Welcome to LCB

Electrical

Leeds College of Building

INTRODUCTION

Welcome to Leeds College of Building (LCB) and the Department of Sustainable Building Services

The Sustainable Building Services Team specialise in study programmes and apprenticeships in careers such as Plumbing, Gas, Electrical & Heating and Ventilation.

Our study programme courses are designed to prepare you for the world of work and encourage progression into full-time employment, an apprenticeship or higher education. Students are supported by our experienced team of lecturers and the wider College team to ensure you reach your full potential, with many students competing in regional and national competitions.

The College has excellent links with employers from across the UK including NG Bailey, SES, Leeds City Council, Engie and Mears, Wakefield District Housing, Kirklees Neighbourhood Housing and Kingston Works Limited.

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.

You can also visit our website and follow our social media pages 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.

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MEET THE TEAM

Ed Hodgson - Curriculum Manager

I started my journey in this industry as a 17 year old at Albert Innes Ltd, one of the oldest electrical companies in Leeds. I worked there for 10 years completing my apprenticeship and working on mainly commercial buildings. I then moved to one of the oldest electrical firms in the country Allenby & Stokell and was introduced to domestic work as well. From there I saw an advert to come and apply for Leeds College of Building! Luckily I got the job as a learning facilitator and never looked back. I've been here 13 years and worked my way up to this position but I started right where you are now.

Chris Bentley – Lecturer

I started my career in the electrical industry as an apprentice with S&R Electrical working mainly on the industrial side of electrical installation. After completing my time at S&R I moved around several contractors working on multiple types of installation including domestic, commercial and more industrial work. After this I managed shop-fits for high street chains including KFC, Costa and Starbucks. Finally, I moved into traffic signal maintenance before pursuing a career in teaching. My hobbies include rugby league, boxing and travelling.

Jake Hardcastle – Lecturer

I began my career in the electrical industry at the age of 17 as an apprentice with Gough & Kelly in Bramley, Leeds, where I worked in mainly the commercial and domestic side of electrical installation and maintenance as well as specialising in fire alarm systems. After 8 years at Gough & Kelly, I left to start my teaching career at Leeds College of Building in 2018. In my spare time I enjoy weight training and I am also a keen Mixed Martial Arts fan and even travelled to New York to watch Nate Diaz!

MEET THE TEAM

Anthony Dunning – Lecturer

I joined the College in 2006 after being made redundant from a manufacturing company where I had worked as a maintenance engineer for 10 years, I previously worked in construction starting out labouring and went on to become a qualified stonemason. After an economic downturn in construction, I moved into building maintenance which led to machine maintenance and on to gaining my electrical qualifications. During my working life I have worked on industrial, commercial, and domestic, for large medium and small companies.

Steve Precious - Lecturer

I have over 15 years' experience in the construction industry, starting out as a labourer during my holidays at university. After realising I enjoyed working in the industry, I decided to retrain as an electrician, whilst working for a company called C & G Electrical. Since then I have worked for various companies, as well as working self employed. I have also worked in Australia and New Zealand before returning to the UK when I began to work as an installation engineer for ADT. I have been working as a lecturer for LCB for over 3 years. My hobbies include running, playing rugby and watching live music.

Phillip Walker – Lecturer

I started my career in the industry as an electrical maintenance apprentice with Dawsons, a local company who specialised in making canning and bottling lines that were exported around the world. One of the duties included installing and commissioning the lines which took me to some wonderful places including Nigeria, Singapore, Malaysia and throughout Europe. I moved from there to join Kirklees Council Building Services where I worked on multiple types of installation including domestic and commercial. Finally I moved into teaching working at Kirklees College before moving to Leeds. My hobbies include Marathon running, triathlons, road cycling, mountain biking, golf and supporting Leeds Utd.

INTRODUCTION

201: Health & Safety

Health and Safety in Construction is a key section that you will learn constantly **learn**, **practice** and **improve** throughout the course. This is to **ensure your own safety** and the **safety of others.**

It goes without saying that every job comes with its own level of **risk**, but the construction industry is certainly one of the more hazardous workplaces.

Thankfully, many of its associated risks can be avoided with effective **Health & Safety knowledge!**

Complete the activities below to introduce yourself to Health & Safety

Activity 1: Spot the Hazard
A hazard is 'Something that has the potential to cause harm' and a building site needs to follow strict health and safety instructions to try and minimize the number of Hazards.

How many Hazards can you spot and circle in the picture below?

Could anything be done on this construction site to avoid these Hazards?

Write your thoughts below:

Remember: On a building site, workers **MUST** report any hazards that they find, so it is important to always stay alert!

Activity 2: Controlling Hazards
Look back at the Hazard spotting picture.
What injuries could have occurred to a worker on this site?

You can prevent accidents on site by wearing the correct **Personal Protective Equipment (PPE)** for the job.

Activity 3:
Give a brief explanation for each item of PPE shown below.
Explain what it is and what injuries or accidents wearing it could prevent.

Activity 4: Safety Signs
Safety signs are also used to control hazards. They inform workers on how to stay safe, pass on information and warn people of potential dangers.

There are 4 different types of signs, research the colour and shape of each of the following types of sign:

PROHIBITION:

MANDATORY:

WARNING:

INFORMATION:

Activity 5: What are the following signs for?
(Remember to write down weather they are prohibition, mandatory, warning or information)

Activity 6: Acronym activity
Acronyms are abbreviations formed from the first letter of each word. They are frequently used across construction and you will come learn numerous acronyms throughout the course.

Some of these will be specific to **health and safety in construction;** others will be specific to electrical.

It is important to become familiar with these and **understand** what they mean.

Use the website below to help identify the following acronyms within Construction.

Construction Acronyms - https://www.hse.gov.uk/acronym/index.htm#a

COSHH:

HASAWA:

HSE:

PUWER:

PTFE:

LPG:

RIDDOR:

202: Electrical Principles

It is important for electricians to understand the basic scientific principles of electricity. One of the fundamental laws of physics that is relevant to electrical work is Ohm's Law and it is extremely important that you understand it clearly.

Ohm's Law describes the relationship between voltage, current and resistance in an electrical circuit. It is the basis for the majority of work you will do regarding electrical principles and is inherent in every electrical system.

Here are some activities to help you **understand** and **describe** Ohm's Law.

Try watching this video for some information that will help you.

Ohm's Law: https://www.youtube.com/watch?v=HXOok3mfMLM

Activity 1: Definitions and understanding

As we have already established Ohm's Law is the fundamental calculation that is the foundation of electrical principles. Let's find out your level of understanding!

Can you **list** and **define** the three components of Ohms Law?

1.

2.

3.

Can you **list** the SI unit and symbol for each of these components?

1.

2.

3.

Activity 2: Basic calculations

Now that we know what Ohm's Law defines and how it works, lets do some basic calculations to see how the different values react relatively to each other and how we can use the law to predict values when we only have two of the values. Don't forget to shown your working out and use the correct symbols!

1. If we have a current of 10A and resistance of 10Ω what is the voltage?

2. If we have a voltage of 240V and a resistance of 24Ω what is the current?

3. If we have a voltage of 110V and a current of 5A what is the resistance?

Activity 3: Type of current flow
There are two types of current flow to be found in an electrical circuit. Understanding this concept is vital to gaining the knowledge required to predict how electricity will behave in simple to complex electrical systems. This activity will help build your knowledge and help you get into the flow of electrical understanding.

For this activity you will need to **define** both types of current flow and **explain** the differences between them in no more than 100 words. You might find it easier to write two paragraphs or list them using bullet points. Write your answer below.

203: Installation technology

The principles of electricity that you learn will be put to use in a more practical sense in this section as you will learn the theory behind electrical installation. Regulations, types of cable and containment, earthing systems and protective devices are some of the topics we will cover. It is extremely important as an electrician to not only be able to install electrical systems but also how to install them safely and to the standards set out in the most recent wiring regulations.

The activities in this section will further your knowledge in cable types, earthing and protective devices. By the end of these activities you will **understand** the reasons that electrical systems are installed in a particular way.

These videos will help you with the activities:

https://www.youtube.com/watch?v=CCzT6QyadMY

https://www.youtube.com/watch?v=i220iHyWeUg

https://www.youtube.com/watch?v=rijmYhVeUNs

Activity 1: PVC cable
Answer the following questions on PVC/PVC twin and earth cable, there's quite a few but the answers shouldn't be longer than a sentence each.

1. What sort of installation would PVC/PVC twin and earth be used in?

2. What different electrical accessories can it feed?

3. There are two layers of PVC in PVC/PVC twin and earth cable, what are they used for?

4. What do the letters CPC stand for and what colour sleeving do we put on it?

5. What is the colour of the line and the neutral conductor?

Activity 2: Earthing types

Earthing is vital for electrical safety and as an electrician you will need to be able to distinguish between different earthing arrangements. You are going to start by **identifying** the type in your own home! Make sure you have watched the video above and then go locate your electrical consumer unit and incomer and identify your earthing arrangement. Do not touch anything and ask for help when you do this. It's best to just take a photo and then compare it to the earthing arrangements. Write your answer below.

Activity 3: Protective devices.

Protecting the cables that we install is probably the most important part of ensuring a system is electrically safe. To begin with a simple **identification** task will help you to be able to tell what protective device you use. Look at the pictures and write the BS number, name of device and current rating in the box next to it.

204: Practical electrical installation

As an electrician working with tools and resistant materials will be the mainstay of your working life. The majority of your time you will be working manually with your hands and it is important that you understand the tools that you will be using and how to use them safely so that you can work in the industry.

The following activity will give you some insight and knowledge into some of the tools you will be using and help you to **understand** how and why to use them correctly.

This video will give you an idea of some of the tools an electrician uses: **https://www.youtube.com/watch?v=oG0hwrol7dc**

Activity 1: Identify the tools

It sounds like a simple requirement but being able to **identify** what tools you will need to use really is an essential foundation to begin training as an electrician. In this task you'll need to name the tools shown in the pictures and **describe** their use and some of the hazards that could occur if used incorrectly.

211: Communications
When we work as an electrician we work as part of a broader team and amongst other trades in order to achieve a task that can often be complex and require cooperation and high level planning and professionalism from all involved.

First and foremost we need to know who the other trades on site are and roughly what they all do. This task will help you learn who's who and what they do on site.

Describe what these trades do below.

JOINER:

PLUMBER:

PLASTERER:

BRICKLAYER:

GAS-FITTER:

COLLEGE CONTACTS

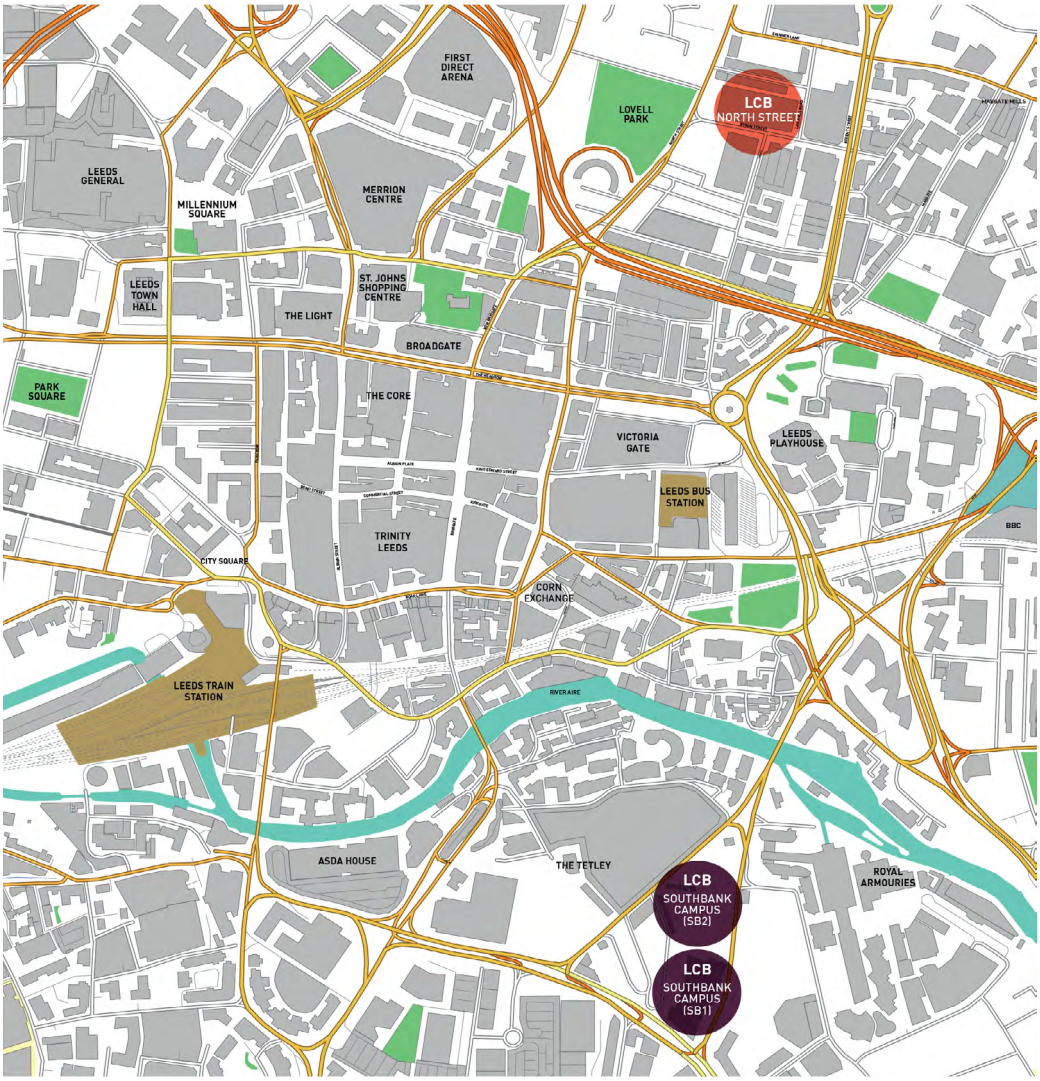
The Sustainable Building Services, Apprenticeship and Student Services Teams are available at any time if you want to speak to them.
For further information on starting at the College click here: www.lcb.ac.uk/student-life/starting-at-lcb/

You can contact them on:

Apprenticeship Team: **0113 222 6023**

SBS Team: **0113 222 6015**

Student Services Team: **0113 222 6002**



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