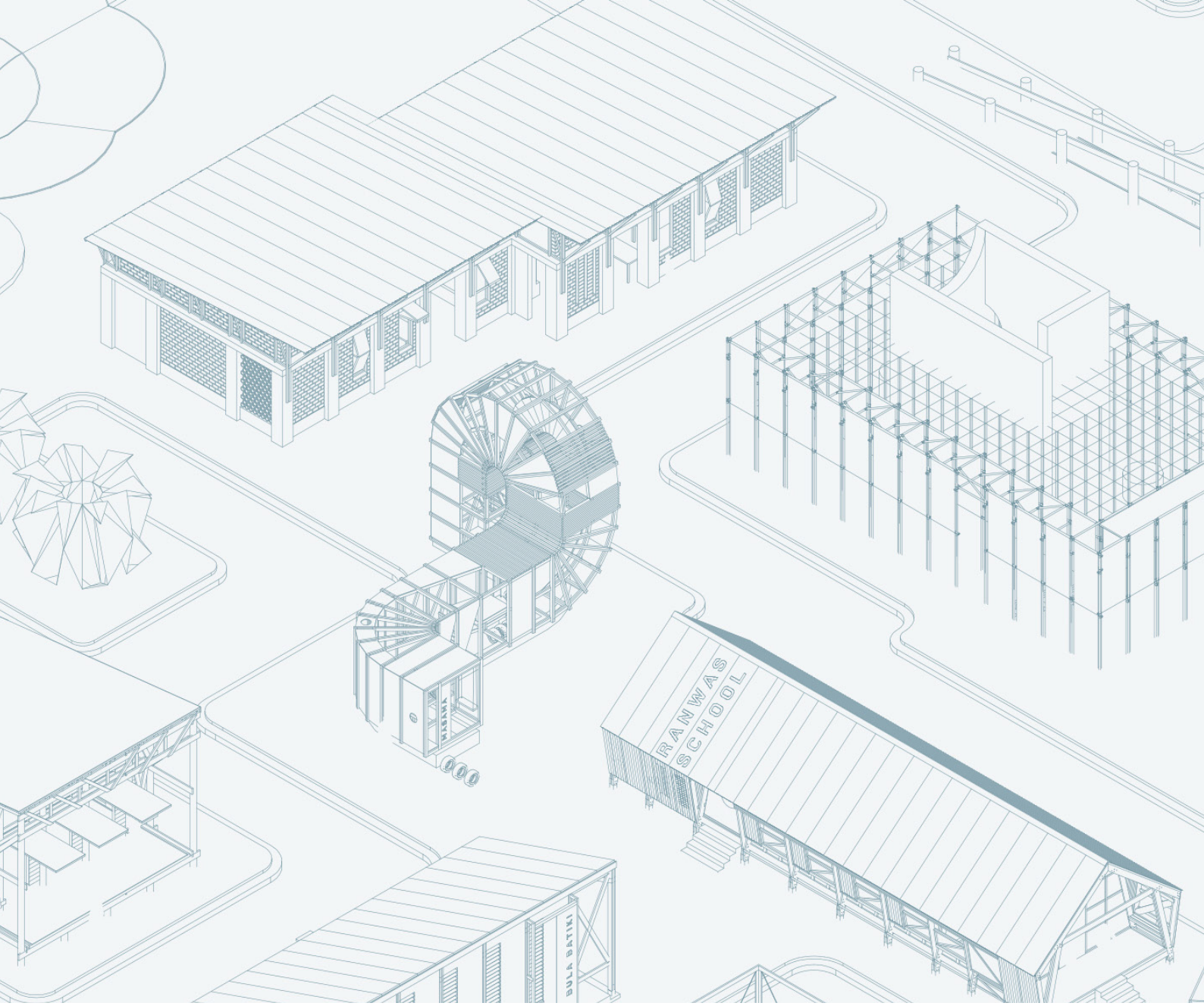

CA·UK·IN
studio

DESIGN & BUILD
CURRICULUM

01

Introduction

This document is intended to outline the learning objectives and outcomes that you will achieve through active participation in our virtual workshops or construction workshops.

Question	Answer
Who is this curriculum for?	This curriculum is for participants who wish to gain knowledge and understanding of the built environment sector in an international development context.
What does the curriculum cover?	The curriculum topics allow participants to learn, practice and develop the skills required for employment and/or career development in international development, design and/or construction projects.
Is the curriculum part of a framework or initiative?	No. Completion of a design workshop and a construction workshop will provide participants with a broad understanding of the sector and will open opportunities to join the CAUKIN Team in a capacity of higher responsibility such as a Project Runner, Project Leader or Project Manager.
Does this apply exclusively to international development projects?	No. This curriculum and the associated modules can be applied to all design and construction impact projects, that work to tackle sociual or environmental issues. The location and context will vary from workshop to workshop.

02

Qualification

The following qualification levels are awarded after the completion of each module by a participant. Upon completion of a full Virtual Design Workshop and a Design & Construction Live Build Workshop, selected participants will be offered the opportunity to progress onto the subsequent qualification levels through site management and leadership roles. Details of qualification Level 3 + can be obtained by requesting a copy via email.

Qualification Level	Description
CAUKIN Qualification Scheme: Level 1	Virtual Design Workshop - *Design Through Collaboration - Designing With and for the Community in Humanitarian Contexts*
CAUKIN Qualification Scheme: Level 2	Construction Live Build Workshop (2 - 8 Weeks) - *Learning Through Building - Design & Construction on Site*
CAUKIN Qualification Scheme: Level 3	Project Runner - On-*site Team Management, Pastoral Care & Community / Participant Integration*
CAUKIN Qualification Scheme: Level 4	Project Leader - *Leading Construction Specific Operations in Humanitarian Contexts*
CAUKIN Qualification Scheme: Level 5	Project Manager - *Managing International Development Projects in Humanitarian Contexts*

03

Module 01: Virtual Design Workshop

Location of delivery: Online (Global)

Qualification level: CAUKIN Qualification Scheme Level 1

Main aims of the module: To develop an advanced understanding within the theoretical aspects of implementing collaborative design and construction projects, in community contexts, through participatory design. The module will offer participants the opportunity to gain knowledge of a selection of methods surrounding community design engagement; how to design within contextual and practical limitations; and methods for design communication with remote stakeholders.

The module will also engage relevant leading professionals to deliver lectures, talks and roundtables as well as open critiques and consultation with the design brief's end users.

The Key Themes explored throughout the duration of the course will be:
- Alternative methods for practicing architecture
- The role of the architect / designer in collaborative projects
- Community engagement and communication techniques
- Site analysis and design parameters
- Stakeholder viewpoints
- Production and presentation

Main topics of Study:

- Climatic design strategies (including specific / relevant extreme climatic issues)
- Remote site analysis techniques
- Designing for remote locations
- Design considerations within humanitarian projects
- Techniques for community engagement
- Alternative ways to practice architecture- different business models within the industry
- Design communication with remote communities
- Design representation and presentation techniques

03

Module 01: Virtual Design Workshop

Learning Outcomes of the Module - at the end of this module, participants will be able to demonstrate: *(reference numbers indicated relate to the ARB criteria of accreditation, e.g. GC1.3)*

Knowledge of:	- How to develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user. (GC1.3) - The basic management theories and business principles related to running both an architect's practice and architectural projects, recognising current and emerging trends within the construction industry. (GC11.3)
Understanding of:	- The constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project (GC1.2) - The needs and aspirations of the end users of a building (GC5.1) The impact of buildings on the environment and the precepts of sustainable design (GC5.2) - The way in which buildings fit into their local context (GC5.3) - The role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the build environment (GC6.2) - The potential impact of building projects on existing and proposed communities (GC6.3) - The need to critically review precedents relevant to the function, organisation and technological strategy of design proposals (GC7.1) - Strategies for building construction and ability to integrate knowledge of structural principles and construction techniques (GC8.2) specific to the climate, context and materials available
Ability to:	- Critically examine the financial factors implied in varying building types, constructional systems, and specification choices, and the impact of these on architectural design (GC10.1)

03

Module 01: Virtual Design Workshop

Teaching / learning methods used to enable the achievement of the learning outcomes:

- The knowledge and understanding based learning outcomes will be delivered through online lectures, panel discussions from the CAUKIN team, as well as relevant external contributors from professional practice and academia

- Participants will apply the knowledge and understanding to a design brief in which the participants will have the opportunity to develop a design for a community structure or building

- Elements and ideas from the student's design proposals will be taken forward into a final design which will then be constructed on site at a later date as part of the CAUKIN Construction Module

- Participants will receive critical feedback on design proposals from relevant industry leaders specific to each design brief

Further reading and resources for the module:

Julia Watson, Lo-Tek Design By Radical Indigenism, ed. by Julia Watson (Cologne, Germany: Taschen, 2019).

Sumita Singha, Architecture for Rapid Change and Scarce Resources (London: Routledge, 2013).

Johan Van Lengen, The Barefoot Architect: A Handbook for Green Building (California, USA: Shelter Publications , 2008).

Nishat Awan, Tatjana Schneider, Jeremy Till, Spatial Agency: Other Ways of Doing Architecture (London, UK: Routledge , 2013).

IDEO (Firm), Human Centered Design Toolkit, 2 edn (London, UK: IDEO, 2011).

Geoff Mulgan, Julie Caulier-Grice, and Robin Murray, The Open Book of Social Innovation (London, UK: The Young Foundation, 2010).

Indira van 't Klooster , Reactivate!: Innovators of Dutch Architecture (Netherlands: Valiz / Trancity, 2013)

04

Module 02: Design & Construction Live Build Workshop

Location of delivery: International (dependant on project brief and location)

Qualification level: CAUKIN Qualification Scheme Level 2

Main aims of the module: The aim of this module is to develop an advanced understanding of the practical aspects of implementing collaborative design and construction projects in community context's, through participatory construction. The module will offer participants the opportunity to gain hands on knowledge of construction, response to on-site changes, problem solving, designing for site limitations and methods for design & construction communication with remote stakeholders. This construction knowledge will be taught and learnt in direct relation to elements of theoretical design understanding, with the two simultaneously complementing each other. Practical decisions will relate back to elements of community engagement strategies, collaborative design techniques and responding / understanding the many remote and community-based limitations posed.

The module will give participants the chance to experience the construction of a building or part of a larger scheme from inception through to final completion.

The Key Themes explored throughout the duration will be:

- Site appraisal and preparation
- Foundations
- Primary structure
- Secondary structure
- Fixings, fastenings and junctions
- Roofing, cladding and flooring
- Finishing, painting and treating
- Detailed design
- Safe use of construction methods, materials and tools
- Health & Safety and welfare in construction

04

Module 02: Design & Construction Live Build Workshop

Main topics of Study:

Practical

- Setting out a foundation
- Understanding the different types of foundation
- Responsive design relating to design issues that occur on site
- Excavating foundations
- Laying and understanding rebar reinforcement
- Techniques for mixing, laying and screeding concrete foundations, including mix compositions
- Safe use of a number of construction tools, including but not limited to; circular saw, mitre saw, impact driver, combination drill, SDS drill, angle grinder, hand saw, chisel, hammer
- Various methods for timber joinery
- Fabrication and installation of primary structure (timber, masonry, steel)
- Fabrication and installation of secondary structure (timber, masonry, steel)
- Measuring and marking out joints and elements
- Learning how to source timber, and deciding which wood to use for different elements of a building, relating to species, treatment, cost and physical dimensions
- Applying construction learning to design thinking
- Methods for cladding, flooring and finishing buildings
- Installing different types of roofing
- Constructing design details specific to various types of natural disaster design
- Hard landscaping and site drainage design and installation

Theoretical

- Collaborative design decision making
- Design communication with remote communities
- Design in remote locations
- Design limitations with humanitarian projects
- Climatic design strategies (including specific / relevant extreme climatic issues)
- Techniques for community engagement
- Process for post occupancy review
- Techniques for recording post occupancy and building life cycle data / case studies

04

Module 02: Design & Construction Live Build Workshop

Learning Outcomes of the Module - at the end of this module, participants will be able to demonstrate: *(reference numbers indicated relate to the ARB criteria of accreditation, e.g. GC1.3)*

Knowledge of:

- Techniques used to measure, set out and square foundations in buildings
- The health and safety regulations, roles and responsibilities
- Accident and emergency reporting procedures and documentation
- Correct use of personal protective equipment
- Environmental consideration in relation to construction

Understanding of:

- How to read and translate construction drawings into a built output
- The constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project (GC1.2)
- The needs and aspirations of the end users of a building (GC5.1)
- The impact of buildings on the environment and the precepts of sustainable design (GC5.2)
- The way in which buildings fit into their local context (GC5.3)
- The potential impact of building projects on existing and proposed communities (GC6.3)
- Strategies for building construction and ability to integrate knowledge of structural principles and construction techniques (GC8.2) specific to the climate, context and materials available

Ability to:

- Use a wide range of construction tools safely and competently identify health and safety legislation relevant to and used in the construction environment
- Critically examine the financial factors implied in varying building types, constructional systems, and specification choices, and the impact of these on architectural design (GC10.1)
- Measure and mark out woodworking joints (applicable to timber construction projects)
- Select and use appropriate hand tools and materials to produce basic woodworking, masonry or steel joints
- Form a frame using woodworking joints (applicable to timber construction projects)
- Form a structural wall using brick laying techniques (applicable to masonry construction projects)

04

Module 02: Design & Construction Live Build Workshop

Teaching / learning methods used to enable the achievement of the learning outcomes:

- The learning outcomes will be delivered through a live construction project, on site

- Participants will engage with skilled tradespeople on site in small groups, regularly rotating around different construction tasks to ensure that each participant meets the full scope of learning outcomes

- Structured tutor groups on site will address design issues by working together to provide and implement solutions

- Participants will receive feedback on construction proposals from skilled trades people and our team on site

Further reading and resources for the module:

Julia Watson, Lo-Tek Design By Radical Indigenism, ed. by Julia Watson (Cologne, Germany: Taschen, 2019).

Sandra Piesik, Habitat: Vernacular Architecture for a Changing Planet, Illustrated edn (New York, USA: Harry N. Abrams, 2017).

John Bullar, The Complete Guide to Joint-Making, Illustrated edn (Lewes, UK : GMC Distribution, 2013).

Kiyoshi Seike, The Art of Japanese Joinery, trans. by Yuriko Yobuko, Rebecca Davis, Rebecca M. Davis (California, USA: Weatherhill, 1977).

Rupert Newman, Oak-framed Buildings (London, UK: Guild of Master Craftsmen, 2005).

William Hall, Dan Cruickshank, Brick (London, UK: Phaidon, 2015).

William Hall, Concrete (London, UK: Phaidon, 2017).

William Hall, Richard Mabey , Wood (London, UK: Phaidon, 2017).

Bhatt, V. et al. (2020). Blueprint for a Hack: Leveraging Informal Building Practices. Actar Publishers.

Friedman, Y. & Bocco, A. (ed.) (2017). Tetti (trans. “Roofs” UNESCO). Available at: https://ia800404.us.archive.org/12/items/Roofs-PartOne-English-YonaFriedman/roofs-1.pdf

Hart, K. (2018). Essential Earthbag Construction: The Complete Step-by-Step Guide. New Society Publishers.