Course Specification

Overview and Aims

This course will convey the fundamental principles of energy efficiency in buildings and their systems. Covering the methods of meeting targets for energy use and sustainability in new builds as well as refurbishments. Potential problems and difficulties will also be covered.

Sustainability in buildings is a pressing issue in the built environment. A large portion of carbon dioxide emissions in the UK originate from energy use in buildings. Part of the burden of reducing the UK's carbon dioxide energy emissions by 80% falls on the built environment. As the construction industry attempts to meet energy performance requirements the need for knowledge and skills in energy performance has increased.

This course is aimed at professionals in industry, with relevant experience within the built environment. The course is also aimed at graduate students from cognate built environment
disciplines. Expanding upon the learner’s background study and experience, specialist knowledge and skills are developed to design efficient, low energy buildings; both in new build and retrofit/returbishment contexts.

This course Aims to

- To produce students that are capable of playing a leading role in designing and constructing buildings that meet low energy use targets.
- To equip professionals and recently qualified graduates with a systematic understanding of how energy performance targets are met through the design and construction process of a building.
- To develop professionals and graduates who are capable of critically assessing and understanding the limitations and requirements of a construction scenario.
- To produce students that have the necessary skills and knowledge to evaluate and propose appropriate design solutions in order to meet energy use goals.

**Course Learning Outcomes**

<table>
<thead>
<tr>
<th></th>
<th>By the end of the course, the student will be able to Synthesise and Critically analyse the fundamentals of energy efficiency and sustainability in buildings</th>
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<tbody>
<tr>
<td>2</td>
<td>By the end of the course, the student will be able to critically analyse the role that Low energy buildings and systems play in the built environment and the need for sustainability in buildings</td>
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<tr>
<td>3</td>
<td>By the end of the course, the student will be able to critically reflect on how low energy requirements can be met in buildings. In both new build and retrofit/refurbishment scenarios.</td>
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<td>4</td>
<td>By the end of the course, the student will be able to critically assess the requirements and limitations of a building scenario and make decisions affecting energy performance and sustainability.</td>
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<td>5</td>
<td>By the end of the course, the student will be able to critically assess Energy efficiency measures, weighing their benefits against drawbacks and practicality.</td>
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<tr>
<td>6</td>
<td>By the end of the course, the student will have developed the judgement and initiative required to critically analyse existing buildings and recommend and design appropriate refurbishment measures to improve energy performance.</td>
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**Course Structure**

<table>
<thead>
<tr>
<th>Level 7</th>
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<tbody>
<tr>
<td>This course will teach students a broad of knowledge of energy efficiency and sustainability in buildings, both new build and refurbishment of existing buildings. Challenges facing the achievement of energy efficiency and sustainability in practice will also be explored.</td>
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</table>
Students will be taught principals of applying energy efficiency and sustainability measures to new builds, and to existing buildings. Using examples of best practice and successful case studies.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Core Y/N</th>
<th>Semester 1</th>
<th>Core Y/N</th>
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<tbody>
<tr>
<td>Low to zero Energy Buildings and Energy Efficient Building Systems</td>
<td>Y</td>
<td>Sustainable Refurbishment and Retrofit</td>
<td>Y</td>
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**Learning and Teaching**

Details relating to contact hours and other key information sets (KIS) are available on the course page of our Online Prospectus on our website.

**Learning and Teaching Approaches**

The learning and teaching approach employed on the course utilises blended learning to deliver lectures and tutorials. The lectures provide overviews of the topics studied and explain the connections between topics. Pre-recorded lectures and other learning objects are made available for students to access via the virtual learning environment. All learning materials provided will be informed by the research undertaken by the LSI and the current industrial experience of its staff. The tutorials provide face-to-face contact and offer focused support to the learners in a flipped classroom arrangement. Students undertake project based work to apply their learning as independent learners and also gain from engagement with a learning experience that replicates scenarios encountered in professional practice. The research informed nature of the course that is underpinned by the research activity of the LSI and its connections with industry ensure that the provision is maintained at the forefront of the subject area.

**Learning and Teaching Activities**

Students are expected to prepare for formal contact time by pursuing learning opportunities in advance. These include background reading and interaction with the learning objects provided via the virtual learning environment. Attendance and participation in tutorials will enable students to receive focused support and formative feedback. Tutorials also provide the forum for lecturer’s to present additional material, not suitable for a lecture format. Scenario based project coursework provides a safe academic environment to develop the ability to generate creative responses to the challenges encountered in professional practice.

**Graduate Attributes (UG only)**

N/A

**Use of the Virtual Learning Environment**
Blackboard will be used to host lecture materials for future reference by students and other related materials, as well as learning materials produced for the modules.

**Use of Blended-Learning**

Additional digital content will be made available for the students, this will give the students some control over time, place, path and pace of learning. Lectures will be recorded for future use in distance learning. The mixed–mode delivery of both formal and web-enhanced instruction should achieve flexibility for both the student and the tutor.

Students will be encouraged to discuss between themselves and engage in conversation, able to do this through the VLE or social media (LinkedIn is popular with professionals).

**Assessment Strategy**

Assessment will be based on completion of two pieces of coursework to assess the student’s knowledge and understanding of energy efficient, sustainable buildings and the student's capability of applying their knowledge to produce low energy, sustainable design solutions, both to new build and existing buildings.

*Low to Zero Energy Buildings and Energy efficient Building Systems:* Assessment is a piece of coursework. The coursework is a scenario based building design project, students will be required to analyse a client brief for a Low energy, sustainable building. Students will produce a design to fulfil the requirements of the provided brief whilst working within the limitations of the brief; designing building fabric and systems, as well as undertaking assessment of the expected energy performance and sustainability of their proposed design.

The submission for assessment is in the form of a design portfolio which may include drawings and a specification along with reports detailing the energy performance and sustainability of their design.

*Sustainable Refurbishment and retrofit:* Students will undertake a piece of coursework, assessing an existing traditional building for sustainable, low energy retrofit/ refurbishment and produce a retrofit solution to fulfil the energy efficiency and sustainability requirements of a given brief.

Submission will consist of a written report including evidence of detailed retrofit solutions involving key elements of a traditional building. The design proposal, to include a justification for the targeted elements evidenced by well annotated technical details. The completed tasks including a Harvard referencing section to be comb bound and submitted as students’ portfolio.

**Feedback on Assessed Coursework**

Formative feedback will be provided to the students throughout the module as they learn and develop their work, through contact with lecturers teaching the modules.

**Module Assessment Methods**
### Assessment Method Mapping

<table>
<thead>
<tr>
<th>Module Titles</th>
<th>Core (Y)</th>
<th>Coursework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low to Zero Energy Buildings and Energy Efficient Building Systems</td>
<td>Y</td>
<td>100%</td>
</tr>
<tr>
<td>Sustainable Refurbishment and Retrofit</td>
<td>Y</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Employability and Professional Context

This course is aimed at professionals within the built environment, providing part of their continual professional development (CPD) with a notional 400 hours of study undertaken throughout the course.

This course is also open to post graduate students, looking to build upon their knowledge of the built environment and further their employment prospects within the construction industry. This is a sector with high demand for well qualified and knowledgeable employees.

### Work-Related Activities

The module does not require industrial links but does build on the professional and research experience of the group. The LSI has strong links with industry through the nature of the research that the Institute undertakes. Working with industrial partners that are an integral part of the project team ensures constant exposure to the industry’s perspective. The Institutes investigates the integrity of theories in building science and the effectiveness of current building practices. In response to the findings of research, the LSI develops practical solutions in partnership with government and industry organisations. The course draws upon this body of research activity and the links with industry to underpinning the content of the course.

**Placement or Work-Related Activity Level:**

**N/A**

**Placement or Work-Related Activity Length in Weeks:**

**N/A**

**Type of Placement or Work-Related Activity:**

**N/A**
Reference Points used in course design and delivery

All our courses leading to Leeds Beckett University awards have been designed and approved in accordance with UK and European quality standards. Our courses utilise the Frameworks for Higher Education Qualifications (FHEQ) and relevant subject benchmarks (where these are available) and professional, statutory and regulatory body requirements (for professionally accredited courses).

We review our courses annually and periodically, responding to student feedback and a range of information to enhance our courses. Our University is also subject to external review by the Quality Assurance Agency. Our latest report can be found on the QAA website at http://www.qaa.ac.uk/reviews-and-reports

We appoint External Examiners to verify that our University sets and maintains standards for awards which adhere to relevant national subject benchmark statements and the FHEQ (UK), ensure standards and student achievements are comparable with other Higher Education Institutions in the UK, with which they are familiar, and ensure that assessments measure achievement of course and module learning outcomes and reach the required standard. External Examiners may also provide feedback on areas of good practice or potential enhancement.

Student Support Network

If you have a question or a problem relating to your course, your Course Administrator is there to help you. Course Administrators works closely with academic staff and can make referrals to teaching staff or to specialist professional services as appropriate. They can give you a confirmation of attendance letter, and a transcript. You may also like to contact your Course Rep or the Students’ Union Advice team for additional support with course-related questions.

If you have any questions about life at our University in general, call into or contact the Student Hub on either campus to speak to our Student Experience Team. This team, consisting of recent graduates and permanent staff, are available to support you throughout your time here. They will make sure you have access to and are aware of the support, specialist services, and opportunities our University provides. There is a Student Hub on the ground floor of the Rose Bowl at City Campus and one in Campus Central at Headingley. You can also find the team in the Gateway in the Leslie Silver Building at City Campus. The telephone number is 0113 812 3000, and the e-mail address is StudentHub@leedsbeckett.ac.uk.

Within MyBeckett you will see two tabs (Support and Opportunities) where you can find online information and resources for yourselves. The Support tab gives you access to details of services available to give you academic and personal support. These include Library Services, the Students’ Union, Money advice, Disability advice and support, Wellbeing, International Student Services and Accommodation. There is also an A-Z of Support Services, and access to online appointments/registration.

The Opportunities tab is the place to explore the options you have for jobs, work placements, volunteering, and a wide range of other opportunities. For example, you can find out here how to get help with your CV, prepare for an interview, get a part-time job or voluntary role, take part in an international project, or join societies closer to home.
<table>
<thead>
<tr>
<th>No.</th>
<th>Detail of modification</th>
<th>Date Effective</th>
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<tbody>
<tr>
<td>1</td>
<td>To allow students to achieve Merit and Distinction</td>
<td>Sep-15</td>
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