

Module Title: Advanced sustainable building techniques project	Module Code: EV7123 Level: 7 Credit: 15 ECTS credit: 7.5	Module Leader: Tim Coleridge Additional tutors: Alan Owen Bryce Gilroy-Scott Frances Hill Jane Fisher Louise Halestrap Ruth Stevenson Siobhan Maderson Saskia Pagella Trish Andrews John Carter
Pre-requisite: none	Pre-cursor: EV7122 Circular Building & EV7110 'Sustainable Materials in the Built Environment'	
Co-requisite: none	Excluded combinations : none	
Location of delivery: CAT/By distance learning		
<p>The main aims of the module are to enable students to;</p> <p>Apply various insights, knowledge and theoretical perspectives encountered earlier in the Green Building programme to an Advanced Sustainable Building Techniques Project (ASBTP).</p> <p>Deepen theoretical knowledge and understanding within the field of sustainable design and construction and its interrelationship with other associated areas of the field through its application within a teamwork based ASBTP.</p> <p>Develop and undertake substantial investigations within the field of sustainable design and construction to address significant areas of associated theory and/or practice, and critically assess the effectiveness of the methodologies utilised. Investigations may take the form of <i>inter alia</i>: a case study scenario exercise; design, fabrication, prototyping, experimentation and testing exercise; or other devised for the purposes of the module.</p> <p>Undertake analysis of complex evidence generated through the ASBTP, and develop critical responses to existing theoretical discourses, methodologies or practices within the field of Green Building.</p> <p>Communicate and work effectively within a team, as leader or member undertaking the ASBTP; to prototype, implement and/or evaluate innovative or sectoral best practice.</p>		

Main topics of study:

- Sustainable building practices, as applied to the project.
- Practical application of advanced design and construction methods and techniques to building elements and systems within a wider context of sustainability in the built environment.
- Technical aspects of building from drawings (*at the scale of building systems or elements*)
- Advanced building design, simulation and analysis tools and methods, as applied to the project (*which could include for example: Building Information Management (BIM) tools; evaluation of thermal and lighting performance; calculation of energy and carbon impacts; hydrothermal simulation (e.g. WUFI); thermal bridging analysis (e.g. THERM) etc.*).
- Prototyping and testing novel forms of sustainable construction.

Learning Outcomes for the module

At the end of this module, students will be able to:

Knowledge

1. Demonstrate critical awareness of the complex nature of the interrelationship between sustainable design and construction and other associated areas of the field through carrying out substantial investigations through an Advanced Sustainable Building Techniques Project (ASBTP).

Thinking skills

2. Develop critical responses to existing theoretical discourses, research or design methodologies or practices within the field of sustainable design and construction. Working proactively within a team, critically evaluate complex data, evidence and/or other outputs generated through the ASBTP to assess the effectiveness of the methodologies utilised in the project, and formulate solutions where required.

Subject-based practical skills

3. Demonstrate an ability to identify and critically evaluate innovative or sectoral best practice within the field of sustainable design and construction.

Skills for life and work (general skills)

4. Whilst undertaking the ASBTP, demonstrate an ability to communicate and work effectively within a team as leader or member; taking appropriate decisions which make appropriate use of the capacities and capabilities of team members, and resolving likely conflict situations before they arise.
5. Reflect on own performance within the team setting to adapt to the changing context of the project.

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

Onsite delivery:

The factual content of the module is taught through an experiential teamwork based Advanced Sustainable Building Techniques Project (ASBTP), which may include lectures, seminars, practical workshops (design, construction, experimentation and testing), presentations, tutorials, and throughout this process an active exchange of views and opinions is encouraged. Both theoretical and practical aspects are covered. Detailed module delivery proposals will be made available through the Module Guide.

Distance-learning delivery:

For distance-learning (DL) students, the Advanced Sustainable Building Techniques Project (ASBTP) should be undertaken within a work-based setting within the academic year of delivery. This should be relevant to the programme learning outcomes and will generate defined evidence and outputs. The experiences of participating in the project also forms part of the learning outcomes for the module, so a project involving group-working and/or a clear structure of mentoring, oversight, stakeholder engagement and/or organisational communication will be necessary.

Undertaking this module by distance-learning will require students to be proactive, to find an appropriate setting (company/organisation) and develop a suitable project that will be undertaken in the time available. The project could, for example, be in a student's own workplace, on secondment, during a short-term work placement, training course or volunteer position. Students will need to devise their own project and submit a formative 'Project proposal form' to facilitate a structured but formative review of the acceptability of the proposed ASBTP in advance of the module. The suitability of a student's proposed context and focus for the ASBTP (eg workplace, work-placement, project, design, enterprise, research, task, programme, scheme etc.) will be confirmed if mutually agreed between all parties and approved by the module leader in advance.

Detailed module guidance will be made available through the Student Handbook and/or Module Guide as appropriate.

All students:

The module delivery will include formative learning element/s to allow the students to receive critical feedback on their work from their peers, project leader/s and/or tutors without the pressure of marked assessment.

All students also have access to Moodle discussion boards and Skype seminars, where they can meet with their peers and a tutor to discuss any academic issue.

Lectures onsite and through DL highlight key concepts, models and frameworks, and integrate additional resources (such as journal articles). They encourage deep learning through the use of self-assessment questions which encourage students to engage with the topic, to help students understand new topics and skills.

The summative coursework consists of a report that writes up the ASBTP in a professional style, including critically evaluating the ASBTP in an academically rigorous manner (*inter alia* its objectives, supporting theories, methodologies employed, evidence and outputs generated, implications and lessons learnt) and a structured reflective diary of the student's own performance within the team setting.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	Weighting:	Learning Outcomes demonstrated:
1. Report (3,000 words max. Or equivalent)	100%	1,2,3,4,5

Reading and resources for the module:

Subject specific Core and Recommended texts will be found within the Module Guides and Module Specifications for the pre-cursor modules.

Core

Silyn-Roberts H. (2012) *Writing for science and engineering: papers, projects & proposals: a practical handbook for postgraduates in science, engineering and technology*. Oxford: Butterworth-Heinemann. (*)

Recommended

Tgroup, Reed, B. and Fedrizzi, S. R. (2009) *The Integrative Design Guide to Green Building: Redefining the Practice of Sustainability*. Hoboken, UNITED STATES: John Wiley & Sons, Incorporated. (*)

Gray, D (2017) *Doing Research in the Real World* Sage Publications Ltd.

Groat. L.N. & Wang D (2013). *Architectural Research Methods*. 2nd edition. New York: Wiley. (*)

Kahn, W. A. (2014) *The Student's Guide to Successful Project Teams*. Routledge. (*)

Lucas, R. (2016) *Research Methods for Architecture*. Laurence King Publishing.

SAGE Research Methods: Find resources to answer your research methods and statistics questions. (no date). Available at: <http://methods.sagepub.com/> (Accessed: 3 March 2017) – online access is available by signing in through Athens / UEL Institutional login. (*)

Samuel, F. and Dye, A. (2015) *Demystifying Architectural Research: Adding Value to Your Practice*. Taylor & Francis Usa. (Less-academic but provides case studies from a range of practices describing first hand research in practice)

Thomas, G. (2015) *How to Do Your Case Study*. 2nd edition. SAGE. (*)

Walliman, N. (2011) *Your Research Project: Designing and Planning Your Work*. SAGE. (*)

Yin, R. K. (2014) *Case study research: design and methods*, London: SAGE Publications

Further relevant journals, websites and other relevant resources will be provided within reading materials that are made available for the module.

(*) Available as an e-book

Indicative learning and teaching time (10 hrs per credit):	Activity		
1. Student/tutor interaction:	Lectures, seminar, tutorial, presentation, practical / demonstration		
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">Onsite delivery: 35 hours</td> <td style="width: 50%; border: none;">DL delivery: 7.5 hours</td> </tr> </table>	Onsite delivery: 35 hours	DL delivery: 7.5 hours
Onsite delivery: 35 hours	DL delivery: 7.5 hours		
2. Student learning time:	Seminar reading and preparation, Assignment preparation, Background reading, On-line research activities.		

	Onsite delivery: 115 hours	DL delivery: 142.5 hours
Total hours (1 and 2):	150 hours	