UNIVERSITY COLLEGE
OF ESTATE MANAGEMENT

Sustainable Materials, Processes and Technologies

Module Descriptor

Module Code:	SUS7MPT
Version:	V3.00
Status:	Final
Date:	08/03/2024

Summary Module Details

Module details

Module Title: Sustainable Materials, Processes and Technologies

Module Leader: Dr Pippa Boyd

Module Mode: Supported online learning

Semester: Spring (UK)

Level: 7

Credits: 20

Learning Hours: 200

Contact & Study Hours

Scheduled learning and teaching activities: 33 hrs (16.5%)

Guided independent study: 167 hrs (83.5%)

Assessment Type

Coursework: 70%

Computer Marked Assessment: 30%

Self-directed Research Project: 0%

Portfolio: 0%

Module Summary

This module will introduce the current diverse discourse around materials, processes and technologies (MPTs) with the potential to catalyse a more sustainable built environment. Framed within a socio-technical perspective, the module will underscore the significance of recognising the multitude of stakeholders and their agendas in driving the uptake of sustainable MPTs. Central to the module will be how to conceptualise MPT from micro, meso and macro socio-technical perspectives, and to explore how the sector both shapes and is shaped by MPTs.

Key themes within the module content will include: conceptualising MPTs, sustainability, innovation and uptake, MPTs within the context of digital transformation and Industry 4.0, impacts and stakeholders, and analysis using socio-technical perspectives. Relevant MPTs may include natural/carbon-zero materials (including debates around embodied carbon), management or production processes to improve sustainability and also the range of emerging technologies and the role they might play and how stakeholders and the sector can be prepared. The digital agenda (Industry 4.0) and its connection with the current discourse around what are described as modern methods, off site, robotics, light weight and natural structures will play a central role. Emerging concepts yet established and in their infancy will be introduced.

Taken on which Programmes

MSc Innovation in Sustainable Built Environments (C)

Postgraduate Diploma Innovation in Sustainable Built Environments (C)

Sustainable Materials, Processes and Technologies

Postgraduate Certificate Sustainable Building and Property Studies (C)

Core (C) or Elective (E)

Module Aim

This module aims to offer students critical understanding, knowledge and tools to navigate the evolving landscape of innovative, sustainable materials, processes and technologies and their uptake, towards a more sustainable built environment.

Module Learning Outcomes

LO1. Demonstrate understanding of a diverse section of materials, processes and technologies (MPTs) that shape the built environment and their relationship with sustainability.

LO2. Develop analytical skills to examine innovative sustainable materials, processes and technologies that shape the built environment and understand their uptake.

LO3. Apply a critical understanding of how sustainable, innovative MTPs might shape the built environment in its current and future contexts.

Indicative Module Content

Module topics

- Sustainable materials.
- Sustainable processes and processes for sustainability.
- Sustainable technologies.
- Socio-technical connection.
- Innovation adoption, diffusion and uptake.

Key themes and content:

1. **Conceptualising MPTs:** Develop a nuanced understanding of MPTs across different scales – from the micro-level intricacies to the broader macro-level context – exploring their complex interplay within the built environment.
2. **Sustainability, innovation and uptake:** Explore sustainable MPTs, including natural/carbon-zero materials, the discourse on embodied carbon, emerging renewable technologies, and management and production processes to improve sustainability.
3. **Digital transformation and Industry 4.0:** Investigate the connection of the digital agenda (Industry 4.0) with modern methodologies, off-site construction, robotics, lightweight and natural structures, and other nascent concepts. Examine their role in reshaping the construction landscape.
4. **Impacts and stakeholders:** Analyse the potential of MPTs to contribute to a more sustainable built environment while considering their ramifications on various stakeholders within the industry.

5. **Socio-technical perspectives:** Employ socio-technical lenses to explore how to navigate meaningful transitions at firm, project, and sector levels and the cascading effects of these adaptations on niche, landscape and societal layers.

This content will be reviewed and updated regularly to reflect the evolving discourse around the sustainability associated with MPTs.

Overview of Summative Assessment

Module learning outcomes	Assessment	Word count or equivalent	Weighting
LO1, LO2	**Assessment 1** Completion of Energy and Carbon Foundation units 1–6	500 (word count equivalent)	10%
LO1, LO2	**Assessment 2** Computer Marked Assessment (CMA)	500 (word count equivalent)	10%
LO1, LO2	**Assessment 3** Computer Marked Assessment (CMA)	500 (word count equivalent)	10%
LO1, LO2, LO3	**Assessment 4** Briefing/Board paper style document	3,500 words max	70%

Module Pass Mark (as a weighted average of all assessments): 50%

Key Module Learning Resources

Core Sources and Texts

The core reading resources within each module will be provided via the specific Virtual Learning Environment (VLE) module pages and within the e-Library. Additional reference material and supplementary resources to support your studies are available through the UCEM e-Library.

Module tools

Students will have access to study materials, dedicated academic support, student forums, and learning activities via an online learning platform (VLE).

The module page on the VLE is broken down into structured study weeks to help students plan their time. Each week will have a key theme related to the module, drawing upon an evolving set of methods, including flipped learning with interactive workshops and discussions, online Padlet discussion activities for student unable to attend the live sessions.

Online tutorials/seminars led by specific academics can be attended in real time and provide opportunities to consolidate knowledge, ask questions, discuss topics and work through learning activities together.

These sessions are recorded to support students who cannot attend and to enable students to recap the session and work through it with a degree of flexibility. Module forums on the VLE provide further opportunities to discuss topics with other students, complete collaborative work and get extra help from the module team.

Professional online resources

The e-Library provides access to trusted, quality online resources, selected by subject specialists, to support students' study. This includes journals, industry publications, magazines, academic books and a dissertation/work-based library. For a list of the key industry specific and education resources available please visit the VLE e-Library.

Other relevant resources

Access is also provided to further information sources that include the British Library and Open University UK catalogues, as well as providing a monthly current awareness service entitled, ***Knowledge Foundations*** - a compendium of news, research and resources relating to the educational sector and the Built Environment.

The module resource list is available on the module website and is updated regularly to ensure materials are relevant and current.