



## APPRENTICESHIP PROGRAMME SPECIFICATION

### 1. General information

|                                                                                      |                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Awarding body / institution</b>                                                   | Leeds Trinity University                                                                                                                                                                                                                            |
| <b>Teaching institution</b>                                                          | Leeds Trinity University                                                                                                                                                                                                                            |
| <b>Sub-contracted provider</b>                                                       | N/A                                                                                                                                                                                                                                                 |
| <b>'Parent' Faculty</b>                                                              | BCDI                                                                                                                                                                                                                                                |
| <b>'Parent' School</b>                                                               | School of Business                                                                                                                                                                                                                                  |
| <b>Professional accreditation body</b>                                               | Accreditation by the Royal Institution of Chartered Surveyors (RICS) will be sought                                                                                                                                                                 |
| <b>IfATE Apprenticeship Standard</b>                                                 | <a href="#">L6 Chartered Surveyor (non-integrated)</a>                                                                                                                                                                                              |
| <b>Final award</b>                                                                   | BSc (Hons)                                                                                                                                                                                                                                          |
| <b>Title of programme(s)</b>                                                         | Professional Practice in Chartered Quantity Surveying                                                                                                                                                                                               |
| <b>Subsidiary award(s)</b>                                                           | BSc (Hons) Professional Practice in Quantity Surveying<br>BSc Professional Practice in Chartered Quantity Surveying<br>DipHE Professional Practice in Chartered Quantity Surveying<br>Cert HE Professional Practice in Chartered Quantity Surveying |
| <b>Honours type</b>                                                                  | Single                                                                                                                                                                                                                                              |
| <b>Typical Duration</b>                                                              | Practical Period - 4 Years (48 months)<br>Gateway period and EPA Period - 8-12 months                                                                                                                                                               |
| <b>Month/year of approval of programme</b>                                           | August 2024                                                                                                                                                                                                                                         |
| <b>Start date (this version)</b>                                                     | Sept 2024                                                                                                                                                                                                                                           |
| <b>Periodic review next due</b>                                                      | 2028-29                                                                                                                                                                                                                                             |
| <b>HECoS subject code(s)</b>                                                         | 00149 construction<br>100150 construction and the built environment                                                                                                                                                                                 |
| <b>UCAS course code &amp; route code (available from Admissions)</b>                 | TBC                                                                                                                                                                                                                                                 |
| <b>SITS codes (Course / Pathway / Route) (available from Student Administration)</b> | ADLDGPPCQSUR                                                                                                                                                                                                                                        |
| <b>Delivery venue(s)</b>                                                             | Leeds Trinity University (City Campus) + place of employment                                                                                                                                                                                        |

## 2. Aims of the programme

### Rationale and general aims, including what is special about this programme

In the region, and at national levels, the market analysis for quantity surveying is extremely positive, supported by the forecasted growth in the regional and national infrastructure sector. The construction industry is facing a significant skill shortage, and it is expected to grow rapidly in the coming years. By 2025, the industry will require an additional 225,000 new workers across the country.

According to the Construction Industry Training Board – (CITB, 2021), in the Yorkshire & Humber region alone, an average annual recruitment requirement of 1.8% is projected, with a need for 19,000 extra workers over the next five years.

The demand for additional employees is driven by the growth of the industry as well as the replacement demand resulting from Brexit and the pandemic. Additionally, the aging workforce in the UK employment base contributes to the need for new skilled professionals with a large number of employers relying on workers aged between 50 and 64. Most of these are expected to retire in the next 15 years. Unfortunately, the ratio of young skilled professionals entering the market is at its lowest, according to the Construction [Skills Network Outlook \(January, 2023\)](#).

#### 225,000

Additional workers will be required to meet UK construction demand by 2027 (45,000 workers per year, down from last year's figure of 53,200).

#### UK-wide growth

All nine English regions plus Scotland, Wales and Northern Ireland are set to experience growth however, recession expected in 2023 with slow growth returning in 2024.

#### Recruitment

The major sectors for demand are:

- Private housing
- Infrastructure
- Repair and maintenance.

#### 2.67 million

Workers in construction industry by 2027 if projected growth is met.

Tim Balcon, CITB Chief Executive said: "The latest CSN report clearly shows that despite current economic uncertainty, recruiting and developing the workforce remains vital to ensure the industry can contribute to economic growth.

[Source CITB-CSN, 2023](#)

"We know the next 18 months won't be easy, however, I remain inspired by the construction industry's resilience shown in the pandemic and throughout 2022.

The sector's growth will be fuelled by both large-scale infrastructure projects and the increased demand for domestic projects, particularly private housing. Consequently, the demand for quantity and building surveyors nationwide is estimated to increase by around 6

employment needs of North, West and South Yorkshire regions, including the Humberside and East and West Riding Economic zones. Under the [West Yorkshire Growth Strategy 2016-2036](#), especially in the Leeds and Bradford regions these local economies have attracted enormous capital injection from central government of more than £20 billion. This highlights the importance of region most of which is under a combined mayoral authority.

The BSc (Hons) Professional Practice in Chartered Quantity Surveying program is designed to equip apprentices with the knowledge, skills, and behaviours KSBs required to pursue a career as a Chartered Quantity Surveyor. The program is closely aligned with the requirements set out by the Royal Institution of Chartered Surveyors (RICS) and will lead to a RICS membership status upon completion. It covers essential areas such as contract negotiation, project assessment and management, cost planning, procurement and tendering, contract administration, and commercial management.

Delivered over four years plus an additional 12 months for Gateway and End Point Assessment, the BSc (Hons) Professional Practice Chartered Surveying Degree Apprenticeship course combines the theoretical knowledge with applied professional skills and competencies. The degree apprenticeship route will enable apprentices to work and study at the same time.

There are two distinct components to the degree apprenticeship, the academic degree programme and the work-based assessment. This means that knowledge gained on the degree apprenticeship can be successfully applied in the workplace.

As part of the programme, apprentices will work towards an End Point Assessment -EPA for Professional Competence. Sitting the RICS Panel Exam takes place after successful completion of the academic degree programme.

Under this apprenticeship standard, the Professional Practice in Chartered Quantity Surveying degree apprenticeship follows the RICS pathway for **Quantity Surveying & Project Management** which has the following mandatory areas of focus

1. Negotiating contracts and prices, assessing,
2. Evaluating and managing construction projects to ensure the best value for money and quality
3. Life cycle costing,
4. Cost planning,
5. Procurement and tendering,
6. Contract administration and commercial management.

Core occupational duties associated with this apprenticeship include:

- providing professional advice and recommendations to clients relating to construction;
- managing client instructions from engagement to completion,
- liaising with other professionals typically including legal advisers, architects, engineers, town planners
- and contractors;
- negotiating contracts and prices;
- analysing data relating to buildings or construction;
- following due diligence in providing advice to clients;
- undertaking detailed inspections of buildings,
- construction and analysing information from inspections or visits to buildings, and construction sites.

The apprenticeship will be delivered by academic lecturers with up-to date practical skills and research experience who can integrate a high level of theoretical knowledge with practical knowhow. We have engaged holistically with a broad range of stakeholders across the institution and

across the Yorkshire region to co-create a programme that is fit for purpose, innovative and challenging and will meet the dynamic and contemporary landscape of 21st century construction provision. This will ensure that, on graduation, apprentices will be highly employable and prepared for future academic and professional development with the capacity for lifelong learning and a career in construction.

The apprenticeship programme aims to provide the surveyor knowledge and skills for apprentices to provide high quality, safe, evidence led provision. The apprenticeship will provide the specialised knowledge, skills and resilience needed to develop and influence future surveying practice. Our innovative apprenticeship reflects the university's strategic values of creating a learning environment that is inclusive, challenging and promotes collaboration, professionalism, and confidence in all our apprentices.

The programme aims to develop apprentices who can:

1. Develop a thorough understanding of the fundamental principles and practices of quantity surveying.
2. Comprehend the theoretical approaches used in the study of cost management, including procurement, contract administration, and risk management.
3. Demonstrate confidence and competence in utilising ICT software in managing the accuracy of measurement and cost estimation of minor and major construction projects
4. To develop intellectual skills in critical analysis, evaluation, synthesis, hypothesis formulation, testing and problem-solving within quantity surveying practice
5. Foster critical thinking and the ability to evaluate and interpret simple to complex contracts, legal frameworks, and industry standards to ensure compliance and mitigation of construction disputes.
6. Can work autonomously and effectively as part of an interprofessional team, demonstrating excellent client support and acting as a professional role model in their ability to promote the best outcomes in construction.
7. Develop the study skills, and experience to work autonomously and collaboratively within multidisciplinary teams to successfully deliver projects within time, cost, quality, and safety standards
8. Develop lifelong skills and enthusiasm to adhere to high ethical and professional codes of conduct and personal development within quantity surveying practice.
9. Use evidence and reflection to inform their practice and manage their own continuing personal and professional development.

The aims of the programme are:

- To develop quantity surveyor apprentices who can apply appropriate techniques and methodologies to accurately estimate construction costs and prepare workplace budgets to respond to the changing external context in which they operate;
- The development of analytical skills to evaluate construction contracts, identifying potential risks and implementing effective risk management and mitigation strategies.
- develop the research skills of apprentices to allow them to understand and demonstrate an awareness of the mainstream technology and the resources it uses for constructing domestic, industrial, and commercial buildings and infrastructure.
- Utilise relevant software and technology to support quantity surveying tasks, such as computer-aided design (CAD), building information modelling (BIM) and Cost X for accurate measurement and estimation.
- the development of abilities (skills) to communicate effectively with stakeholders, including clients, contractors, and other professionals, both orally and in writing.

- Demonstrate proficiency in conducting feasibility studies, value engineering, and life cycle costing analysis.
- develop the transferable, personal, practical and advanced intellectual skills to enable apprentices to confidently pursue a graduate career in cost control management, procurement processes and contract management all of which require an appreciation of time, cost, quality and value drivers likely to impinge on the quality of design, construction and functional efficiency of occupied buildings.
- Apply ethical principles and professional standards in quantity surveying practice, including adherence to legal frameworks, relevant codes of conduct and regulations
- Engage in continuous professional development, staying updated with emerging trends, technologies, and best practices in quantity surveying and stipulations of the Royal Institution of Chartered Surveyors.

The programme is designed to give a particular focus on professional and personal development which helps apprentices in career planning and developing their knowledge and skills. This encourages apprentices to reflect on their own career and study plans. The apprentices must meet the requirements of the apprenticeship standard in three areas:

1. they must complete the 'on-programme modules.
2. they must meet the requirements of the Gateway which are that the employer must be content that the apprentice is working at or above the occupational standard and the apprentices must have achieved English and mathematics at Level 2.

Once the requirements of Gateway have been achieved, the third and final area is

3. the end point assessment. The EPA period typically lasts for 12 months.

The programme has been designed with the United Nation's Sustainability Development Goals in mind. For example, Goal 4. Ensure inclusive and equitable quality of education and promote lifelong learning opportunities for all and Goal 17. Strengthen the means of implementation and revitalise the global partnership for sustainable development.

Equality, Diversity and Inclusion, PREVENT, safeguarding, English and maths, digital skills and radicalisation will all also be covered in the content of the programme.

### **What is special and what are the benefits of this programme?**

There are numerous benefits the Professional Practice Chartered Quantity Surveying offers to the apprentice candidates:

- Hands-On Training: Enhances skill development through real-world practical learning experiences.
- Mentorship: Provides daily guidance from experienced QS professionals.
- Job Shadowing: Allows apprentices to observe and learn from their workplace mentors and specialist skilled workers.
- Project-Based Learning: Applies skills and knowledge in real construction projects, learning and observing from what goes wrong, understanding why and use theoretical knowledge to improve production and efficiencies.
- Collaborative Learning: Fosters collaboration and peer learning among apprentices.
- Feedback and Reflection: Encourages apprentices to reflect on learning experiences and decision-making.

- Industry Visits: Exposes apprentices to different approaches within the Quantity Surveying practice.
- Simulation Exercises: Replicates real-world scenarios for problem-solving, skill development and improved dexterities.
- Health and Safety Training: Prioritises health and safety protocols in the workplace.
- Reflection Skills: Allows for personal reflection and identification of strengths and weaknesses.
- Goal Setting: Helps apprentices to set goals for skill development and to track their progress over study period.
- Accountability: Holds apprentices accountable for learning and performance and development of portfolio, readiness for online test and the interview.
- Skills Development: Allows academics and reviewers to monitor skill development and identifies areas for immediate and long term improvement with gateway and EPAs in mind.
- Self-Awareness: Encourages self-accentuation of professional skills and analysis of actions, decisions, and behaviours.
- Professional Development: Enables apprentices to record their professional growth and milestones within the quantity surveying practice.
- Critical Thinking: Encourages critical thinking and problem-solving especially in construction sequencing.
- Professional Portfolio: Compiles work experience, skills, and achievements for potential employers.
- Career Planning: Assists in planning a career path towards Gateway and EPA for the desirable **chartered status**.

### **3. Apprenticeship KSB mapping – please see appendix**

### **4. Apprenticeship programme learning outcomes**

In addition to achieving the KSBs for the apprenticeship apprentices will achieve the following learning outcomes that directly relate to the academic award.

#### **Learning outcomes in terms of:**

- **knowledge and understanding (K)**
- **intellectual / cognitive / 'thinking' skills (I)**
- **practical skills specific to the subject (P)**
- **employability skills (postgraduate) (E) or attributes and skills (undergraduate) (AS)**

On successful completion of the apprenticeship programme apprentices will be able to:

- K1 Demonstrate knowledge and understanding of the fundamental principles and theories of quantity surveying.
- K2 Understand the legal and regulatory frameworks relevant to quantity surveying
- K3 Explain the roles and responsibilities of quantity surveyors in construction projects.
- K4 Critically evaluate the financial viability and feasibility of construction projects.
- K5 Analyse and evaluate construction contracts and assess their suitability for specific project requirements.
- K6 Critically analyse the principles of sustainable development, sustainable construction and their implications for quantity surveying practice.
- K7 Critically evaluate and apply advanced cost management strategies for construction projects.

- K8 Innovate new methods for cost planning, value engineering, and life cycle costing in construction projects.
- I1 Identify risk factors and the key factors influencing the cost and value of construction projects.
- I2 Analyse and interpret construction drawings, specifications, and contract documents.
- I3 Distinguish between a range of research methodologies and apply appropriate evidence to inform critical thinking in diverse and complex situations.
- I4 Analyse and interpret appropriateness of standard contracts and alternative options.
- I5 Analyse and evaluate the impact of changes and variations on project cost and value and recommend appropriate actions.
- I6 Apply advanced negotiation and conflict resolution skills to resolve quantity surveying issues among contracting organisations.
- P1 Develop comprehensive cost plans, bills of quantities, and tender documents for construction projects.
- P2 Use advanced software tools and technologies to complete quantity surveying tasks efficiently and speedily as part of project control and monitoring.
- P3 Analyse and interpret complex cost data to identify cost-saving opportunities and value engineering options.
- P4 Analyse and evaluate the performance of construction projects against cost, time, and quality objectives using critical path analysis.
- P5 Apply advanced measurement techniques and technologies, to create a final account on a contract
- P6 Apply advanced software and technology, such as CAD, BIM tools, Cost X and Itwo Catto to effect changes arising from interim variations and allocate loss and expense to contractors appropriately

**Additionally, apprentices MUST pass the EPA.**

#### Attributes and Skills Outcomes (undergraduate)

- AS1 **Working Independently** - prioritising workload, anticipating and troubleshooting potential problems, and achieving this without requiring continual oversight from a supervisor or manager.
- AS2 **Research & Thinking Critically** - systematic investigation of resources to identify relevant information. Critical thinking refers to a process of independent scrutiny, allowing formation of a well-reasoned opinion for application of the research to decision-making and action.
- AS3 **Digital Confidence** - identifying, learning and confident adoption of digital tools, applications and software to improve existing processes, meet emerging challenges or develop new approaches.
- AS4 **Adaptability** - the ability to make the most of changing circumstances and adapt to new conditions.
- AS5 **Resilience** - the ability to recognise that you will be exposed to adversity but that you will be able to respond positively and ultimately adapt and grow from challenging events.

- AS6 **Professional Outlook** - preparing yourself to successfully research, plan and apply for opportunities through effectively articulating your skills and attributes whilst understanding how to present yourself in professional working environments to achieve your career goals.
- AS7 **Effective Communication** - the ability to work cooperatively with others to achieve a group objective and the recognition that good leadership empowers achievement of collective goals through combined efforts.
- AS8 **Ethics, Diversity, Sustainability** - making a positive impact on society and the environment as a whole.
- AS9 **Enterprise and Entrepreneurship** - entrepreneurship is the application of enterprise behaviours, attributes and competencies into the creation of cultural, social, or economic value. Enterprise is generating and applying ideas that are practical when undertaking a new venture or project.

In addition, under the chartered surveying standard, the following Knowledge, Skills and Behaviours will be met:

### **Knowledge (K)**

K1: Law - The law and the role of legal advisers relating to either acquisition/disposal of property, standard forms of building contracts or other property related contracts.

K2: Information management - The methods and techniques for providing information, data and advice to clients.

K3: Finance - Accounting procedures and methods for obtaining and managing finance.

K4: Health and safety - How to ensure safe and secure working environments for self and others.

K5: Diversity and inclusion - The importance and recognition of diversity. Legal, regulatory and ethical requirements including inclusive environments.

K6: Sustainability - How to embed sustainability into projects and how to influence client behaviour.

K7: Construction technology - The technology of complex buildings including materials.

K8: Ethics and professionalism - The role, governance and regulatory frameworks of the RICS. Global and professional ethical standards and Rules of Conduct and how to deal with ethical dilemmas.

K9: Client relationships - How to manage client/customer relationships.

K10: Building pathology - The detailed pathology of buildings and the related defects, causes and remedies. The methodology for completing a property inspection and inspection techniques.

K11: Design and specification - The various stages of the design process, legal requirements and regulations including planning, Building Regulations and health and safety requirements and the structural implication of design.



K12: The standard forms of building/construction contract and subcontract, contractual mechanisms and procedures applied at various stages of the contract. The role and responsibilities of the contract administrator and the duties of the parties to the contract.

K13: Procurement and contracts - Identifying when different forms of procurement and tendering are appropriate and the clauses of building/infrastructure contracts.

K14: Costing and cost planning of construction works - The detailed quantification and costing of construction works and the methods of cost planning that can be applied.

K15: Construction project control and reporting – Management of a construction project and the principles of contingencies and risk allowances. Life cycle costing and value engineering. Techniques to manage contractors, sub-contractors and/or suppliers. Reporting and forecasting.

### **Skills (S)**

S1: Information management - Provide data, information and advice for clients relevant to the surveying discipline.

S2: Health and safety - Recommend solutions to ensure safe and secure working environments.

S3: Construction technology - Provide advice relating to the construction technology of buildings and their materials.

S4: Law - Negotiate and agree terms for acquisition/disposal of property, standard forms of building contracts or other property related contracts and liaise with legal advisers.

S5: Consultancy - Manage instructions from engagement to completion.

S6: Building surveys – Undertake inspections and surveys and provide advice and recommendations to clients relating to building surveys.

S7: Prepare designs and specifications – Carry out the preparation of the design and specification of building projects from outline proposals to completion of the design and specification process.

S8: Administer contracts – Implement administrative procedures for the running of a construction project. Issue instructions, deal with payment provisions, manage variation procedures and deal with completion and possession issues and the issuing of certificates.

S9: Tendering and procurement - Provide advice and recommendations as to appropriate procurement routes and manage the tendering processes relevant to them.

S10: Costing and cost planning of construction works - Undertake the detailed quantification, costing and cost planning of complex construction works.

S11: Manage efficiencies of construction contracts – Manage the construction phase of a construction project. Carry out life cycle costing and apply value engineering processes. Prepare data, reports and forecasts.

### **Behaviours (B)**

B1: Provide a high standard of service - Always ensure your client, or others to whom you have a professional responsibility, receive the best possible advice, support or performance of the terms of engagement you have agreed to and ensure you always give attention to detail.

B2: Act in a way that promotes trust in the surveying profession - Act in a manner, both in your professional life and private life, to promote you, your firm or the organisation you work for in a professional and positive way.

B3: Act with integrity - Always be trustworthy, open and transparent. Respect confidential information of your clients or potential clients and do not allow bias, conflict of interest or the undue influence of others to override your professional or business judgments or obligations. Always act consistently in the public interest when making decisions or providing advice.

B4: Treat others with respect - Treat everyone with courtesy, politeness and respect and consider cultural sensitivities and business practices.

B5: Take responsibility - Always act with skill, care and diligence and deal with any complaint in an appropriate professional manner.

## 5 External benchmarks

### Statement of congruence with the relevant published subject benchmark statements

All Leeds Trinity University programmes are congruent with the Frameworks for HE Qualifications (FHEQ) and, where appropriate, the Qualifications and Credit Framework (QCF) (formerly National Qualification and Credit Framework (NQF)).

The apprenticeship programme is also congruent with the requirements of QAA 2470 (November 2019); and recently the Subject Benchmark Statement: Land Construction and Real Estate and Surveying (qaa.ac.uk version released for consultation, October 2023) and Higher Education Credit Framework for England (FHEQ), QAA UK Quality Code for Higher Education, Part A: Setting and Maintaining Academic Standards – The Frameworks for Higher Education Qualifications of UK Degree Awarding Bodies, October 2014; Qualification Frameworks 2023 Subject Benchmark Statement – Land Construction Real Estate and Surveying (qaa.ac.uk).

In addition, the programme has been designed to ensure alignment to the Mandatory and Technical Core competencies as set out by the RICS (Royal Institution of Chartered Surveyors) in Quantity Surveying and Construction Pathway Guide – 2019.

The apprenticeship is fully aligned to the Chartered Surveyor Apprenticeship Standard which can be accessed here

[Chartered surveyor \(degree\) / Institute for Apprenticeships and Technical Education](#)

## 6. Learning outcomes for subsidiary awards

### Learning outcomes for the award of Certificate of Higher Education in Professional Practice in Quantity Surveying

On successful completion of 120 credits at Level 4 apprentices will have demonstrated:

- i) Making sound judgements in accordance with basic quantity theories and concepts;
- ii) Evaluation of the appropriateness of different approaches to solving problems within quantity surveying
- iii) Communication of the results of their work coherently;

and will have had specific opportunities to display transferable skills relevant to employment related to Quantity Surveying.

### **Learning outcomes for the award of Diploma of Higher Education Professional Practice in Quantity Surveying**

On successful completion of 240 credits, including 120 at Level 5, apprentices will be able to, in addition to the outcomes for a Certificate of HE:

- i) interpret and evaluate data appropriate to quantity surveying;
- ii) critical understanding of quantity surveying principles;
- ii) application of concepts outside their initial context;
- iii) use of a range quantity surveying techniques;
- iv) proficient communication of the results of their work;

### **Learning outcomes for the award of a BSc Professional Practice in Quantity Surveying**

On successful completion of 300 credits, including 60 at Level 6, apprentices will be able to, in addition to the outcomes for a Diploma of HE:

- i) make flexible use of quantity surveying concepts and techniques;
- ii) critically evaluate approaches to solving quantity surveying problems;
- iii) work autonomously within a structured learning experience;
- iv) effectively communicate the results of their work in a variety of forms;

For the award of **BSc (Hons) Professional Practice in Quantity Surveying** apprentices will NOT have passed the End Point Assessment but will have achieved 360 credits and demonstrated the apprenticeship programme learning outcomes.

## **7. Content**

### **Summary of content by theme**

The programme is a degree level apprenticeship which combines higher education study and work-based/work integrated learning to enable apprentices to achieve a higher-level award. The programme has been codesigned with employers to ensure that it meets their requirements.

The Chartered Surveying apprenticeship programme offers the essential knowledge and understanding, skills and experience required for apprentices to operate effectively and successfully in a surveying role. Core areas of the programme cover the following topics which are embedded in the Chartered Surveyor apprenticeship standard.

Duty 1 Provide professional advice and recommendations to clients relating to land, property or construction

Duty 2 Manage client instructions from engagement to completion

Duty 3 Liaise with other professionals typically including legal advisers, architects, engineers, town planners and contractors

Duty 4 Negotiate contracts and prices

Duty 5 Analyse data relating to land, buildings or construction

Duty 6 Follow due diligence in providing advice to clients

Duty 7 Undertake detailed inspections of buildings, land or construction

Duty 8 Analyse information from inspections or visits to buildings, land and construction sites

Option duties

### **Quantity Surveying & Project Management duties**

Duty 12 Advise on procurement routes and tender processes.

Duty 13 Undertake costing and cost planning of construction projects.

Duty 14 Manage efficiencies in construction projects

In addition to the content based on surveying, the curriculum will be underpinned by Leeds Trinity University's Work based Learning Framework which we use to frame the apprenticeship programmes. **Work-Based Learning (WBL)** at higher education level draws on adult learning theories and highlights the importance of the context in which learning takes place, and the work purposes for which the learning is undertaken. Work-based learning programmes value and acknowledge learning that is happening in the workplace when the apprentices are carrying out their job roles.

The LTU WBL Framework aims to:

- Enable the employee and employer to agree Work-based learning activity which contributes to the goals and aspirations of both, (as well as the requirements of an apprenticeship where appropriate).
- Recognise and develop the workplace as a source of learning.
- Be learner centred and develop students/apprentices as effective work-based learners who can undertake research and development activity of direct relevance to their work.
- Encourage and enable students/apprentices to take responsibility for their own continuing development.
- Facilitate evidenced progression of learning with the on-going completion of an e-portfolio (mapped against the apprenticeship standard, where appropriate).
- Provide a structured approach to "real" work-based projects; this enhances students/apprentices potential to contribute to the development of the organisation where they work.
- Focus on the importance of knowledge as a key resource for organisations.

All modules have been mapped against the requirements of RICS.

In addition to the curriculum content on Chartered Quantity Surveying and the work-based learning framework mentioned above, LTU is committed to the overall personal development of all apprentices. This includes providing guidance, support and learning around the following topics

- i) Equality, Diversity and Inclusion
- ii) British Values
- iii) PREVENT and radicalisation
- iv) Progression in literacy and numeracy
- v) Development of digital skills
- vi) UN Sustainable development goals
- vii) Curriculum for social justice
- viii) Careers guidance
- ix) Enrichment activities such as a series of career-led masterclasses delivered by practitioners.
- x) Support and wellbeing

Leeds Trinity University's curriculum for **social justice** is a framework that can be applied within all academic schools and across all academic disciplines and modes of study. As apprenticeships are key to addressing social injustice in our higher education system and around the world, and attending to the skills gap and boosting economic productivity, this curriculum approach is key to our institutional values.

The curriculum for social justice has three aims:

1. To allow all our apprentices, regardless of background to achieve to the very best of their ability and to exceed their expectations about what they can accomplish academically and in their future careers.
2. To eradicate gaps across all apprentice characteristics, whether these be awarding gaps, employability gaps, or any other unfair gap in apprentice achievement.
3. To provide a transformational education to our apprentices and develop graduates who are capable of positively contributing to society in a way that creates a fairer and more equitable world.

The curriculum for social justice is based upon five, evidence-based, pedagogics, underpinned by inclusive pedagogy and inclusive assessment.

These are:

1. **Relational pedagogy.** This is a broad pedagogic approach that emphasises the benefits of the development of authentic, high-quality staff-apprentice, and apprentice-apprentice, relationships. This pedagogic approach is associated with a range of benefits to the apprentices including fostering a strong sense of belonging.
2. **Co-creation.** This involves both the tutor, employers and apprentices having input into what is taught, how it is taught, and how learning is assessed.
3. **Development of autonomous apprentice:** Our curricula reflect the unique identities, life experiences, and motivation for studying what our apprentices possess. Through the curriculum for social justice, we will encourage our apprentices to move from dependency upon their tutors to becoming self-directed in their learning and progress towards becoming autonomous apprentices.
4. **Assessment for social justice.** This includes allowing apprentices to express their knowledge from their own point of view, offering increased opportunities for formative assessment, and creating apprentices who are assessment literate.
5. **Creating content for social justice.** Programmes are taught using pedagogies that are grounded in social justice principles and which address through module content, the most pressing social justice issues of our age.

These five pedagogical approaches are embedded across **six social justice themes**. These themes form the foci of our curriculum for social justice and are the areas through which a transformation of our curricula will be achieved. The six social justice themes are:

1. **Race equity:** Racial inequalities in higher education are widespread and difficult to remove. Academic teams will develop and employ anti-racist and decolonial curricula to redress racial inequities and improve the learning experiences for all our apprentices. We hold a Bronze Race Equality Charter Mark and have apprenticeship recruitment targets which aimed to improve the diversity of our intakes.
2. **Health and wellbeing:** Concerns about the physical and mental wellbeing of our apprentices is driven by many factors including increased numbers of apprentices reporting that they have a mental health condition. We recognise that issues of health and wellbeing are not solely the responsibility of health advisors and councillors but are also impacted by relevant, engaging, and stimulating curricula and positive educational experiences.
3. **Digital pedagogy:** Digital pedagogic practices have the potential to improve access to, and the ability to participate in higher education. We will ensure that our use of digital pedagogy supports the needs of our apprentices from minoritized groups through ensuring that our apprentices have access to appropriate and useful technology along with the skills to use this technology.
4. **Sustainability:** Developing effective education for sustainable development within our modules and programmes is of utmost importance to us. Our curriculum for social justice will contribute to addressing our strategic objectives of: Creating a sustainable environment in all aspects of how and where we work and develop our learners for careers of the future through work experience and the skills to promote themselves in a changing world.
5. **Employability and enterprise:** Our approach to embedding the overlapping concepts of employability and enterprise within our curricula makes social justice central to this agenda. All our apprentices, regardless of their background, identity, personal circumstances, or mode of study will have equitable access to the opportunities available to enhance their employability.
6. **Internationalisation:** Our approach to the internationalisation of the curriculum focusses on the development of internationally relevant knowledge and skills, behaviours, ethics, attitudes, methodologies, epistemologies, and ontologies. We will examine and evaluate widely taken for granted western pedagogical approaches and we will incorporate alternative and culturally diverse systems of knowledge into our curricula that are useful to both our domestic and international students.

## 8. Structure

**Duration:** 4 year apprenticeship (plus 8-12 month EPA)

**Total credit rating:** 360

**Level 4** – with effect from 2024

**Core:** Apprentices are required to take:

| Module code | Module Title                                            | Number of credits |
|-------------|---------------------------------------------------------|-------------------|
| CON4053     | Construction Technology & Design 1                      | 30                |
| CON4001     | Introduction to your Professional Degree Apprenticeship | 10                |
| CON4063     | Introduction to Measurement & Costing                   | 30                |
| CON4011     | The Reflective Apprentice                               | 10                |
| CON4073     | Construction Economics                                  | 30                |
| CON4021     | Apprentice Portfolio Review 1                           | 10                |

### **Level 5** – with effect from 2025

**Core:** Apprentices are required to take:

| Module code | Module Title                            | Number of credits |
|-------------|-----------------------------------------|-------------------|
| CON5103     | Construction Technology & Design 2      | 30                |
| CON5102     | Sustainable Buildings & Practice        | 20                |
| CON5123     | Procurement & Contract Administration   | 30                |
| CON5121     | Advancing your portfolio towards EPA CS | 10                |
| CON5113     | Construction Law                        | 30                |

### **Level 6**-with effect from 2026

**Core:** Apprentices required to take:

| Module code | Module Title                                | Number of credits |
|-------------|---------------------------------------------|-------------------|
| CON6053     | Project Management, Ethics & Safety Control | 20                |
| CON6063     | Research Project (Dissertation)             | 60                |
| CON6043     | Advanced Measurement Project                | 30                |
| BMM6641     | Gateway Preparation CS                      | 10                |

### **Year 5**

During year 5, following the completion of the BSc (Hons) qualification apprentices will be engaged with a series of activities to continue supportive preparations for the Gateway and EPA, in line with the apprenticeship standard. University staff will liaise closely with RICS,

who also are responsible for conducting the EPA, to ensure the Gateway and EPA run smoothly and timely. It is worth noting that currently RICS offer two opportunities a year for apprentices to undergo EPA; apprentices will be presented for EPA at the most appropriate window.

## 9. Core Apprenticeship Curriculum

|                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safeguarding                                                                    | <p>Safeguarding is introduced to the apprentices in the Introduction to your Professional Degree Apprenticeship module. This is also reinforced throughout the apprentice's journey on the programme through progress reviews and the Gateway Preparation Module.</p> <p>Safeguarding is discussed at the start of every progress review to ensure that there are no current issues.</p> <p>Safeguarding and Health, Safety, Welfare and LTU belong are discussed as the theme for progress review 2.</p> |
| Prevent                                                                         | <p>Prevent is introduced to the apprentices in the Introduction to your Professional Degree Apprenticeship module.</p> <p>British Values, Prevent and LTU belong are discussed within the theme of progress review 10.</p>                                                                                                                                                                                                                                                                                |
| Equality, diversity, and inclusivity (EDI)                                      | <p>EDI is a key underpinning of ethical sales codes for most organisations. This is discussed in detail in the Sustainable Buildings and Practice and Project Management, Ethics &amp; Safety Control modules.</p> <p>EDI and LTU belong are discussed as the theme for progress review 6.</p>                                                                                                                                                                                                            |
| Personal Development, e.g. careers guidance and supporting readiness to succeed | <p>Personal Development is provided by the progress reviewer role. Themes around career development is discussed in progress review 4, 8 and 12 (end of each academic year).</p>                                                                                                                                                                                                                                                                                                                          |



|                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| British Values of 1) democracy, 2) individual liberty, 3) the rule of law and 4) mutual respect and tolerance | <p>British Values is introduced to the apprentices in the Introduction to your Professional Degree Apprenticeship module. This is discussed in detail in the Project Management, Ethics &amp; Safety Control and Construction law modules.</p> <p>British Values, Prevent and LTU belong are discussed within the theme of progress review 10.</p>                                                                                            |
| Behaviour and attitudes                                                                                       | <p>These are developed throughout the apprenticeship through engaging with the modules increasing their knowledge, and through their workplace activity developing their skills and behaviours.</p> <p>As well as the taught delivery KSB development is discussed in each progress review and a detailed focus provided in progress review 3,5,7,9 and 11.</p> <p>KSB mapping document shows how the KSBs are mapped across the modules.</p> |
| English, Maths and Digital Literacy                                                                           | <p>Across the module NP4s, English, Maths and Digital Literacy has been identified signposting where it will be developed and/or assessed. Maths and English are part of the progress review themes for progress reviews 3,5,7,9 and 11.</p>                                                                                                                                                                                                  |
| Sustainability Goals                                                                                          | <p>The NP4 document for Sustainable Buildings and Practice module identifies regulations, systems and practices which align to UN Sustainability Goals and are addressed through the completion of the work-based projects.</p>                                                                                                                                                                                                               |
| Knowledge, Skills, and Behaviours                                                                             | <p>These are developed throughout the apprenticeship through engaging with the modules increasing their knowledge, and through their workplace activity developing their skills and behaviours.</p> <p>As well as the taught delivery KSB development is discussed in each progress review and a detailed focus provided in progress review 3,5,7,9 and 11.</p> <p>KSB mapping document shows how the KSBs are mapped across the modules.</p> |

## 10. Learning, teaching and assessment

## Statement of the strategy for learning, teaching and academic experience for the programme

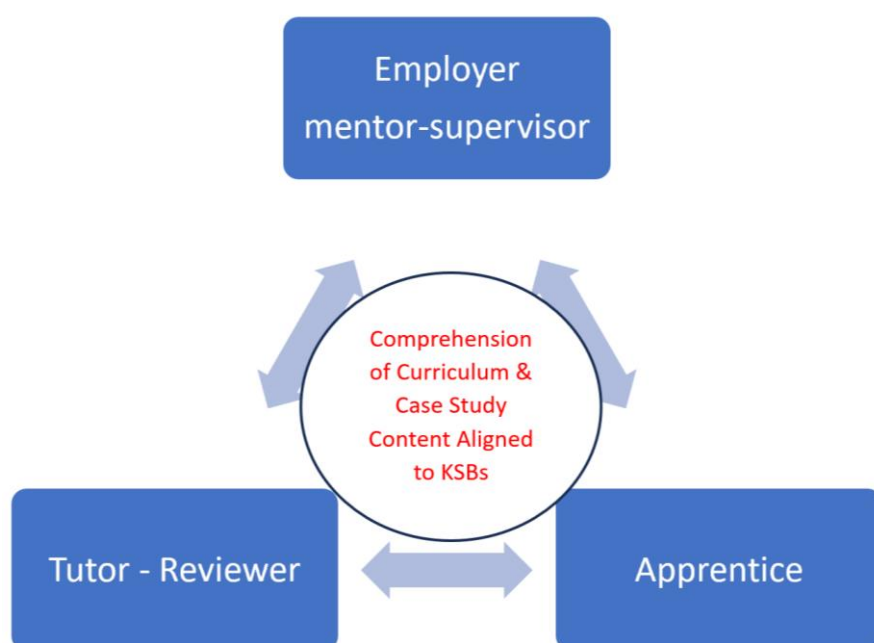
The design of our chartered surveying apprenticeship adheres to the philosophy and principles as set out in the Learning, Teaching and Academic Experience Sub-Strategy 2022-2026. Our programmes are designed to provide high quality, equitable teaching experiences with authentic learning and assessment opportunities which we recognise are fundamental to engaging apprentices in deep learning and to their success and in preparing them for further study and professional life within their employment.

### Support Strategy for Apprentices

#### Teaching staff

This programme is designed to ensure teaching staff offer apprentices specific support in the curriculum delivery paying cognisance to the KSBs in the following ways:

- Guidance in understanding theoretical concepts: Teaching staff will endeavour to provide clear explanations and guidance to help apprentices understand theoretical concepts related to construction, sustainability, health and safety, and other relevant subjects.
- Practical skill development: Teaching staff will offer hands-on training, demonstrations, and practical exercises to help apprentices develop their technical skills and proficiency in construction practices.
- Feedback and assessment: Regular feedback and assessment from teaching staff are essential for apprentices to track their progress, identify areas for improvement and receive guidance on how to enhance their knowledge and skills.
- Guidance on reflective practice: Teaching staff will support apprentices in developing reflective practice skills, encouraging them to critically analyse their own learning experiences and identify areas for growth and development.



- **Mentorship and career guidance:** Teaching staff will serve as mentors, providing technical guidance and support to apprentices in navigating their learning around the KSBs and in ensuring they identify and use the correct terms to map their own learning to the KSBs. Reviewers will ensure this learning continues in the workplace and reflect the sort of activities apprentices are exposed to that are crucially relevant to quantity surveying practice and the construction industry. This will include advice on professional development, networking opportunities, and industry insights.
- **Access to resources and materials:** Teaching staff will ensure that apprentices have access to relevant learning resources, textbooks, online materials and industry publications to supplement their knowledge and stay updated on industry trends and best practices all of which will be mapped to the KSBs and Educational frameworks of the RICS.
- **Support in applying knowledge to real- site project scenarios:** Teaching staff will facilitate opportunities for apprentices to apply their theoretical knowledge to real-world construction projects, providing guidance and supervision as they tackle practical challenges.
- **Assistance with exam preparation:** Teaching staff will provide guidance and resources to help apprentices prepare for exams and assessments including practice exams, study materials, and strategies for effective revision.
- **Constant radar monitoring:** teaching staff and reviewers will play a crucial role in providing apprentices with the necessary support, guidance, and resources to succeed in their apprenticeship programme. By offering a combination of theoretical instructions, practical training, feedback, mentorship, and access to resources, teaching staff and reviewers will play a pivotal role in ensuring apprentices develop the knowledge, skills, and confidence required to excel in the construction industry and to pass their degree programme and succeed in displaying professional competencies at the end point assessment.

Development of Soft Skills under this standard.

### **Incorporating Soft Skills in Formative Assessments to enhance Professional Development for Construction and the Built Environment Students**

#### **Evidencing of Soft Skills Development**

Soft skills are recognised as non-technical skills that are related to how construction professionals work, interact with others, and navigate their environment. They are often also referred to as interpersonal skills or people skills and are recognised to be essential for personal and professional success. Soft skills are more about the individual students is as a person rather than the specific knowledge they possess. Some of the common soft skills will be recognised through:

- 1. Communication:** The students' ability to effectively convey information, ideas, and thoughts to others through verbal, written, and non-verbal means.
- 2. Teamwork:** The student/apprentice capacity to collaborate with others, contribute to a group effort, and work effectively as part of a team.
- 3. Problem-solving:** The skill to identify issues, analyse situations, and develop effective solutions to challenges in a logical and systematic manner.
- 4. Critical Thinking:** The ability to objectively analyse information, evaluate arguments, and

make informed decisions based on reasoning and evidence.

**5. Leadership:** The capability to inspire, motivate, and guide others towards a common goal, as well as take charge and make decisions when needed.

**6. Adaptability:** The flexibility to adjust to new situations, changes, and challenges, and to remain productive and positive in dynamic environments.

**7. Time Management:** The aptitude to prioritise tasks, manage time effectively, and meet deadlines without compromising quality or productivity.

**8. Emotional Intelligence:** The skill to recognise, understand, and manage your emotions and those of others, as well as navigate social interactions with empathy and sensitivity.

**9. Creativity:** The ability to think innovatively, generate original ideas, and find unique solutions to problems by thinking outside the box.

**10. Conflict Resolution:** The capacity to address and resolve conflicts, negotiate disagreements, and find mutually beneficial solutions in a constructive manner.

Soft skills therefore, complement technical or hard skills and are embraced equally as important as the technical skills for the construction workplace environment. They contribute to building strong relationships, fostering effective communication, and enhancing overall performance and success in various personal and professional contexts.

#### **Application in practice opportunities:**

##### **1. Virtual Internships and Simulations:**

- Accentuate communication, teamwork, and problem-solving skills by engaging in virtual collaborative projects that simulate real construction scenarios.

##### **2. Networking and Informational webinars:**

- Practice active listening, interpersonal communication, and relationship-building skills during virtual networking events and informational interviews with industry professionals.

##### **3. Mentorship Programmes:**

- Develop leadership, adaptability, and mentorship skills by actively engaging with mentors and seeking guidance on professional development and career goals.

##### **5. Educational Projects and Competitions:**

- Enhance creativity, critical thinking, and innovation skills by participating in educational projects and design competitions that require interdisciplinary collaboration and problem-solving.

##### **6. Self-Directed Learning:**

- , time management, and lifelong learning skills through self-directed exploration of online resources and independent study on construction topics.

#### **Incorporating Soft Skills in Formative Assessments:**

### **1. Reflective Journals:**

- Encourage students/apprentices to maintain reflective journals to articulate their experiences, challenges, and learning from real construction scenarios, promoting self-awareness and emotional intelligence.

These skills will be practiced in Project Management Ethics and Safety Control.

Scenarios in which risk management was insufficiently conducted, leading to the fatality of a worker, will be showcased. Students will be tasked with selecting from a range of scenarios the most appropriate course of action, identifying the potential cause of the mishap. They will address questions about who the duty holder is and what could have been prevented. The class will scrutinise the hierarchy of decision-making as per legal guidelines to determine whether all foreseeable and reasonably practicable measures were implemented to avert the incident. Ultimately, the legitimacy of the final decision will be examined, focusing on the understanding of the Hierarchy of Decision Making under the law, and its practical application to forestall construction accidents and safeguard the lives of those under duty of care.

Learning to save lives and adhering to legal statutes is most effectively done through real-world scenarios. These scenarios urge learners to critically assess the sequence of events leading up to an incident and the interventions that might prevent a fatality. The presented scenarios will be based on genuine events reported in construction news or contract journal and the health and Safety Executive bulletins. These sources present scenarios which include penalties, fines, and sentences imposed on duty holders. Understanding a practitioner's responsibilities entails substantial reflection on the role of a construction professional and their obligations under contract law, as well as compliance with the Health and Safety at Work Act 1974 and the Construction (Design and Management) Regulations.

### **2. Peer Feedback Exercises:**

- Given the example given above, apprentices will be split into groups to evaluate; weigh the cases and then outline what the decision-making process ought to have been. This then facilitates apprentices to engage in providing peer-to peer feedback. These feedback sessions, where students provide constructive feedback to each other, promote active listening, empathy, and communication skills and are espoused through active learning depicting all the soft skills that CBE apprentices ought to harness and develop and practice so that correct decision making, whatever, the scenario, becomes second nature.

### **3. Collaborative Projects:**

- Assign collaborative projects that require teamwork, communication, and conflict resolution skills, with formative assessments focusing on group dynamics and interpersonal interactions.

### **4. Case Study Analysis:**

- Students will be exposed to construction accidents scenarios reported in national media outlets such as construction new, construction contracts and Health Safety Executive Bulletins. These sources report on real cases. Therefore when students are exposed to such cases, they always have to immerse in the scenes as duty holders, and analyse the standard of decision making within the case studies that involve ethical dilemmas, safety challenges, and project management issues, with group or individual assessments given which emphasise on soft skills involving critical thinking, decision-making, and ethical reasoning.

### **5. Role-Playing Scenarios:**

- As outlined in the scenarios above, students/apprentices will be engaged in role-playing scenarios that simulate negotiation, client interactions, and leadership challenges, imposing

themselves in various roles as duty holders, and assessing their ability to navigate complex interpersonal situations.

#### **6. Presentation Skills Development:**

- various modules within the programme incorporate presentations as formative assessments to evaluate learners' public speaking, presentation design, and storytelling abilities, enhancing their communication and confidence.

#### **Benefits of Soft Skills Integration and Formative Assessments:**

##### **1. Holistic Development:**

- Soft skills integration and formative assessments promote holistic development by nurturing students' interpersonal, communication, and problem-solving abilities alongside technical knowledge associated with Construction and Built Environment subject content.

##### **2. Career Readiness:**

- Equipping students with soft skills through alternative approaches and reflective assessments enhances their readiness for professional roles in the construction industry.

##### **3. Professional Growth:**

- Formative assessments such as Multiple-Choice Questions, focusing on soft skills development facilitate continuous improvement, self-reflection, and personal growth throughout the learner's educational journey.

##### **4. Adaptability and Resilience:**

- Soft skills training and formative assessments based on real construction scenarios, prepare students to navigate challenges, collaborate effectively, and adapt to changing work environments in the construction field. These skills prepare them for the real world of work.

Therefore by integrating soft skills development strategies and formative assessments that accentuate interpersonal competencies, students/apprentices can enhance their overall professional readiness, communication abilities, and emotional intelligence, essential for success in the dynamic and collaborative construction industry.

#### **Reviewers**

University reviewers should collaborate with employers and apprentice supervisors to ensure that apprentices receive the necessary support at work while also completing their required tasks for several reasons:

1. Alignment of learning and work objectives: By working closely with employers and supervisors, university reviewers will ensure that the tasks assigned to apprentices align with the learning objectives of the apprenticeship programme. This alignment ensures that apprentices' work experiences contribute to their overall development and achievement of programme goals.

2. Monitoring apprentice progress: University reviewers will regularly communicate with employers and supervisors to monitor apprentices' progress at work. This collaboration allows for a comprehensive understanding of the apprentice's performance, feedback received, and areas where additional support may be needed.

3. Addressing challenges and providing support: By engaging with employers and supervisors, university reviewers will identify any challenges or difficulties faced by apprentices in their

workplace. This information enables them to provide appropriate support, guidance, or resources to help apprentices overcome these challenges and succeed in their work tasks.

4. Quality assurance and assessment: Collaboration between university reviewers and employers/supervisors ensures that the work tasks assigned to apprentices meet the required standards and align with the programmes' assessment criteria. This collaboration enhances the quality assurance process, ensuring that apprentices are receiving meaningful and relevant work experiences.

5. Enhancing learning outcomes: By working together, university reviewers, employers, and supervisors will create a supportive environment that enhances the overall learning outcomes for apprentices. This collaboration allows for the integration of theoretical knowledge with practical application, ensuring that apprentices acquire the necessary skills, knowledge, and competencies required for their chosen profession.

6. Feedback and improvement: Through regular communication and collaboration, university reviewers will gather feedback from employers and supervisors regarding the effectiveness of the apprenticeship programme. This feedback helps to identify areas for improvement, curriculum enhancements, and potential pedagogical adjustments to meet the needs of both apprentices and employers.

Cognisance is also given to the fact that all collaboration between university reviewers, employers, and apprentice supervisors is crucial and contractual to ensure that apprentices receive the necessary support, complete their required tasks, and have a positive and impactful work experience. This collaboration enhances the overall effectiveness and success of the apprenticeship programme, benefiting both the apprentices and the employers involved.

#### **The assessment strategy for apprenticeship degree**

The assessment strategy for apprenticeship degree will combine a variety of assessment methods to ensure comprehensive evaluation of the apprentice's knowledge, skills, and competencies.

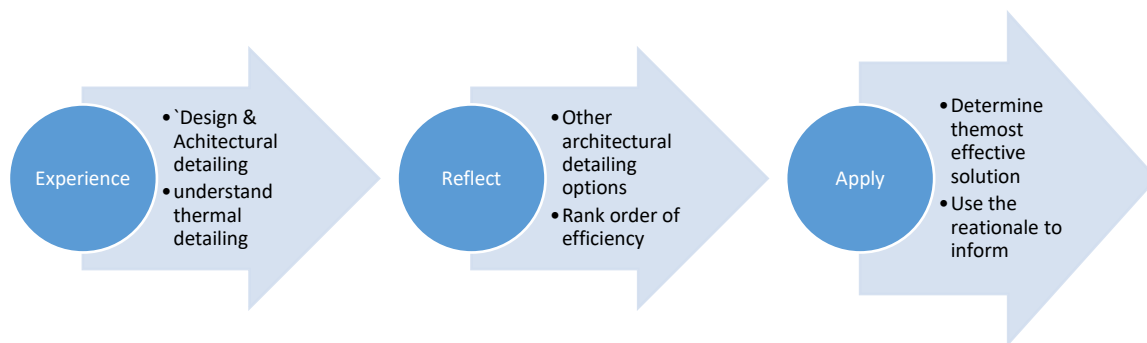
This strategy also aligns with the specific learning outcomes, KSB for the chartered standard and evidence of meeting industry requirements of the programmes. The following are the assortment of assessment methods for the professional practice-chartered surveying apprenticeship degree programme:

- Practical assessments: Assessing apprentices' practical skills through hands-on tasks, simulations, or workplace-based projects. This will involve observing their performance, evaluating their ability to apply knowledge in real-world scenarios, and assessing their problem-solving abilities.
- Work-based assessments: Evaluating apprentices' performance and progress in the workplace, where they will demonstrate their application of knowledge, skills, and behaviours in authentic work settings. This will include workplace observations, supervisor feedback, and performance reviews.
- Written assignments: Assigning written tasks such as reports, reflective journals, case studies, or research papers to assess apprentices' theoretical understanding, critical thinking skills, and ability to communicate effectively in written form.
- Presentations: nearly all modules assess apprentices' ability to effectively communicate and present their knowledge, ideas and findings to an individual or an audience. This will involve individual or group presentations where apprentices will showcase their understanding of key building concepts including their ability to articulate complex information.

- Assessments in the form of exams or tests: apprentices will be exposed to traditional written exams or tests to evaluate apprentices' knowledge and understanding of theoretical concepts, principles, and industry-specific regulations.
- Portfolios: apprentices will be expected to compile a portfolio of evidence which will include samples of their work, reflections, self-assessments, and feedback from supervisors or mentors. Portfolios provide a holistic view of the apprentice's progress and development throughout the programmes.

### Experiential Learning Pedagogy.

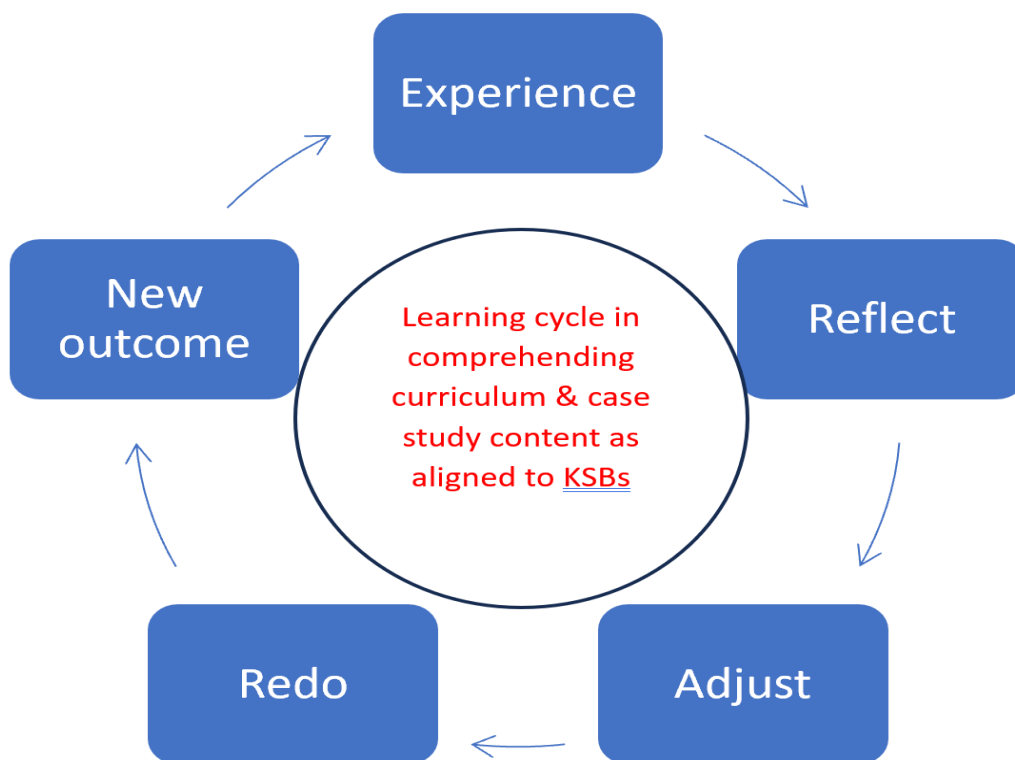
**Experiential learning** approach will be taken which emphasises the importance of hands-on practical experiences. Videos of live construction activities will expose apprentices to some unique construction scenarios beyond their own workplace projects. This learning environment fosters a desire for innovative learning approaches, enabling apprentices to apply theoretical knowledge to real-world contexts and to actively engage in work-based tasks where quick thinking may be required to inform decision making and to receive immediate feedback from experienced tutors and industry professionals. This pedagogical approach recognises the value of learning through experience, reflection, and application, ultimately leading to the development of practical skills, critical thinking, and professional competence.



### Constructivist pedagogy

Apprenticeship programme is also aligned with constructivist pedagogy which emphasises the active construction of knowledge through interactions with the learning environment. Apprentices actively engage with their workplace, industry professionals, and educational resources to construct their understanding of the subject matter. The Constructivist pedagogy supports apprentices in developing the problem-solving skills, critical thinking abilities, and the ability to transfer knowledge and skills to different contexts which characterise most of the KSBs for this standard.





### Assessment based on Multiple Choice Questions (MCQs)

Multiple Choice Questions (MCQs) are a feature of the chartered surveyor apprenticeship standard End Point Assessment (EPA). This is explained for several reasons, namely:

- **Standardised assessment:** MCQs provide a standardised format for assessment, ensuring that all apprentices are evaluated on the same set of questions and criteria. This helps maintain consistency and fairness across different apprenticeship cohorts.
- **Knowledge retention and recall:** MCQs require apprentices to recall and apply their knowledge to select the correct answer from a set of options. This helps to reinforce their understanding of the key concepts within the taught curriculum and encourages active recall which will enhance knowledge retention.
- **Efficient assessment:** MCQs allow for the assessment of a large number of apprentices in a relatively short time. This efficiency is particularly beneficial for EPA where a significant number of apprentices may need to be assessed within a specific timeframe.
- **Objectivity in grading:** MCQs offer a greater level of objectivity in grading as the answers are typically clear-cut and have predetermined correct options. This reduces the potential for subjective bias in assessment and ensures a fair evaluation of apprentices' knowledge and understanding.
- **Coverage of broad content:** adopted pool of MCQs will cover a wide range of topics and content in a single assessment, providing a comprehensive evaluation of apprentices' knowledge across the breadth of the apprenticeship standard.
- **Diagnostic tool:** use of MCQs will serve as a diagnostic tool to identify gaps in apprentices' understanding and areas that may require further review or additional

support. This feedback will be valuable for both apprentices and their trainers in guiding their learning and preparation for the EPA.

- Preparation for professional exams: Many professional exams, such as certification exams or licensing assessments utilize MCQs as a standard format. By incorporating MCQs into the gateway and end point assessments, apprentices are provided with practice and familiarity with this assessment format which will help them prepare for future professional exams.

In practicing MCQs formatted for end point assessment, the learning is then aligned with standardised assessment practices, encourages knowledge retention and recall, allows for efficient assessment of a large number of apprentices, promotes objectivity in grading, covers a broad range of content, serves as a diagnostic tool, and prepares apprentices for future professional chartered status exams.

### **Diversity in staff, background and specialisation**

Our programmes will value the different perspectives our apprentices will bring to their education and empower them to fulfil their personal and professional ambitions and add value to the lives of all stakeholders in our educational community and beyond. Our approach to learning, teaching and academic experience aims to, “develop curiosity, courage, confidence, and aspiration in all our apprentices and recognise the importance of well-being”. All sessions are planned to the three-phase teaching model of pre, live and post inquiry led activities using accessible, engaging, and developmental research informed teaching material.

The curriculum for social justice mentioned in the previous section runs throughout the programmes to bring to life LTU’s mission, vision, and values and to develop apprentices’ understanding of their role as active citizens through engagement with community and sector issues.

Our inclusive assessment strategy is designed to ensure that apprentices achieve the overall aims and learning outcomes of the programmes as well as the learning outcomes for individual modules. Assessment processes across the programmes have been deliberately designed to be developmental rather than judgemental embedding a non-deficit, anti-discriminatory approach to promote inclusivity and remove barriers to apprentice progress and success.

We will actively encourage the use of formative feedback, including that received from peers, service users and carers and employer representatives to co-create a dialogue whereby the apprentice is an active participant in how they might best improve on current and previous performances but most significantly how they can take ownership of this process. Summative assessments include a variety of methods with optionality being available in the topic areas studied and where possible negotiated method of assessment. Clear links between formative and summative work will be made evident to apprentices to support learning from and for assessment.

Research informed key lectures will introduce the weekly content of the module identifying theories/principles/concepts enabling you to develop your knowledge and skills. The lecture content will be supported by seminars enabling smaller group discussion where apprentices will consolidate their knowledge and critically engage with best evidence to support their professional development and to apply their learning to practice, activities will include, problem-based learning, and practice-based scenario exploration. Learning styles will be supported by a variety of resources including videos, reading material, discussion and debate, e-learning modules, problem

solving and practical tasks. Apprentices will be expected to utilise appropriate digital technologies and study skills to engage with additional resources and independently directing their own learning.

### **End Point Assessment – Apprenticeship Standard requirements**

Following completion of the BSc (Hons) qualification apprentices will continue to undertake any further preparations in order to meet the practical requirements of RICS, as the End Point Assessment Organisation, and the Gateway requirements of the apprenticeship standard which are:

- The employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard.
- achieved English/mathematics Level 2
- completed a RICS accredited degree
- completed a Summary of Experience Portfolio

Apprentices will be supported in meeting, and evidencing, these requirements throughout the apprenticeship by their workplace mentor/supervisor and members of the academic team, particularly the Progress Reviewers; Progress Reviews will be a key mechanism to ensure the activities needed are relevant and sufficient,

#### **Assessment Method 1: Online test**

With the following grades:

- Pass
- Fail

#### **Assessment Method 2: Case Study including report, presentation and questioning**

With the following grades:

- Pass
- Fail

#### **Assessment Method 3: Interview (underpinned by the Summary of Experience Portfolio)**

With the following grades:

- Pass
- Fail

### **The Summary of Experience Portfolio requirements include:**

The portfolio should typically cover at least 24 months (and at least 400 days of work experience) and the summary should be typically 5500 words long

The portfolio should include a CPD record of a typical minimum of 48 hours of CPD activity in each of the last two years of the apprenticeship (typical minimum of 96 in total). Further details can be found in Gateway Preparation CS NP4.

The EPA must be completed within an EPA period typically lasting a maximum of 8 month(s), including any required resits/re-takes, beginning when the apprentice has passed the EPA gateway.

## 7b) Apprenticeship Programme Learning Outcomes and Attribute Skills covered

| Adjust LO codes as necessary. ↓                                                                                                 | K1                        | K2               | K3                         | K4                                                 | K5                                    | K6                                | K7                                    | K8                               | I1              | I2                            | I3                              | I4                                    | I5                              | I6                                | P1                                     | P2                                           | P3                                              | P4                                          | P5                              | P6                                |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|----------------------------|----------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|----------------------------------|-----------------|-------------------------------|---------------------------------|---------------------------------------|---------------------------------|-----------------------------------|----------------------------------------|----------------------------------------------|-------------------------------------------------|---------------------------------------------|---------------------------------|-----------------------------------|
| Lighter or hatched shading indicates modules that are not core, ie. not all apprentices on this programme will undertake these. | Knowledge & Understanding | Legal frameworks | Roles and responsibilities | Viability and feasibility of construction projects | Preparation of construction contracts | Principles of design/construction | Financial /Cost management strategies | Cost planning /value engineering | Risk management | Analysis of technical details | Applying research methodologies | Appropriateness of standard contracts | Contract variation & management | Negotiation & Conflict resolution | Able to develop BOQ & Tender Documents | Use of estimating IT Software & Technologies | Interpret complex cost data & Value engineering | Performance against cost, time, and quality | Advanced Measurement techniques | Use software to execute QS duties |
| Construction Technology & Design 1                                                                                              |                           |                  |                            |                                                    |                                       |                                   |                                       |                                  |                 |                               |                                 |                                       |                                 |                                   |                                        |                                              |                                                 |                                             |                                 |                                   |
| Introduction to your Professional Degree Apprenticeship                                                                         |                           |                  |                            |                                                    |                                       |                                   |                                       |                                  |                 |                               |                                 |                                       |                                 |                                   |                                        |                                              |                                                 |                                             |                                 |                                   |
| Introduction to Measurement & Costing                                                                                           |                           |                  |                            |                                                    |                                       |                                   |                                       |                                  |                 |                               |                                 |                                       |                                 |                                   |                                        |                                              |                                                 |                                             |                                 |                                   |
| The Reflective Apprentice                                                                                                       |                           |                  |                            |                                                    |                                       |                                   |                                       |                                  |                 |                               |                                 |                                       |                                 |                                   |                                        |                                              |                                                 |                                             |                                 |                                   |
| Construction Economics                                                                                                          |                           |                  |                            |                                                    |                                       |                                   |                                       |                                  |                 |                               |                                 |                                       |                                 |                                   |                                        |                                              |                                                 |                                             |                                 |                                   |
| Apprentice Portfolio Review 1                                                                                                   |                           |                  |                            |                                                    |                                       |                                   |                                       |                                  |                 |                               |                                 |                                       |                                 |                                   |                                        |                                              |                                                 |                                             |                                 |                                   |
| Construction Technology & Design 2                                                                                              |                           |                  |                            |                                                    |                                       |                                   |                                       |                                  |                 |                               |                                 |                                       |                                 |                                   |                                        |                                              |                                                 |                                             |                                 |                                   |

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|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Sustainable Buildings & Practice            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Procurement & Contract Administration       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Advancing your Portfolio towards EPA        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Construction law                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project Management, Ethics & Safety Control |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Research Project (Dissertation)             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Advanced Measurement Project                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gateway Preparation CS                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|                                                                                                                                 | Skills development    |                                |                    |              |            |                      |                         |                                   |                                 |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------|--------------------|--------------|------------|----------------------|-------------------------|-----------------------------------|---------------------------------|
| <i>Adjust LO codes as necessary. ↓</i>                                                                                          | AS1                   | AS2                            | AS3                | AS4          | AS5        | AS6                  | AS7                     | AS8                               | AS9                             |
| Lighter or hatched shading indicates modules that are not core, ie. not all apprentices on this programme will undertake these. | Working Independently | Research & Thinking Critically | Digital Confidence | Adaptability | Resilience | Professional Outlook | Effective Communication | Ethics, Diversity, Sustainability | Enterprise and Entrepreneurship |
| Construction Technology & Design 1                                                                                              |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Introduction to your Professional Degree Apprenticeship                                                                         |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Introduction to Measurement & Costing                                                                                           |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| The Reflective Apprentice                                                                                                       |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Construction Economics                                                                                                          |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Apprentice Portfolio Review 1                                                                                                   |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Construction Technology & Design 2                                                                                              |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Sustainable Buildings & Practice                                                                                                |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Procurement & Contract Administration                                                                                           |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Advancing your Portfolio towards EPA                                                                                            |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Construction law                                                                                                                |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Project Management, Ethics & Safety Control                                                                                     |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Research Project (Dissertation)                                                                                                 |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Advanced Measurement Project                                                                                                    |                       |                                |                    |              |            |                      |                         |                                   |                                 |
| Gateway Preparation CS                                                                                                          |                       |                                |                    |              |            |                      |                         |                                   |                                 |

## 11. Entry requirements

|                                                                                                                       |     |
|-----------------------------------------------------------------------------------------------------------------------|-----|
| <b>Do the University's standard entry requirements apply (as outlined within the University's Admissions Policy)?</b> | Yes |
| <b>Detail of any deviation from and/or addition to the University's standard entry requirements (if applicable)</b>   |     |

## 12. Progression, classification and award requirements

|                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Details of requirements for apprentice progression between levels and receipt of the award(s)</b>                                                                                                                                                      |
| Apprentices must achieve a pass mark of 40% in all components of assessment in all modules. All modules at each level must be passed in order to progress to the next level of study. Condonement of Marginal Failure is not permitted on the programmes. |

## 13. Prerequisites

|                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Details of modules apprentices <u>must</u> study and achieve credit for before enrolling on a module at a higher level, or attaining their final programme award</b> |
| Construction Design & Technology 1 for Construction Technology & Design 2                                                                                               |

## 14. Additional Support Needs

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Arrangements made to accommodate apprentices with additional support needs and any unavoidable restrictions on their participation in the programme/scheme</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>In providing an inclusive and supportive learning environment apprentices with disabilities or other support needs are welcome and are expected to be able to participate fully in this programme. Arrangements will be made via the normal University support systems to accommodate apprentices with additional support needs wherever possible with reasonable adjustments made to accommodate individual needs.</p> <p>LTU is committed to providing support all quantity surveying apprentices to increase their ability to manage the academic demands of the programme through, academic study skills, critical reading and writing skills and to encourage apprentices with additional needs to capitalise on support available to them. Literacy, numeracy and digital literacy and technology skills are therefore a core theme delivered within each level of the programme to enable apprentices to meet the needs of the construction sector.</p> <p>LTU's Learning Hub has a highly skilled team of teaching and advising experts who deliver academic skills workshops across every level and every programme so that every LTU apprentice is given opportunities to maximise their learning potential. LTU's Peer Support</p> |

Champions also offer peer to peer support for apprentices and have a calendar of bespoke sessions including time management, note taking, referencing and mental health and wellbeing chats.

Disability services offer relevant access and support for apprentices with a disability to ensure they can engage with their programme. This could be accessing Dyslexia screening, appropriate accommodation, adaptations on campus, Inclusion Plans, guidance for staff, non-medical assistance (e.g., note takers in lectures), support accessing Disabled Student Allowance and one to one academic support sessions.

The Mental Health & Wellbeing Team offers apprentices a self-referral service where they will be offered an assessment by a qualified Mental Health practitioner within two weeks. This provides the opportunity to explore current needs and compare offers of support at LTU with other local NHS and Third Sector provision. Apprentices can then access Counselling, CBT and/or appointments with LTU's Wellbeing Practitioner. The service also offers the creation of Inclusion Plans, Wellbeing Workshops (learning to relax, regaining motivation, managing stress and placement worries) as well as access to a range of self-help materials, the Togetherall online wellbeing platform, exercise on prescription in conjunction with Trinity Fitness and LTU's Wellbeing Module on the VLE. Support can be offered remotely or on campus.

**5. An overview of mapping of module content /structure at each level linked to Knowledge, Skills and Behaviours (KSBs) as stipulated for the Chartered Surveying Standard - ST0331 is shown in the table below.**

The table below depicts the extent to which the KSBs for the Chartered Surveying Standard are met within the programme's module structure.



| Mapping Modules to<br>ST0331- Chartered<br>Surveying Standard<br>/ |                                                         | Knowledge (K)                                |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            | Skills (S)         |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       | Behaviours (B)             |                                  |                    |                           |                     |  |
|--------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------|-----------------------------|--------------------|------------------------------------|-----------------------|----------------|-------------------------|----------------------------|----------------------|---------------------|------------------------|----------------------------------|-----------------------------|-------------------------|--------------------------------------------|--------------------|--------------------|-------------------------|--------------------|--------------------|--------------------|--------------------------|----------------------|-----------------------|-------------------------|-----------------------|----------------------------|----------------------------------|--------------------|---------------------------|---------------------|--|
|                                                                    |                                                         | <a href="#">K1</a>                           | <a href="#">K2</a>          | <a href="#">K3</a> | <a href="#">K4</a>                 | <a href="#">K5</a>    | K6             | <a href="#">K7</a>      | <a href="#">K8</a>         | <a href="#">K9</a>   | <a href="#">K10</a> | <a href="#">K11</a>    | <a href="#">K12</a>              | <a href="#">K13</a>         | <a href="#">K14</a>     | <a href="#">K15</a>                        | <a href="#">S1</a> | <a href="#">S2</a> | <a href="#">S3</a>      | <a href="#">S4</a> | <a href="#">S5</a> | <a href="#">S6</a> | <a href="#">S7</a>       | <a href="#">S8</a>   | <a href="#">S9</a>    | <a href="#">S10</a>     | <a href="#">S11</a>   | <a href="#">B1</a>         | <a href="#">B2</a>               | <a href="#">B3</a> | <a href="#">B4</a>        | B5                  |  |
|                                                                    |                                                         | Law                                          | Information Data management | Managing Finance   | Ensure Health and safety of others | Diversity & inclusion | Sustainability | Construction Technology | Ethics and Professionalism | Client relationships | Building pathology  | Design & specification | Building contract & subcontracts | Procurement and contracts - | Costing & cost planning | Construction project control and reporting | Data management    | Health and safety  | Construction Technology | Law                | Consultancy        | Building surveys   | Prepare detailed designs | Administer contracts | Tendering/Procurement | Costing & cost planning | Manage contracts well | Offer a high service-level | Promotes trust & Professionalism | Act with integrity | Treat others with respect | Take responsibility |  |
| Year 1                                                             | Construction Technology 1 & Design                      |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Introduction to Your Professional Degree Apprenticeship |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Introduction to Measurement & Costing                   |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | The Reflective Apprenticeship                           |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
| Year 2                                                             | Construction Economics                                  |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Apprentice Portfolio Review 1                           |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Construction Technology & Design 2                      |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
| Year 3                                                             | Sustainable Buildings & Practice                        |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Procurement & Contract Admnistration                    |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Advancing your portfolio towards EPA                    |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Construction Law                                        |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
| Year 4                                                             | Project Management, ethics & Safety Control             |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Research Project (Dissertation)                         |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Advanced Measurement Project                            |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Gateway Preparations CS                                 |                                              |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    |                                                         | Gateway + Endpoint Assessment 8 to 12 months |                             |                    |                                    |                       |                |                         |                            |                      |                     |                        |                                  |                             |                         |                                            |                    |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |
|                                                                    | Key =                                                   | Level 4                                      |                             |                    |                                    |                       |                |                         |                            |                      | Level 5             |                        |                                  |                             |                         |                                            | Level 6            |                    |                         |                    |                    |                    |                          |                      |                       |                         |                       |                            |                                  |                    |                           |                     |  |