

MODULE DESCRIPTOR

Module Title

Advanced Data and Computational Methods for Design

Reference	ACM610	Version	1
Created	January 2022	SCQF Level	SCQF 11
Approved	November 2022	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

To equip students with skills in the use of advanced digital tools for the design and evaluation of sustainable architectural solutions, over their whole-life cycle.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- ¹ Devise and critically evaluate advanced Data Driven methods for Architectural design, taking into account the wider economic, social and environmental context.
- 2 Design strategies and models for circular economy, re-purposing, adaptability of materials, building components, and buildings.
- 3 Develop coherent, credible Design for Manufacture and Assembly structures
- 4 Conduct and critically appraise whole-lifecycle carbon assessment of designs in the early strategic stages of development, including embodied and operational carbon.

Indicative Module Content

Principles of Circular Economies, Material Passports, Whole-lifecycle Carbon Assessment, Data lifecycle of a building, Data strategies for design, Parametric strategies for Design, DfMA strategies, Data Driven Evaluation of Architectural Design, The content is delivered through a series of seminars and lectures, while the students need to develop a research brief using the indicative design methods/content

Module Delivery

2 hours seminar and lecture and presentation followed by a 2 hour hands-on tutorial with tools and application of concepts. Students develop their coursework on both the tutorials and the off-contact hours.

	Module Ref:	ACM61	0 v1
Indicative Student Workload		Full Time	Part Time
Contact Hours		46	N/A
Non-Contact Hours		104	N/A
Placement/Work-Based Learning Experience [Notional] Hours		N/A	N/A
TOTAL		150	N/A
Actual Placement hours for professional, statutory or regulatory body	dy		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Туре:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	Technical report incorporating circular economy appraisal, whole-life cycle appraisal Data driven and DfMA approaches to design for a small building/structure.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The overall module grade is based on 100% weighting of Component 1 (Technical Report). An overall minimum grade D is required to pass the module. Non-submission will result in an NS grade.

Module Grade	Minimum Requirements to achieve Module Grade:
Α	A
В	В
С	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements		
Prerequisites for Module	None.	
Corequisites for module	None.	
Precluded Modules	None.	

INDICATIVE BIBLIOGRAPHY

- 1 The Handbook to Building a Circular Economy, RIBA, Cheshire, David
- 2 Building Better, Less Different: Circular Construction, Felix Heisel, ?Dirk E. Hebel, ?Ken Webster, 2022
- 3 Targeting Zero: Whole Life and Embodied Carbon Strategies, Simon Sturgis, 2019
- 4 Data-Driven Design and Construction: 25 Strategies for ...books.google.com ? books, Randy Deutsch, 2015
- 5 Parametricism 2.0 Rethinking Architecture's Agenda for the 21st Century, Schumacher