

## Level 4 HNC in Electrical/Electronic Engineering



This programme provides students with a specialist work-related framework that covers all the key knowledge, understanding and practical skills required to work and progress in the electrical and electronic engineering sector. Furthermore, you will develop a working knowledge of how electricity is generated, transmitted and used to process and store information. Throughout the studies, learners will undertake eight units including, but not limited to, Electrical and Electronic Principles, Electrical Systems Fault Finding, Electronic Circuits and Devices, and Engineering Management.

### What does the course include?

The successful completion of this HNC course will open many doors for you. Here are a few of the options:

- Progression to a Level 5 HND in Electrical/Electronic Engineering (2 years)
- Apply for the following job roles within industry:
  - Electrical Design Engineer
  - Electrical Maintenance Engineer
  - Junior Operations Test Engineer
  - System Engineer

### Where can this course lead?

#### Can't wait to get started? Here are some places to get you on your way:

- **Video:** What is Electrical Engineering?  
<https://www.youtube.com/watch?v=6cEkZ-0uFPw>
- **Book:** Electrical Engineering (know it all)  
<http://index-of.co.uk/Mathematics/Electrical%20Engineering%20know%20it%20all.pdf>
- **Article:** Reasons to Study Electrical Engineering  
<https://engineering-jobs.theiet.org/article/here-s-why-you-should-work-in-electrical-engineering/>

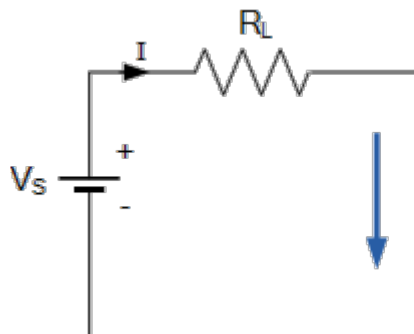
Have a go!

## Activity – Ohm’s Law

Have you ever wondered what happens when you flip a switch to turn on a light, TV, vacuum cleaner or computer? What does flipping that switch accomplish? In all these cases, you are helping complete an electric circuit, which in turn allows a current, or flow of electrons, through the wires.

An electric circuit is in many ways similar to your circulatory system. Your blood vessels, arteries, veins and capillaries are like the wires in a circuit. The blood vessels carry the flow of blood through your body. The wires in a circuit carry the electric current to various parts of an electrical or electronic system.

In practice, there are many types of electrical circuits as well as theorems to model their behaviour and parameters. For this activity, we will consider the simple network indicated below. This is a direct current (D.C.) circuit with a resistor in series with the voltage supply. The blue arrow inside the loop indicates the direction of the current, which by convention, always flows from the positive to the negative end of the battery.



### Problems:

1. If the resistor ( $R_L$ ) had a value of  $500 \Omega$ , and the voltage ( $V$ ) supplied was  $240 \text{ V}$ , what will be the magnitude of the current ( $I$ ) flowing through the circuit? Use the following equation obtained from Ohm’s Law:

$$V = I \times R$$

2. Using the current ( $I$ ) from **part 1**, calculate the power ( $P$ ) dissipated by a  $1 \text{ k}\Omega$  resistor. Use the following equation:

$$P = I^2 \times R$$