Module Descriptor Form

Civil and Environmental Engineering

CL812 - Carbon Assessment And Management In The Built Environment

Module Code	CL812	**Module Title**	Carbon Assessment And Management In The Built Environment				
Module Registrar	Giesekam, Dr Jannik J						
Other Staff Involved							
Credit Weighting	10	**Semester**	1	**Elective**	Yes	**Academic Level**	5
Pre-requisites							
Required for							

Module Format and Delivery (hours):

Lectures	Tutorials	Assignments	Labs	Private Study	Total
19	3	60	0	18	100

Educational Aim

This module aims to:

The built environment is a key sector driving climate change, accounting for almost two fifths of global carbon dioxide emissions. These emissions are strongly influenced by decisions made by construction value chain members (including clients, designers and contractors) throughout the optioneering, design and delivery of construction projects. Consequently, detailed carbon assessment and management on building and infrastructure projects is becoming a routine requirement within client briefs, public procurement standards and local authority planning requirements. This module aims to equip students with: an understanding of the main principles of life cycle assessment; awareness and experience of applying widely used standards in built environment whole life carbon assessment (e.g. RICS Professional Standard on Whole life carbon assessment in the built environment) and management (e.g. PAS 2080: Carbon Management in Buildings and Infrastructure). The module develops familiarity with market-leading asset assessment software and the ability to appraise common sources of information on the environmental impacts of construction products (e.g. Environmental Product Declarations). The module also exposes students to a range of contemporary challenges in the practical application of these standards and principles, incorporating case studies, presentations and discussions with leading practitioners in the field.

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Syllabus

This module will teach the following:

The key topics covered by the module lectures over an 11-week teaching period are:

- Overview of the built environment's contribution to climate change
- Key phases and principles in life cycle assessment
- Principal built environment carbon assessment standards and key supplementary guidance documents
- Regulations, planning requirements and public procurement standards driving uptake of embodied and whole life carbon assessment
- Sourcing and interpreting product information such as Environmental Product Declarations
- Overview of built environment carbon assessment software tools
- Integrating carbon management into project decision making
- Establishing baselines and target setting
- Monitoring and reporting requirements
- Benchmarking results to other projects and prominent voluntary targets
- Communicating results to other value chain members

In addition the module includes:

- Development of skills in a market leading carbon assessment tool through project work and tutorials
- Guest lectures from industry practitioners illustrating the practical challenges implementing carbon assessment and management standards on current projects.

Learning Outcomes

On Completion of the module, the student is expected to be able to:

LO: 1	Understand the basic principles of life cycle assessment and the factors driving greater uptake of carbon assessments in the built environment
LO: 2	Analyse the environmental impacts of construction products and be able to interpret and critically appraise product information.
LO: 3	Apply common carbon assessment and management standards, associated guidance and best practice
LO: 4	Conduct a carbon assessment, minimise impacts through design changes and effectively communicate results to project stakeholders

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

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Assessment of Learning Outcomes - Criteria

Learning Outcome: **1**

	Criteria
1	Demonstrate an understanding of the contribution of the built environment to climate change
2	Appreciate the main factors driving routine carbon assessment on built environment projects
3	Awareness of current UK public procurement and regulatory requirements related to carbon assessment in the built environment.

Learning Outcome: **2**

	Criteria
1	Appreciation of the key environmental impacts of construction products.
2	Analyse and critically appraise information on the environmental impacts of construction products
3	Demonstrate ability to locate and interpret Environmental Product Declarations.

Learning Outcome: **3**

	Criteria
1	Interpret and apply common carbon assessment and management standards
2	Demonstrate an awareness of associated supplementary guidance for different sub-sectors and asset types.
3	Appreciate the respective roles of different value chain members in managing carbon throughout a project.

Learning Outcome: **4**

	Criteria
1	Develop knowledge of life-cycle assessment and the ability to conduct a whole life carbon assessment on a simple asset.
2	Understand how to compare designs and minimise the carbon footprint whilst retaining key elements of a design brief.
3	Ability to benchmark results of a carbon assessment and communicate results to a client.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

To Pass the module, students need to gain a summative mark of: 50%

Description	**Semester**	**Start Week**	**Duration**	**Weight**	**Submission Week**	**Linked Criteria**
Assignment 1: EPD Review	1	3		30%	6	LO 1: C1, C2, C3 LO 2: C1, C2, C3
Assignment 2: Asset assessment	1	6		70%	11	LO 1: C3 LO 3: C1, C2, C3 LO 4: C1, C2, C3

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Principles of Assessment Feedback

Principle 1. “Assessment and feedback practices promote effective student learning”

All assignment briefs follow a clear template and instructions are available from the outset of the course with staggered dates for submission, maximising the opportunity for students to manage their workload and incorporate feedback into subsequent work. Students will have opportunities through tutorials to incorporate feedback and improve their performance. One-to-one discussions of feedback will be available on request. Regular on-demand office hours will also be maintained for informal interactions.

Principle 2. “Assessment and feedback practices are appropriate, fair, and transparent”

The assessment criteria are clearly stated at the outset of the course and within instructions for each of the assignments. All of the assignments employ skills the students may use in a professional context. The grading and feedback is based solely on the students’ submissions and judged against the stated marking criteria.

Principle 3. “Assessment and feedback practices are clearly communicated to students and staff”

All assignment briefs are available from the outset of the course and follow a clear template detailing purpose, weighting, timing etc. Students will be made aware of submission and electronic feedback dates in Week 1 and reminded each week of upcoming deadlines. All related policies and procedures are signposted on the course myplace pages and referenced in assignment instructions.

Principle 4. “Assessment and feedback practices are continuously reviewed”

Lecturers engage regularly with students and class reps about how the semester is going, including, but not limited to, assessment. Mid- and end-of-term opportunities for student feedback are included via questionnaires, with changes made in response to mid-term feedback set out in Week 7 and end-of-term feedback incorporated into the subsequent year’s approach.

Additional Information

Resit Procedure

Resubmission of coursework prior to commencement of the next exam diet. The resubmission is a second iteration of Assignment 2 with a revised brief (new project parameters, assessment driver, client information) and an additional requirement (similar to Assignment 1) to identify, critically appraise and recommend a set of lower impact products to procure.

Recommended Reading

RICS (2023) Professional Standard. Whole life carbon assessment for the built environment. 2nd edition.
BSI (2023) PAS 2080: 2023 Carbon management in buildings and infrastructure
ICE, CLC & GCB (2023) PAS 2080: Carbon management in buildings and infrastructure guidance

Each week’s topic has a prioritised list of optional further reading on Myplace.

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Module Timetable

Week	Semester 1	Semester 2
0		
1		
2		
3		
4		
5		
6	Submission 30%	
7		
8		
9		
10		
11	Submission 70%	
E		

Date of Last Modification

12-09-2025