Welcome to LCB

HECDM

Leeds College of Building

INTRODUCTION

Welcome to Leeds College of Building (LCB) and the Department of Higher Education, Construction Design & Management (HECDM).

The HECDM Team specialise in BTECs, study programmes and apprenticeships in careers such as Architectural Technology, Building Services Engineering, Civil Engineering, Construction & Project Management, Quantity Surveying and many more.

The BTEC Level 3 Extended Diploma starting in September is equivalent to 3 A Levels and attracts UCAS points for progression to University. 95% of our BTEC students progress into Higher Education (degree course), full-time employment or an apprenticeship. This course will provide you with the opportunity to progress into many varied career opportunities within the construction industry.

Students are supported by our professional team of lecturers with industry experience and the wider College team to ensure you reach your full potential, with many students winning College and industry awards, such as BTEC Student of the Year.

The College has excellent links with employers from across the UK including NG Bailey, Balfour Beatty, BAM Nuttall, BAM Construct, Mott MacDonald, JN Bentley, Jacobs and Leeds City Council.

Life at LCB is so much more than sitting in a classroom, we have a friendly and relaxed environment and we want every student to enjoy their time with us. You will also have the chance to join in with sport and enrichment activities, social events, trips, work experience and much more!

This booklet will give you an insight into the kind of vocational topics you will be studying and a chance to meet some of our team. Have a look through, try the links and have a go at the activities. We will revisit the booklet during your induction in September. Also follow the links to our website and social media sites where you will find more information about life at LCB.

Congratulations on choosing an excellent career path & we look forward to meeting you in September. If you have any questions, please do contact us.

Chris Tunningley
BSc MSc IEng MIET
Assistant Faculty Director
Faculty of the Built Environment & Engineering Services
Tel: 0113 222 6000 Ext 6641
Email: ctunningley@lcb.ac.uk

www.lcb.ac.uk

MEET THE TEAM

David Hannan

Prior to graduating from college and university with an HNC Construction and BSc (Hons) Building Surveying I completed a comprehensive 5-year carpentry & joinery craft apprenticeship. 35 + years of industry experience throughout the UK followed, culminating in a 3-year period delivering levels 3 and 4 Btec qualifications to site management within central London. Sites ranged in value between 100 and 800 million pounds and included Chelsea Waterfront development, The Ned Hotel, 10 Trinity Square and others.

Rashel Akers
Lecturer of Construction Technology, Management of Construction Projects and Course Tutor for Level 3's

I have a Degree in Construction Management. I previously worked for Kier, who are a National Construction Contractor. I worked my way up through their Graduate scheme where I worked with Estimators, Buyers, Planning and Site Engineering and eventually I became a Site Manager. I have worked on numerous Projects within the Yorkshire area, on Projects such as Office Blocks, Retail Developments, Hospitals and Schools.

I left Kier to work with my husband doing Property Development converting houses into flats in the Bridlington area.

I have worked as a Lecturer at Leeds College of Building since 2007, Teaching Level 3 and HNC students. You may have seen me at your College Information Day.

Outside of College I enjoy Cycling and Swimming, I did compete in a Triathlon a few years ago with some college colleagues. During lockdown I have sat in on my son's virtual drum lessons and I have quite enjoyed learning to read music and playing the Drums. Watch out Phil Collins!!

Ahmed Hamdan

My journey in engineering started way back when I was still in high school, so you can say it's always been a fascination of mine. During my time in school I went to workshops while also attending summer placements at various companies. This ranged from electronic troubleshooting to engineering construction companies. A huge hobby of mine and at one time was a career path was aviation. I attended and graduated as a commercial pilot in 2010/11 and loved every minute of it. Unfortunately, I quickly found out that flying as a career was much harder than I had initially anticipated. I then decided to focus on engineering and specifically Civil & Structural engineering. My university days ended when I graduated from Bradford University with a MSc and worked with canal & river trust where I really focused on hydrology dealing with canals and derelict structures. My interest in teaching start at university helping fellow students. I have always enjoyed sharing my knowledge and helping others which led me to where I'm now with LCB. I look forward to meeting you in the near future.

MEET THE TEAM

Martin Crossland

Since leaving school, I have worked within various sectors including 19 years' experience in Engineering sector and overseeing Health and Safety in construction. I joined LCB in April 2016 as their Health and Safety Lecturer; I was very keen to bring my real-life industry experience into the classroom.

I work closely with Leeds City Council and Leeds Trinity University with all aspects of their health and safety on behalf of the college.

When not working, I love going to football, listening to music, going to gigs, walking and love having a beer.

Stephen Okoro

I graduated in 2000 from Westminster University as a Quantity Surveyor, completing with a final year dissertation on the "The impact of Quantity Surveyors as Project Managers in the construction industry". In my three years studying Quantity Surveying I learned the importance of financial management, budgeting and contract administration in delivering a successful construction project. In my time in industry, I worked in Facilities Management as a Contract Administrator and a Project Quantity Surveyor. In 2005, I then began to harness my knowledge and skills into Teaching in Construction & the Built Environment.

I began working in education teaching in 2005 where I began to develop an understanding of the importance of coaching and mentoring young adults on the BTEC level 3-5 programme, as well as teaching adults on the foundation degree programme. My experience from my time in the industry enhanced me as a teacher delivering units such as Quantity surveying, Tendering and Estimating, Measurement, Construction Design and Technology, Building Technology, Sustainable construction methods, Economics and Finance, Building Surveying, Project Management, Health and Safety and the construction of complex buildings to mention just a few.

Catherine Hewitt

During my 22 years' experience as an architect, I amassed a broad range of skills across all stages of design and construction, within various sectors including housing, healthcare, schools and residential master-planning. Following 6 years as a director at an award winning, design-led architecture practice, I joined LCB in April 2019, keen to bring my real-life industry experience into the classroom. I am a fervent believer in the importance of design at every stage of planning and construction and I work to embed this into my teaching. As well as being a part-time lecturer, I am also a Pilates teacher.

MEET THE TEAM

Alan Wilson

An apprentice trained wood machinist at British Rail Engineering in Doncaster, I progressed on to technical drawing based duties including the detailing and costing of proposed modifications to various types of rolling stock.

I left to attend a full time teacher-training course and during my early teaching career I developed an interest in Computer Numerically Controlled (CNC) machinery, which eventually led me to Computer Aided Design (CAD) using AutoCAD and on to Building Information Modelling (BIM) using Revit. Since then I have accumulated over 30 years' experience of training AutoCAD and over 10 years of training Revit, in both Further & Higher Education and in the private sector.

In my spare time, I enjoy combining walking the dales & lakes with landscape photography. I also have a collection of vintage and antique cameras dating back to the 1920's. I recently acquired a tenor saxophone having never played a musical instrument or read music before, as my neighbours will testify!

Ian Kennedy

Upon completion of my relative qualifications in Construction and Engineering I went on to gain some 28 years' experience in both areas, covering a range of job roles including bricklaying, surveying setting out engineer, site management. For some of this time I was in business myself building bespoke houses and industrial engineering units.

My teaching career began some 21 years ago where I was contacted by an old friend who was looking for Construction Lecturing staff asking if it were something that I would consider getting involved in. The rest is history as they say and here I am now enjoying my established role as a qualified FE & HE Lecturer. During my time in Construction Education, I have been involved in teaching a range of subjects right from the trades in bricklaying to FE and HE Technical subjects. I have previous experience in Management where my responsibilities included the organisation and staffing of the Construction and Engineering Curriculum for FE and HE areas of study.

Together with my experience in Construction, Engineering and Teaching I am also a practicing musician with some 54 years' experience in brass banding, currently I am the Principal Trombone with Hatfield and Askern Colliery Band who are a championship section Band.

UNIT 1

Construction Principles

This unit is all about understanding how and why different materials are used in construction. Whether you want to become a site manager, designer, engineer or surveyor, you will need the knowledge and skills to ensure that materials are fit for purpose and that the correct quantities and specification are ordered and used on a construction project.

Learning aims:

A Construction materials – their properties, how they are made and how they can be damaged or weakened
B Solving practical construction problems – the calculations that are needed
C Human comfort – what are the comfortable levels of temperature, sound and light?

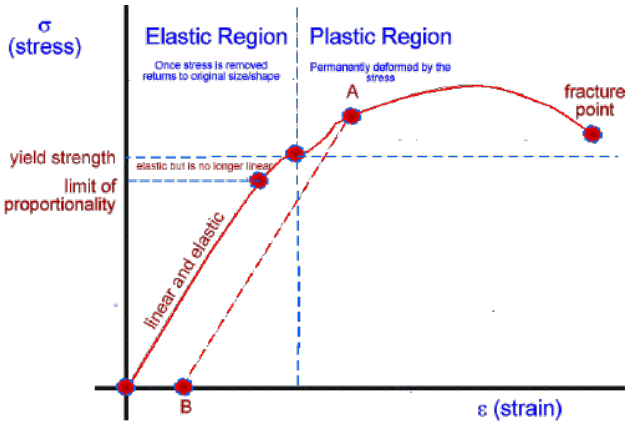



Materials

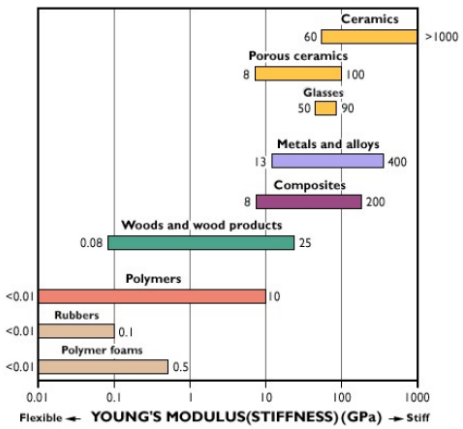
In today's ever evolving construction sector the choices of the right materials is paramount to its use. We must know the properties of the materials before making a choice. Choices are made on the following:

- Fit for purpose
- Visual Appearance
- Cost
- Resistance to degradation
- Ease of installation
- Sustainability

Material waste has long been broken down and used for foundations and sub-bases for new construction, roads and other pavements. There is now a movement towards, and encouragement for,recycling old concrete as crushed aggregate for new concrete, although there can be legitimate concerns and certainly more caution must be exercised with respect to fine aggregate. This holds true for other materials such as metals and glass along with ceramics and polymers albeit not all materials can be used for foundation; however 80% of the materials can be recycled.



Ever wondered how we find out the strength of materials?
Using a stress/strain graph while testing materials can give us an insight into how the material behaves as well as strength (Youngs modules)



Where does the carbon fiber lay within the graph?

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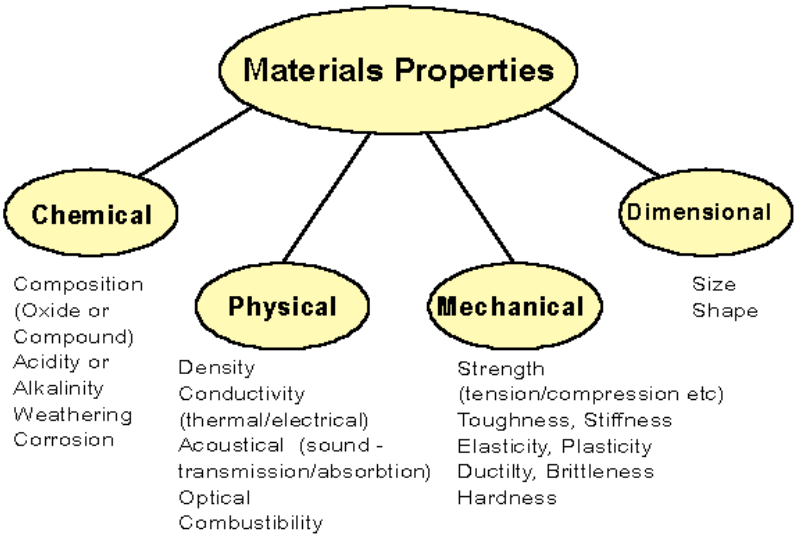
UNIT 1

Construction Principles

Materials science and engineering drives innovation in both research and industry in everything from aerospace to medicine and construction. It is fundamental to all other science and engineering disciplines.

As materials scientists and engineers, we integrate chemistry, physics, maths and biology with engineering to address global challenges relevant to technology, society and the environment, including:

- The environment and climate change
- Advanced manufacturing
- Renewable and sustainable energy
- Materials efficiency
- Healthcare
- Biotechnology
- Aerospace and transport
- Communications and information technology



Have you come across some of these terms? Look at materials around your house, which category would they fit in?

Video Links:

How is steel made?

How is glass made?

How is cement made?

How is construction wood made?

Career Paths:

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UNIT 4

Construction Technology

Learning aims:

A Understand common forms of low-rise construction
B Examine foundation design and construction
C Examine superstructure design and construction
D Examine external works associated with construction projects

Summary:

In this unit you will examine the underlying principles and construction methods used in the construction of new buildings and their associated external works.

Today's buildings can use combinations of modern and traditional techniques and materials in their construction, and this unit will give you an understanding of the technology used in the design and construction of low-rise domestic and commercial buildings.

You will examine various forms of low-rise construction and consider the most appropriate forms for differing site conditions and client requirements.

You will gain an understanding of the different types of foundation that could be used on a project and the factors that influence its selection.

You will investigate superstructure, external works design and construction, considering the most appropriate specifications and details for given scenarios.

You will gain the underlying knowledge and understanding of construction technology that supports a wide range of other units within this qualification.

A sound knowledge of construction technology is an essential aspect of many roles, including architect, site manager, project manager, quantity surveyor, planner, buyer, estimator, etc.

To gain a better understanding of the opportunities available, view the following short clips:

Building visions
https://www.youtube.com/watch?v=qQykMNCxxz0
https://www.youtube.com/watch?v=FUsNZLKH910

London Heathrow Airport Terminal 5
https://www.youtube.com/watch?v=HK0Q3Kh10Ug

What sector most appeals to you?
Having viewed the above and based just on what you understand from the film clips, tell us which type of career most appeals to you and why, for example:

1) Architecture?
2) Engineering?
3) Planning?
4) Civil Engineering?
5) Surveying?
6) Site or Project management?

It is important to understand however, that you can change direction during your study period should another career pathway become more appealing to you.

In conclusion, whichever career pathway you choose within construction, you can achieve it at LCB.

UNIT 5

Health and Safety in Construction

Interesting fact:
Safety helmets was first invented in the 1930's when America built the "Hoover Dam" Workers used to dip their hats in "TAR" and leave them to set in the sun, making them very hard. This provided basic protection from any falling materials.

The purpose of this unit is to prepare you for the world of construction and to keep you safe within the industry, to learn about Health and Safety legislation and regulations.

Learning aims
In this unit you will:

A Understand how health and safety legislation is applied to construction operations
B Carry out the development of a safe system of work for construction operations
C Understand the need for the review of safety systems for construction operations.

Before the introduction of the Health and Safety at Work Act 1974 (HASAWA 1974) hundreds of construction workers would die every year due to poor health and safety practices. However, since the introduction of the HASAWA 1974 accidents in health and safety have been reduced each year. The act has numerous regulations that covers the work activities we carry out in construction to keep us safe such as Work at Heights Regulation 2005 and Manual Handling Regulations 1992.

The most important regulation we use in construction is the Construction and Design Management 2015 (CDM Regs 2015.) We are going to learn about the CDM Regs when you begin your studies with us and how CDM Regs have helped reduce accidents on construction sites since its introduction. **Click on the link to watch a small video** explaining the purpose of the CDM Regs and answer the question.
https://www.youtube.com/watch?v=Yc5AgJkjzNY

Q: What does a Principal Contractor have to provide for their employees?

A:

When working on a construction site, there is lots of signs giving us information on what to do or not to do, signs that tell us what to wear, signs that tell us where to go in an emergency. **Click on the link below** and tell me what types of signs these are?

https://www.haspod.com/blog/construction/understanding-construction-site-safety-signs



Now look do some research on the internet and tell me what each of these signs is telling you to do?

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UNIT 5

Health and Safety in Construction

What is Workplace Safety?

Workplace safety is the safety, health and welfare of people at work. Workplace safety includes employers and employee's awareness related to the knowledge of basic safety, workplace hazards, risks relating to hazards, implementation of hazard preventions, and putting into practice necessary safer methods, techniques, process, and safety culture in the workplace.

What is a Hazard?

A hazard is the potential for anything to cause harm, e.g. electricity, chemicals, working up a ladder, noise, lifting something heavy, a bully at work, stress.

How can we try to prevent anyone being harmed?

We look at "control measures-actions we would take to prevent any harm to anyone" such as isolating the electricity, using chemicals that are less harmful, rather than working up a ladder, use scaffolding if possible, if you have to move something heavy; use a trolley instead of physically lifting.

Here is a small task to do yourself. Look at the picture below; find 5 hazards and list what control measures you would put in place to stop someone from being hurt.

What is the Hazard?	What Control Measures-Actions would you take to prevent harm to anyone?
1.	
2.	
3.	
4.	
5.	

UNIT 7

Graphical Detailing in Construction

Introduction
In this unit, you will develop knowledge and apply skills to produce graphical information by manual and computer-aided design (CAD) methods. You will:

A Understand the resources required to produce construction drawings
B Develop construction drawings for a given construction brief
C Undertake production of 2D & 3D freehand construction sketches

TASK 1: think about how important sketching and drawing are to design and construction. It is how we communicate in our industry, how we enable others to understand our designs. The ability to understand drawn information and to produce it ourselves, is an important skill for everyone, whether you are a designer, builder, QS or planner.

Watch this 12 minute video about the architect Zaha Hadid & the importance of sketching to her design process. You also get to see some of the amazing buildings she designed, a couple of which are shown below. https://henitalks.com/talks/zahahadid/#

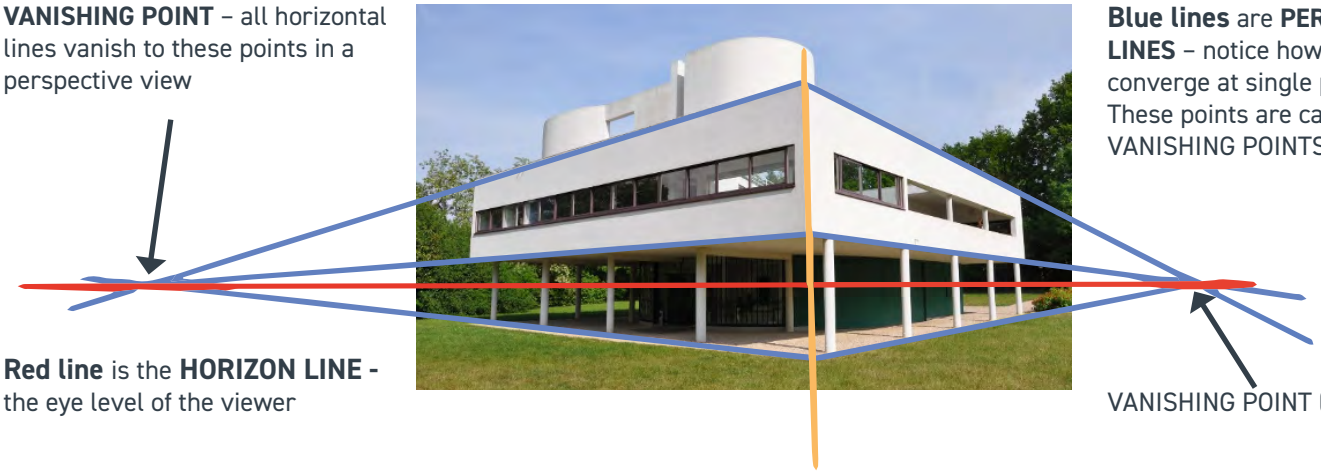

Heydar Aliyev centre, Baku, Azerbaijan.


Bridge Pavilion, Zaragoza.
Photographs: Zaha Hadid architects

TASK 2: have a go at drawing a 2-point perspective sketch by hand.

- Start by watching a step by step guide on YouTube, such as: https://www.youtube.com/watch?v=1Fcbk_K5qWA or https://www.youtube.com/watch?v=vyeZbyEvZ28
- Choose a picture of a building which you admire to work from (tip – rectangular shapes are easiest to draw). EG Villa Savoye, designed by Le Corbusier, below

VANISHING POINT – all horizontal lines vanish to these points in a perspective view



Blue lines are **PERSPECTIVE LINES** – notice how they all converge at single points. These points are called VANISHING POINTS (VP)

Red line is the **HORIZON LINE** - the eye level of the viewer

VANISHING POINT (VP)

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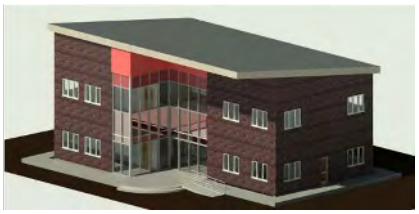
UNIT 7

Graphical Detailing (CAD)

From surveying land with drones to manufacturing a door handle with computer-controlled machinery, technology plays a vital role in modern construction. We explore a range of technology as part of the graphical detailing unit.

Computer Aided Design (CAD)
2D CAD – working drawings of various aspects of a project showing how it is constructed and how everything fits together.



3D CAD – 3D Modelling of a structure in order to visualise its form throughout the design, construction and in-use phases of its life. Once the design is finalised, 2D drawings are taken from the model and enhanced to show construction detail.

Building Information Modelling (BIM)

3D models can be used for more than just visualisation. Elements within the model can contain information (the i in BIM) for example;

- The model contains data on the materials used, so it can be exported and analysed to give an indication of heating, cooling and lighting requirements. Changes are then be made to make it more efficient and therefore cheaper to run.
- A light fitting can contain details of the type of bulb used so that when the building is in operational, and the owner needs a replacement, selecting the light on the 3D model shown on a tablet or smart phone will pop up this information to start the process of ordering and fitting a new one. See the process in practice **here**.

Virtual Reality (VR)

The ability to transport yourself into a 3D Design in real time and full size to check for errors or see what the finished product will look like using a head set and hand-held controllers – **this example** uses the same system that we have in college.

Augmented Reality

Combining 3D models with live views to visualise and interact with a design.

Task 1: Have a look at these 5 uses of Augmented reality:

Task 2: Have a go by downloading this app

Scan QR Code

Download on the App Store

ANDROID APP ON Google play

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UNIT 9

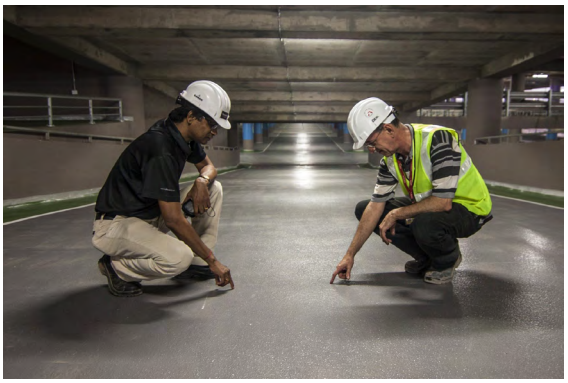
Management of Construction Project.

Introduction
Learners gain an understanding of management principles and their application to the construction industry.

You will:

A Understand the principles and application of management in construction.
B Understand purchasing and cost management techniques.
C Develop a programme of activities for construction works.

This is a Good insight into the many Careers available within the Construction Industry and this also relates to Unit 9 – Management of Construction Projects – Roles.



- **An introduction to the Construction Industry;**
- **How does the Construction Industry work;**
- **What Careers are available in the Construction Industry;**
- **Would a career in Construction suit me?**
- **What are people earning in Construction;**
- **More info about the Construction Industry & Careers.**

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UNIT 10

Building Surveying In Construction

Introduction
In this unit you will learn how to carry out building surveys, identify defects and record findings in a format suitable for a range of end users. You will gain a good understanding of building defects, their causes, and remedies available. You will learn how to undertake a measured survey of an existing property to produce scale plans and elevations of the building. You will:

A Understand the impact of the methods used to construct existing buildings and discuss the current and future maintenance requirements.
B Explore different defects and methods of repair for low rise residential properties.
C Undertake a building survey of a low-rise residential property.

Building Surveying Activity:

Below is a typical semi-detached property perhaps like the one you live in, consider the maintenance that would need to be carried out on such a property. Talk to your parents and ask for their advice and guidance, then attempt the exercise to produce either a small well set out table or a written report with your answers.

Task 1: List six items, internal or external on your house that require regular maintenance & the time intervals and the recommended maintenance that would be required for your chosen items.

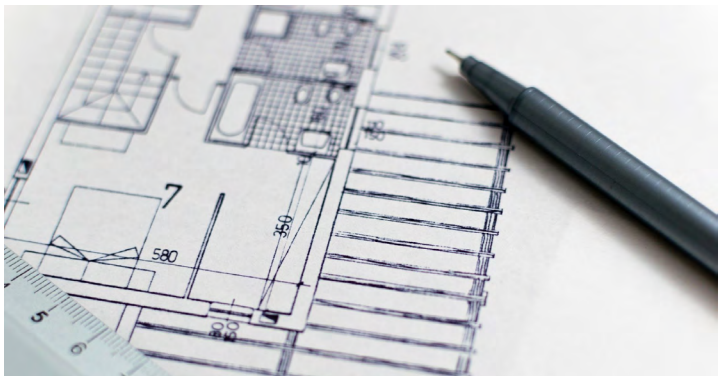
Task 2: Name three maintenance-free construction materials that you may find on your property

UNIT 19

Quantity Surveying

Introduction
The financial management of construction projects has to be closely monitored to ensure that projects meet the financial needs of both the client and the contractor. The client needs the project to be completed within budget and the contractor needs to maximise return on the project.

Key Words:
Bill of Quantities, Take-off, Tendering, Estimating, Cost budgets, Measurement, Contracts, Valuations. Variations, Final accounts



In this unit, you will gain an understanding of the role of a quantity surveyor and the differences when working for a client and a main contractor. You will learn about the financial management of contracts, including the preparation of valuations and the administration of variations, through to the preparation of the final account. You will also learn about the management of cash flow in an organisation, including valuations and payments to subcontractors, suppliers and manufacturers. You will complete a final account for a given project.

This unit will support you in progressing to a higher-level construction programme, such as the Higher National in Construction (with the quantity surveying pathway), or to a general construction or quantity surveying degree. It also supports progression to the workplace as a technician, or direct entry as an assistant quantity surveyor with a construction company. In this unit you will:

A Understand the functions of a quantity surveyor
B Undertake the production of bills of quantities for a project
C Undertake the production of a final account for a project.

Task 1:
Explain the role of the professional quantity surveyor

Task 2:
Explain the role of the contractor's quantity surveyor

TELL US A BIT ABOUT YOURSELF

How do you turn the spotlight on yourself? We all approach decision-making in different ways, and this can be influenced by various factors, such as our personality, how those around us make decisions, how confident we feel, how independent we are, the pressure we're feeling, and the extent we feel destiny plays a part in life. Whichever is important to you, here are some steps you can take to help discover what's important to you and your future.

Activity 1: Where are you now?

This is a good starting point – it's about you, so think carefully about it and note down your thoughts or ideas.

- What are your interests?
  (this could be hobbies, activities, or subjects).

- What are your skills?
  (the sorts of things you're good at - use obvious skills such as working with numbers, as well as softer skills such as being a good listener).

- What do you value?
  (the things that are important to you, both in your social and study life. For example, family, work, socialising, personal interests, being active, money, structure, flexibility).

- What motivates you?
  (the things you're enthusiastic about or encourage you to take action and get involved).

- No idea at all?
  Then have a go at the **UCAS Buzz Quiz** – jot down what you're like or what you could do.

Activity 2: Where do you want to get to?

You may have a clear picture of what you want to do next, or what career you're aiming for, or you may feel you haven't got a clue and don't know where to start. Chances are, you're somewhere in between, so what ideas do you have?

- **Are there any jobs or career areas you're interested in?**
  Find **career ideas** and **explore jobs** as there are a huge variety of roles out there, many of which you might never have thought of.

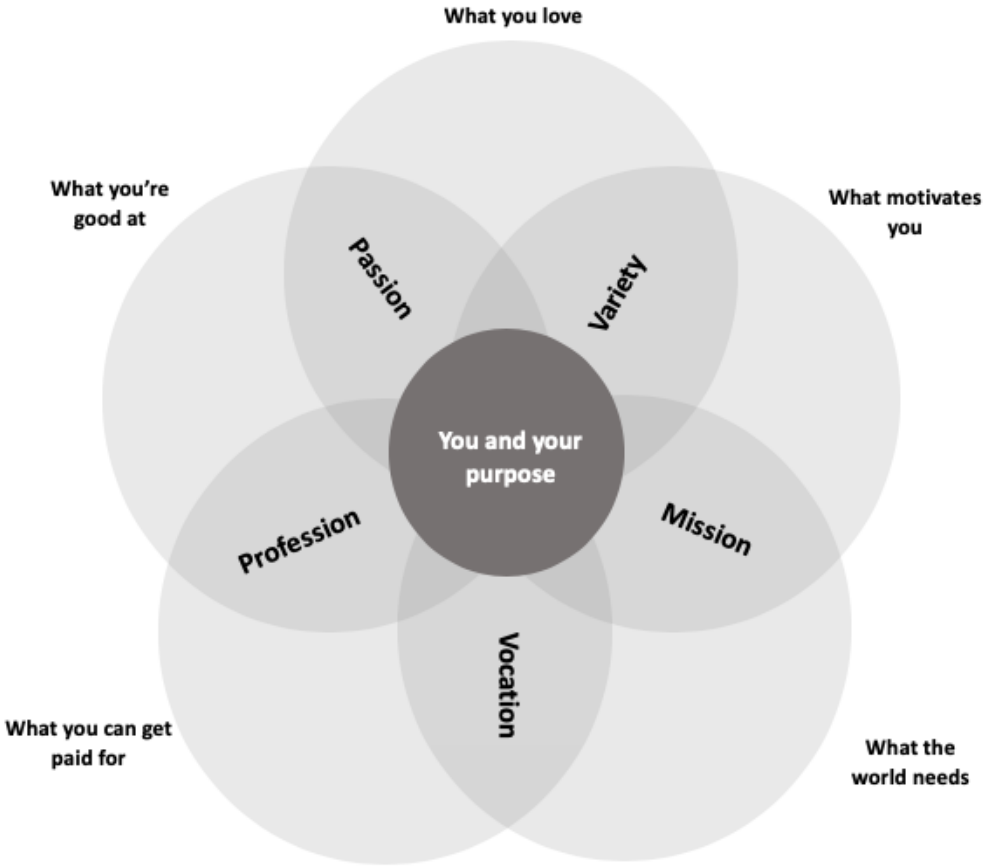
- **Are there subjects you love or ones you wish you could study?**

- **Do you have hobbies or interests you'd like to take further?**

Activity 3: What matters to you most in life?

A Flower Venn diagram – to help you blossom!
Corny? Yes... but don't dismiss it straight away – it's a great way to figure out what matters to you most and where that fits. Finding the perfect balanced lifestyle is key to a happy and successful future.

Using what you've thought about so far, draw and fill in the five outer circles below.



Prompts:

Circle one: What you're good at
Be specific and don't think too hard. Use obvious skills such as working with numbers, as well as softer skills such as being a good listener.

Circle two: What you love
This one is simple – the things that make you happy.

Circle three: What motivates you?
Consider what matters to you most in life – family, work, socialising, personal interests, being active, money, structure, flexibility?

Circle four: What the world needs
Think about how you fit into the bigger picture, and whether 'making a difference' in a wider sense is important to you.

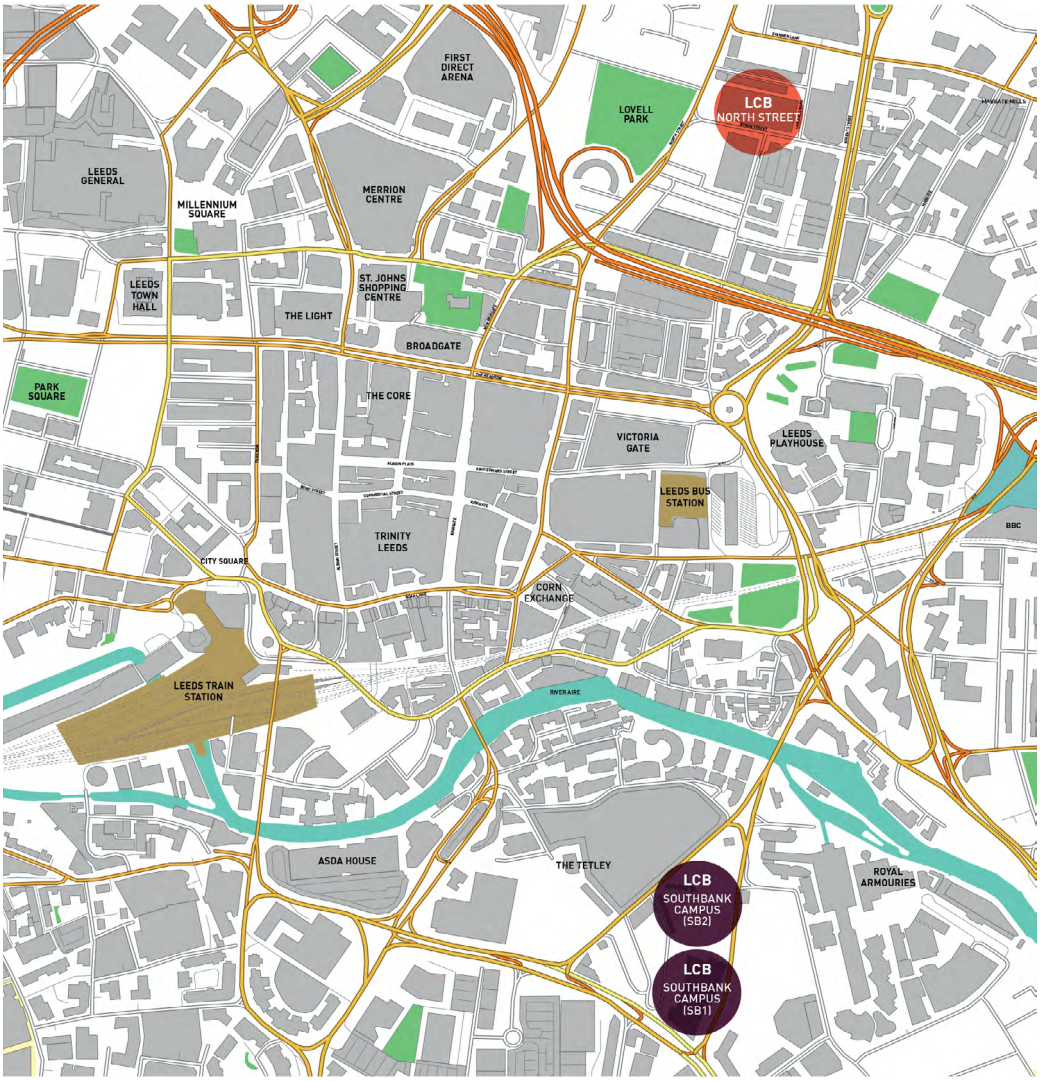
Circle five: What you can get paid for
Write as many ideas as you can...

COLLEGE CONTACTS

The HECDM, Apprenticeship and Student Services Teams are available at any time if you want to speak to them. For further information on starting at the College click here: www.lcb.ac.uk/student-life/starting-at-lcb/

You can contact them on:

Apprenticeship Team:	**0113 222 6023**
HECDM Team:	**0113 222 6015**
Student Services Team:	**0113 222 6002**



North Street Campus
0113 222 6000
North Street
Leeds
LS2 7QT

South Bank Campus (SB1 & SB2)
0113 222 6003
Cudbear Street
Leeds
LS10 1EF
(Sat Nav LS10 1HD)