Level 3 - Designing, Engineering and Constructing a Sustainable Built Environment

Performance points for 2019

Will be on UCAS Tariff Table from May 2018 onwards.

For Certificate: 30 credits required. Recommend Units 1, 2 and 3.

For Diploma: All 5 units Mandatory

Level 3

Level 3, Unit 1 - Defining a Sustainable Construction Project (12 credits)

1. Research and convey the project remit.
   1.1 identify a significant construction project for in-depth study. [5]
   1.2 communicate the vision for the project. [8]
   1.3 set the scene for the project in the context of the existing environment. [11]
   1.4 set the scene for the project in the context of end

2. Set standards for sustainability in a construction project.
   2.1 define commitments to positively impact on the local community and the local environment. [6]
   2.2 define and explain commitments to energy and water efficiency and carbon reduction. [9]
   2.3 define and explain commitments to minimise construction waste. [12]
   2.4 define and explain commitments to ethical

3. Define site information required at pre-design phase.
   3.1 identify the importance of site analysis and the roles of professional consultants at pre-design phase. [7]
   3.2 determine requirements for topographical information including ways to collect accurate data for the site. [10]
   3.3 identify information required to produce a geotechnical report related to the specified project. [13]
   3.4 identify information required to produce an
<table>
<thead>
<tr>
<th>Level 3, Unit 2 - Developing a Sustainable Construction Project (10 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Prepare a design brief and take steps to appoint an effective design team.</strong></td>
</tr>
<tr>
<td>1.1 describe the role and responsibility of the client in a construction project.</td>
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<tr>
<td>1.2 prepare a design brief for a specific construction project and receive critical feedback for client sign off.</td>
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<tr>
<td>1.3 formalise the appointment of an integrated Project Team in contractual terms.</td>
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<td>1.4 produce an organogram outlining professionals and their roles at each phase of the project.</td>
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<tr>
<td>1.5 devise an effective communication strategy to promote collaboration between all parties.</td>
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<tr>
<td><strong>2. Use building information modelling techniques for concept design.</strong></td>
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<tr>
<td>2.1 create preliminary concept designs based on a design brief.</td>
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<tr>
<td>2.2 assess concept designs for space requirements, circulation and accessibility.</td>
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<tr>
<td>2.3 assess concept design to produce preliminary cost and lifecycle cost prediction.</td>
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<tr>
<td>2.4 perform energy analysis relative to form, orientation, weather, surfaces and glazing.</td>
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<tr>
<td><strong>3. Prepare information and resources needed to support a planning application.</strong></td>
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<tr>
<td>3.1 explain the planning process for a specific construction project.</td>
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<tr>
<td>3.2 make use of current legislation and guidance.</td>
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<tr>
<td>3.3 prepare a planning feasibility study for a specific construction project.</td>
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<tr>
<td>3.4 describe what is meant by the term <code>undesirable precedent</code> in planning decisions and provide an example of such.</td>
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<tr>
<td>3.5 formulate justification and present evidence for the approval of a specific project.</td>
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</tbody>
</table>
### Level 3 - Designing, Engineering and Constructing a Sustainable Built Environment

**(8 credits)**

<table>
<thead>
<tr>
<th>1. Use building information modelling techniques to develop the design</th>
<th>2. Use building information modelling techniques to develop structural elements of a building project</th>
<th>3. Use building information modelling techniques to develop building services elements of a building project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 define design elements and operational practicalities to provide the basis of a building information model</td>
<td>2.1 define and create data rich structural elements including foundations, structural walls, slabs, beams and columns</td>
<td>3.1 define and create appropriate systems from prior research, concept analysis and operational practicalities and constraints</td>
</tr>
<tr>
<td>1.2 create an architectural model using materials with properties relevant to a sustainable construction project</td>
<td>2.2 apply science and mathematics to structural specifications</td>
<td>3.2 apply science and mathematics to assess and calculate energy efficiency in a range of scenarios</td>
</tr>
<tr>
<td>1.3 validate sustainable design ideas through production of data rich detailed 3D information</td>
<td>2.3 validate structural engineering methods through production of data rich detailed 3D information</td>
<td>3.3 validate building services proposals through production of data rich detailed 3D information</td>
</tr>
<tr>
<td>1.4 present the design model to critical design experts</td>
<td>2.4 present the structural model to critical structural experts</td>
<td>3.4 present the services model to critical services experts</td>
</tr>
<tr>
<td>1.5 resolve design errors, clashes and omissions making modifications as a result of feedback</td>
<td>2.5 resolve structural errors, clashes and omissions making modifications as a result of feedback</td>
<td>3.5 resolve service related errors, clashes and omissions making modifications as a result of feedback</td>
</tr>
</tbody>
</table>

### Level 3, Unit 4 - Lifecycle and Financial Planning for a Sustainable Construction Project (10 credits)

<table>
<thead>
<tr>
<th>1. Use building information modelling techniques to</th>
<th>2. Understand cost analysis and financial control.</th>
<th>3. Produce a budget for a complex building project.</th>
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</thead>
</table>
support the operational management of a building.

1.1 explain the role of BIM in the operation, management and maintenance of a sustainable building project throughout its lifecycle. [53]

2.1 explain the role of BIM in the financial management of a building project. [54]

3.1 compile an accurate list of capital costs. [55]

1.2 devise an appropriate handover process from the construction team to the end user. [56]

2.2 produce a cost model based on the project timeline. [57]

3.2 provide an annual projection for recurrent fixed costs. [58]

1.3 set targets for whole life energy performance, water consumption, waste reduction, operation and maintenance costs. [59]

2.3 identify points of accountability for keeping the project to budget. [60]

3.3 provide an annual projection for recurrent variable costs. [61]

1.4 analyse the impact of post occupancy behaviour on the life cycle of a building. [62]

2.4 explain the consequences of weaknesses in financial control. [63]

3.4 provide a sensitivity analysis based on possible variations in costs. [64]

1.5 describe the benefits of early engagement of the Facilities Manager and the client/end user in the design process. [65]

2.5 devise policies for sustainable procurement to establish audit trails. [66]

3.5 present and negotiate variations to the design within budget constraints. [67]

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**Level 3, Unit 5 - Evaluating and Documenting a Sustainable Construction Project (10 credits)**

1. Make objective comparisons between construction methods.

1.1 compare construction methods on the basis of aesthetics and appropriateness to design intent. [69]

2. Communicate outcomes from professional perspectives.

2.1 explain the strengths and weaknesses of the design from a facilities management perspective. [70]

3. Make a presentation of a summary report to a critical audience.

3.1 support a presentation with appropriate digital technologies. [71]
| 1.2 compare construction methods on the basis of cost. [72] | 2.2 explain the strengths and weaknesses of the design from an architectural perspective. [73] | 3.2 compare the client brief to the finished project and communicate to a professional audience. [74] |
| 1.3 compare construction methods on the basis of sustainability. [75] | 2.3 explain the strengths and weaknesses of the design from a structural engineering perspective. [76] | 3.3 compare social, economic and environmental outcomes with planned intentions. [77] |
| 1.4 compare construction methods on the basis of endurance and reliability. [78] | 2.4 explain the strengths and weaknesses of the design from a building services engineering perspective. [79] | 3.4 assess and validate the project’s major strengths and weaknesses with supporting evidence. [80] |
| 1.5 compare construction methods on the basis of reduction of operating costs. [81] | 2.5 explain the strengths and weaknesses of the design from an end user perspective. [82] | 3.5 make clear judgements about the success of the project and lessons learned for the future. [83] |

**Source URL:** https://theingots.org/community/BIM-L3-Landing

**Links**

[5] https://theingots.org/community/decl3u1x#1.1
[6] https://theingots.org/community/decl3u1x#2.1
[7] https://theingots.org/community/decl3u1x#3.1
[8] https://theingots.org/community/decl3u1x#1.2
[9] https://theingots.org/community/decl3u1x#2.2
[10] https://theingots.org/community/decl3u1x#3.2
[11] https://theingots.org/community/decl3u1x#1.3
[12] https://theingots.org/community/decl3u1x#2.3
[13] https://theingots.org/community/decl3u1x#3.3
[14] https://theingots.org/community/decl3u1x#1.4
[15] https://theingots.org/community/decl3u1x#2.4
[16] https://theingots.org/community/decl3u1x#3.4
[17] https://theingots.org/community/decl3u1x#1.5
[18] https://theingots.org/community/decl3u1x#2.5
[19] https://theingots.org/community/decl3u1x#3.5
[20] https://theingots.org/community/decl3u1i
[21] https://theingots.org/community/decl3u2x#1.1
[22] https://theingots.org/community/decl3u2x#2.1
[82] https://theingots.org/community/decl3u5x#2.5
[83] https://theingots.org/community/decl3u5x#3.5
[84] https://theingots.org/community/decl3u5i