Descriptive Content for Courses Page

# BTEC Level 2 Firsts Certificate in IT

This course is ideal if you wish to further develop your skills in information and creative technologies. You will study a range of information and communications technology (ICT) applications including website design, online world and app design and the technology systems that support them.

You'll learn how to design and create databases, edit computer-generated images and develop websites, video and other assets.

# Overview

More than 1.5 million people are working within the digital sector, or in digital technology roles in the UK today. The number of digital technology jobs across the UK has grown at more than twice the rate of non-digital technology sectors.

This BTEC First Extended Certificate gives learners the opportunity to gain a broad knowledge and understanding of and develop skills in the information technology sector and some aspects of the creative industries.

<https://www.sccb.ac.uk/courses/computing-digital-it/599-level-2/6512-information-and-creative-technology-btec-first-extended-certificate>

## What are the entry requirements?

Students will be considered depending upon experience, qualifications and an interview. You will probably have one of the following:

A BTEC Introductory Diploma in IT, plus at least GCSE English Language at grade 3 or above/Level 2 Functional Skill equivalent and a maths qualification at Level 1 or above OR 4 GCSEs at grade 3-2 and above. We will look at each candidate and assess your suitability if you don't quite fit in with the crieteria or have studied abroad etc.

You will also need a desire and passion to learn and a genuine interest in progressing onto a career in IT and computing.

## Where can I progress to next?

Successful completion will allow you to move on to a Level 3 qualification, or consider employment in areas involving the use of IT.

## What areas will I study?

### Core/Mandatory units

* The online world
* Technology systems
* A digital portfolio

### Optional Units

* Creating digital animation
* Creating digital graphics
* Spreadsheet development
* Database development
* Website development \*Network development

Additionally, it will be possible to take one or more GCSEs.

# BTEC Level 3 Extended Diploma in IT

# Overview

If you have a logical mind and a drive to make a contribution to the sector, this is the right course for you. Assessment is a combination of coursework and exams making this course a robust academic route into university and the industry.

In the first year, you will study the core subjects of programming, mobile and desktop app development in industry standard languages such as C# and Python. You will also build a website using client side languages such as HTML5, CSS3 and JavaScript.

Other subjects include computer systems, cyber security and social media. The second year will allow you consolidate your knowledge by means of software engineering and project development examinations followed by games development and computer networking.

You could have the opportunity to take part in national competitions, go on trips to the Space Centre, Computer Museum and BBC. There are also opportunities to take part in work placements in Ireland and further abroad.

Due to the current COVID-19 situation and with health and safety of our students as a priority, we have redesigned this course to include a mixture of classroom-based and online learning.

## What areas will I study?

### Year 1 units include:

* Principles of computer science (mandatory)
* Fundamentals of computer systems (mandatory)
* IT systems security and encryption (mandatory)
* Business applications of social media (mandatory)
* Computer games development
* Website development
* Mobile apps development
* Systems analysis and design

### Year 2 units include some of the above, as well as:

* Planning and management of computing projects (mandatory)
* Software design and development project (mandatory)
* Systems analysis and design
* Computer games development
* Human-computer interaction
* Digital graphics and animation
* The impact of computing

## What are the entry requirements?

Typically you will have 5 GCSEs at Grade 4/C or above including GCSE Grade 4/C or above in maths and English language. BTEC First Diploma for IT Practitioners (Merit) or an equivalent IT qualification is desirable. Some experience and knowledge of programming languages is desirable.

If you do not have any IT or Computing qualifications, you will be required to successfully complete an IT test at enrolment. All students will also be required to attend and satisfactorily complete a formal induction period.

## Where can I progress to next?

Many former students have progressed on to university courses such as Computer Science, Games Development, Software Development and Cyber Security. The opportunity to study at university or at South and City College on our HND and degree top-up programmes has proved popular.

Some learners have secured careers in the technology industry as programmers, analysts, web developers and technical analysts. Other learners have gone on to work in visual effects and the digital animation industry and some are working as technical analysts.

The qualification supports entry to a variety of relevant Higher Education courses such as:

* BSc (Hons) in Computer Science
* BSc (Hons) in Forensic Computing
* BSc (Hons) in Games Design/Development

# AS & A-Level Computer Science

## Overview

A Level pathways are designed to prepare you for higher education and beyond.

This course will enable learners to develop a broad range of skills in the areas of programming, system development, computer architecture, data, communication and applications.

In 2018 100% of Computer Science students passed this course.

## Course description

You will be expected to take this subject alongside another two A Levels. Computer Science goes well with subjects such as maths, physics and business. You will also be expected to complete a work placement as part of your programme of study. Study skills and employability skills will be developed with the help of your personal tutor.

## What areas will I study?

### Year 1 AS Specification:

Key Areas AS Specification (Year 1)

* Programming – imperative procedural-oriented, OOP, recursive techniques
* Data structures – arrays, lists, dictionaries, hash tables, queue, graph, tree, stack, vector, fields, records, files (text & binary).
* Systematic approach to problem solving – skills needed for Paper 1 and NEA (Year 2 Project)
* Theory of computation – abstraction, automation, FSM with and without output, language hierarchy, complexity, Turing machines
* Data representation – number systems/bases, information coding systems, encryption
* Computer systems – logic gates, Boolean algebra, program translator types, classification of programming languages, system software
* Computer organisation and architecture – machine code/assembly language, CPU, internal components of computer, external hardware devices (limited range)
* Consequences of uses of computing – software and their algorithms embed moral & cultural values, issue of scale brings potential for great good but also ability to cause great harm, challenges facing legislators
* Communication and networking – communication methods/basics, network topology, wireless, the Internet, TCP/IP, CRUD applications and REST, JSON, JavaScript

### Year 2 A Level Specification:

* Programming – imperative procedural-oriented, OOP, recursive techniques
* Data structures – arrays, lists, dictionaries, hash tables, queue, graph, tree, stack, vector, fields, records, files (text & binary)
* Algorithms – traversal, search, sort, optimisation
* Theory of computation – abstraction, automation, FSM with and without output, language hierarchy, complexity, Turing machines
* Data representation – number systems/bases, information coding systems, encryption
* Computer systems – logic gates, Boolean algebra, program translator types, classification of programming languages, system software
* Computer organisation and architecture – machine code/assembly language, CPU, internal components of computer, external hardware devices (limited range)
* Consequences of uses of computing – software and their algorithms embed moral & cultural values, issue of scale brings potential for great good but also ability to cause great harm, challenges facing legislators
* Communication and networking – communication methods/basics, network topology, wireless, the Internet, TCP/IP, CRUD applications and REST, JSON, JavaScript
* Databases – data modelling, relational database, SQL, client server databases
* Big Data – volume/velocity/variety, fact-based model, distributed processing and functional programming
* Fundamentals of functional programming – function type, first-class object, function application, partial function application, composition of functions, map, filter, reduce, lists
* Systematic approach to problem solving – skills needed for Paper 1 and NEA
* NEA - The computing practical project Key Areas A Level Specification (Year 2)
  1. Programming – imperative procedural-oriented, OOP, recursive techniques
  2. Data structures – arrays, lists, dictionaries, hash tables, queue, graph, tree, stack, vector, fields, records, files (text & binary).
  3. Algorithms – traversal, search, sort, optimisation
  4. Theory of computation – abstraction, automation, FSM with and without output, language hierarchy, complexity, Turing machines
  5. Data representation – number systems/bases, information coding systems, encryption
  6. Computer systems – logic gates, Boolean algebra, program translator types, classification of programming languages, system software
  7. Computer organisation and architecture – machine code/assembly language, CPU, internal components of computer, external hardware devices (limited range)
  8. Consequences of uses of computing – software and their algorithms embed moral & cultural values, issue of scale brings potential for great good but also ability to cause great harm, challenges facing legislators
  9. Communication and networking – communication methods/basics, network topology, wireless, the Internet, TCP/IP, CRUD applications and REST, JSON, JavaScript
  10. Databases – data modelling, relational database, SQL, client server databases
  11. Big Data – volume/velocity/variety, fact-based model, distributed processing and functional programming
  12. Fundamentals of functional programming – function type, first-class object, function application, partial function application, composition of functions, map, filter, reduce, lists
  13. Systematic approach to problem solving – skills needed for Paper 1 and NEA
  14. NEA - The computing practical project

## What are the entry requirements?

You will need 5 GCSEs in curriculum subjects at grades 4 or above, to include maths at grade 5 or above.

## Where can I progress to next?

On successful completion of your AS in Computer Science, you can progress onto A2 Computer Science which qualifies for UCAS points. This means on successful completion you could move onto a degree or BTEC Higher National Diploma in related subjects such as ICT, Computer Science, Information Systems, Software Engineering, Computer Networking, e-Business and Information Management.

You could also go onto work-based training such as IT User/Practitioner NVQs or vendor-specific qualifications.

# Here are some things to think about when choosing your courses:

* **Choose subjects you’re good at:**

Studying your strongest subjects will give you the best chance of achieving your possible highest grades. You’ll be more motivated by your success and find the work easier to keep up with. It’s better to have a CV of strong grades than to choose more ‘impressive’ subjects but achieve lower grades. Realistically, you need to consider your GCSE grades and assess whether or not you’ll be able to cope with the different demands of each subject. For example, do your strengths lie within exams or coursework? Are you an academic or creative person?

* **Choose subjects you enjoy:**

Studying subjects you’re passionate about will make you much more likely to achieve your highest potential. You’ll have a better overall college experience if you genuinely love learning about your subjects and arrive at College each day eager to learn. As the saying goes, if you enjoy what you do, you’ll never have to work a day! It’s also important to choose the subjects *you*want to study – don’t feel pressured by others or choose a course just because your friend has, you’ll make plenty more friends in class.

* **Attend our open events:**

We have an Open Day in October and Open Evenings in November and January. Come along and speak to teachers and current students about the subjects you’re interested in, to ensure you make an informed choice and understand more about what the courses involve. Open events are a great opportunity to chat to like minded people and find out which subjects compliment each other. Pupils in Year 10 and 11 are also invited to our Taster Days in June, where we run sample sessions for each subject.

* **Consider your plans for the future:**

Think about what you want to do after College. Whether you are aiming for a Higher Education course or moving straight into a career; check the entry requirements and any specific subjects you may need to study to achieve your aims. For example, many Engineering courses require Science and Maths A Levels, or if you plan to study Art at university you’ll need a portfolio of work to show. If you have an idea of the career you’d like in the future but aren’t sure how to get there, we can advise you on the best subject combinations to start from. You can also speak to our Careers Adviser who can explain the future options that come with studying each subject.

# References

<https://www.sccb.ac.uk/courses/computing-digital-it/598-level-3/7141-computer-science-a-level>

<https://www.sccb.ac.uk/courses/computing-digital-it/598-level-3/6544-it-extended-diploma-level-3>

<https://www.sccb.ac.uk/courses/computing-digital-it/599-level-2/6512-information-and-creative-technology-btec-first-extended-certificate>

<https://www.jcc.ac.uk/choosing-courses/>