Become a building services engineer

…and create greener, smarter buildings for the future

A guide for AS and A-level students

WHAT IS BUILDING SERVICES ENGINEERING?

Around half of the energy used in the UK goes into buildings to keep their heating, lighting and other services running. Our buildings have a massive impact on the environment, accounting for almost half of damaging carbon emissions.

Building services engineers are playing a key part in tackling climate change by reducing energy and water use in schools, hospitals, offices and other buildings. They design buildings so that the people inside don't get too hot, too cold or waste precious natural resources. They do all the detailed planning to enable environmental technologies to be incorporated into buildings, like solar panels to generate green energy and computer systems that automatically close blinds or turn down the central heating. These building services all keep a building working as efficiently and sustainably as possible, and ensure people are safe and comfortable.

Building services engineering is a broad field, covering areas including:

- Energy use and technologies
- Heating, ventilation and air conditioning
- Daylight and artificial lighting
- Escalators and lifts
- Water, drainage and plumbing
- Building façades
- Communications technology
- Protective systems – for fire, security and other risks.

Realise your potential

By becoming a building services engineer, you'll have the chance to develop a range of skills and pursue many different career opportunities. At the same time, you'll be making a difference to the way people live and work in buildings, and tackling climate change.

Building services engineers generally work as part of teams delivering projects for clients, which may be major industries or businesses, local authorities or school or hospital trusts. As construction is a global industry, it is common for building services engineers to work UK-wide and overseas.

The industry has many career paths, progressing through such roles as project engineer to senior manager, director or partner – or you may want to establish your own business. Building services engineering offers you the chance to pursue your career goals.

Typical salary levels per year

Salaries correct at 2022

The working life of a building services engineer

The work of a building services engineer may typically include:

Scoping out a new building project with its architects

Solving engineering problems using latest design, modelling and visualisation software

Presentations to clients

Guiding or managing an installation team on site

Managing the operation and maintenance of building services in a completed facility

Site visits to see how designs are working in practice

Gemma Taylor
Energy, environment, engineering and carbon lead

Career path: Studied a BTEC in architecture, civil engineering and surveying, then a BEng in architecture and environmental engineering.

> People spend over 80% of their lives indoors, and building services engineering has a direct positive impact on that experience. The link between architecture and the environment is extremely exciting and has a direct influence over sustainability and climate change and how we transition to a net zero world.

Tom Hopton
Digital building consultant, associate director

Career path: Began his career as a building services technician. While working, he was sponsored by his employer to study and gained an HNC, HND and a degree in building services.

> I love my job, it's so rich with opportunity to have an impact and so rewarding working with such a diverse range of people unified to creating a better-built environment.

Jagannatha Reddy
Power engineer

Career path: Completed a BTEC in electrical and electronics engineering and Master of technology in power electronics.

> I am passionate about making a difference through innovation and technology. I always add a digital touch to engineering to help with calculating cost, carbon and lifecycle.

Clare Wildfire
Director

Career path: Studied mathematics at university before going into consultancy and is now a director at a global engineering and management consultancy.

> In today's world, where sustainability and energy saving are so important, the work we do is of increasing importance within the built environment.

Going to university

An engineering degree is the typical starting point for a career in building services engineering. The basic entry requirements for a course will include good A-level grades in mathematics and physics.

If you have relevant work experience alongside good A-levels, you may be able to apply to an employer to become a degree apprentice, enabling you to attend university part-time and earn while you learn.

Degree courses are typically three to five years in duration, with the main study options being:

Bachelor of Engineering - BEng/BEng (Hons)
- Three-year course providing full-time learning
- Four-year sandwich course, giving students the chance to take up a placement working in industry for a year.

Master of Engineering – MEng/MEng (Hons)
- Four-year course of full-time learning
- Five-year sandwich course, incorporating a year-long work placement in industry.

Relevant course titles, and content, may vary and cover such areas as:
- Building services engineering
- Mechanical engineering
- Electrical engineering
- Architectural engineering
- Environmental engineering.

If you opt for a BEng and want to become an Incorporated Engineer, you can apply for early registration. If you want to become a Chartered Engineer, you can enter a graduate trainee scheme with an employer and continue your studies on a part-time basis. Graduate trainee schemes are offered by many organisations, including major construction firms, multi-disciplinary consultancies and dedicated building services consultancies.

What to expect from a degree course
Degree courses use a variety of learning approaches, including lectures, laboratory work, one-to-one tutorials and design studios, where students may work together in teams to solve real-world engineering problems. Students are likely to be using advanced design and modelling software.

There could also be the opportunity to use technologies such as thermal imaging cameras, which highlight the heat loss from buildings, or 3D printing to produce building components. Study visits to building sites or exchange visits overseas could also be part of your course.

Making your application – and preparing for the interview

Making your application

Attending college or university open days is a good way to find out about your options and explore teaching approaches and facilities. You'll be able to quiz tutors about the course and find out first hand from students about the experience of university life.

As courses vary in content and practical experience, it pays to do your research before you make your application. Look at the focus and strengths of available courses, and think about your own abilities and interests to find the best fit for you.

Some points to think about:

- Do you want to study full-time – or do you want a work placement in industry?
- Would you rather work on your own or in teams?
- How much teaching time does the course offer?
- How many hours of work outside of formal teaching time does the course involve?
- What links does the course have with industry? Links can take many forms, from guest lecturers and site visits to business-led projects
- What flexibility is there in the course?
- Does the university have engineering societies or engineering-related groups for students?

Preparing an application gives you the opportunity to think about your interests, skills and why you want to take your chosen course.

When writing your personal statement, make sure that you include any experience or interests that could be relevant to your studies. You may have volunteered or undertaken work experience with an environmental, energy saving or building-related charity or local group for a school project, or completed a Duke of Edinburgh Award.

If you are going for an interview at a prospective university, it pays to give some thought to the subject you are applying for and the reasons why you want to study it.

How studies lead to qualification and career

Set your career on track for success

The Chartered Institution of Building Services Engineers (CIBSE) is the professional body for building services engineers and recognises some degree courses. By following a CIBSE accredited course you may gain a head start in your career and in working towards CIBSE membership and ultimately, Chartered Engineer status. Incorporated and Chartered Engineer status are a demonstration of competence and are recognised by employers in the UK and overseas, and help you to progress your career.

A relevant BEng/BEng (Hons) university degree is the benchmark qualification if you want to gain Incorporated Engineer status. CIBSE provides recognition at Associate Membership level (IEng ACIBSE) or Member level (IEng MCIBSE).

The degree meets part of the academic requirement to become a Chartered Engineer, so if you follow this route, you'll need to undertake further study to Masters level. You should be able to do this on a part-time basis while at work, through an employer's graduate training scheme.

A MEng/MEng (Hons) degree meets the academic requirements to become a Chartered Engineer.

CIBSE's website features a list of the courses that it accredits. Find the list here:

cibse.org/membership/accredited-courses/list-of-accredited-courses/accredited-for-ceng

CIBSE by numbers

21,000

Members of the Chartered Institution of Building Services Engineers

96

Countries around the world where CIBSE members can be found

19

Knowledge sharing groups that CIBSE hosts for members or non-members. They include the Young Energy Performance Group

Want to know more?

Chartered Institution of Building Services Engineers

The Chartered Institution of Building Services Engineers (CIBSE) is the professional body for building services engineers. CIBSE approves courses and work-based training programmes, providing routes to professional registration and membership. It is a global network, providing professional support to building services engineers, and sets the criteria for best practice in the profession.

cibse.org

CIBSE Young Engineers Network (YEN)

The CIBSE Young Engineers Network (YEN) is a network of regional centres aimed at young professionals. There are no costs or strings attached to membership, and you don't have to be a CIBSE member to join – although you can begin your CIBSE membership as a Student Affiliate. CIBSE YEN has its own LinkedIn networking group, while its regional centres organise a range of activities including technical tours and social events. CIBSE YEN has regional centres across the UK as well as overseas.

cibse.org/yen

Women in Building Services Engineering (WiBSE)

CIBSE's WiBSE network has been established to support and encourage women who are joining, working and progressing in the building services sector. Membership is free, and you don't have to be a CIBSE member to join. The network is open to men and women.

cibse.org/Wibse

CIBSE Societies and Special Interest Groups

If you already know which branch of building services engineering is of particular interest, check out the various networks, groups and societies on our website, for instance the Society of Digital Engineering, Society of Light and Lighting or School Design Group.

cibse.org

To find out more visit cibse.org/careers

CIBSE