



# Key Stage 5

## Qualification Descriptions

### Engineering Pathway

When selecting the engineering pathway you can choose to study a single qualification alongside other A Levels, or you can complete a full time qualification that would give you a qualification with the same weight as three A Levels.

#### Single Qualification

You will be studying the Pearson BTEC Level 3 National Extended Certificate in Engineering.

##### Year 12 Units

- Unit 1 Engineering Principles – 2 hour exam
- Unit 10 Computer Aided Design in Engineering – internally assessed coursework

##### Year 13 Units

- Unit 2 Delivery of Engineering Processes Safely as a Team – internally assessed coursework
- Unit 3 Engineering Product Design and Manufacture – two part exam

### Triple Qualification

You will be studying the Pearson BTEC Level 3 National Extended Diploma in Engineering.

##### Year 12 Units

- Unit 1 Engineering Principles – 2 hour exam
- Unit 2 Delivery of Engineering Processes Safely as a Team – internally assessed
- Unit 3 Engineering Product Design and Manufacture – two part exam
- Unit 4 Applied Commercial and Quality Principles in Engineering – internally assessed coursework
- Unit 10 Computer Aided Design in Engineering – internally assessed coursework
- Three other optional units

##### Year 13 Units

- Unit 5 A Specialist Engineering Project – internally assessed coursework
- Unit 6 Microcontroller Systems for Engineers – 12 hour practical exam
- Unit 7 Calculus to Solve Engineering Problems – internally assessed coursework
- Four other optional units

### Digital Pathway

When selecting the digital pathway you can choose to study a single qualification alongside other A Levels, or you can complete a full time qualification that would give you a qualification with the same

weight as three A Levels. Each unit will have a focus on cyber security embedded in it to give you a firm understanding of the practical and academic application of cyber security techniques.

### Single Qualification

You will be studying the Cambridge Technical Introductory Diploma in IT, completing 5 units including:

- Global information
- Cyber security
- Virtual and augmented reality

### Triple Qualification

You will be studying the Cambridge Technical Extended Diploma in IT, completing 17 units including:

- Fundamentals of IT
- Global information
- Cyber security
- Computer networks
- Virtual and augmented reality
- Internet of Everything
- IT technical support
- Enterprise computing

## A Level Mathematics and Core Maths

At SGS Berkeley Green UTC our Mathematics curriculum has the following aims:

- To encourage students to think independently and be confident when dealing with numbers and data.
- To enable students to apply their knowledge and skills to solve real world problems, as well as abstract questions, using mathematical reasoning and proof.
- To promote the use of mathematics in other areas of the curriculum and demonstrate to students the career opportunities available with a mathematics qualification.

In Year 12 and 13 we will offer AS and A2 Maths and Further Maths as well as Core Maths to cater to all those who wish to pursue this amazing subject. For the AS and A2 programmes both will run over 2 years with all formal examinations at the end of Year 13. In Year 12 all students on these pathways will study the full AS programme and the decision of who continues to A2 will be made at the end of Year 12 with guidance from academic achievement as well as student and family opinions. The course we follow is the Edexcel Maths course and all textbooks and additional materials are accessed online through the Active Learn platform.

For the Core Maths students all students will be following the Maths in Context course from Edexcel/Pearson. Students will be required to access material from both GCSE and A-level courses and so to this end will be able to use both Kerboodle and Active Learn. They will also receive a copy of the Maths in Context Project book to annotate during the course. All examinations will take place at the end of Year 13 and will consist of 2 papers, with grades being awarded between A and E.

## A Level Chemistry

### What is it?

At SGS Berkeley Green UTC we are studying the AQA A Level Chemistry course (code 7405).

Chemistry is involved in everything around us - from the making of new materials, to understanding biological systems, from the medicines which keep us healthy, to the quality of the water we drink and the air that we breathe.

This specification provides numerous opportunities to use practical experiences to link theory to reality and it will equip students with the essential practical skills that they need. Students will be able to access the digital AQA textbook and many additional resources using Kerboodle.

### How is it assessed?

The course is taught over two years and candidates sit three written examinations in the summer of the second year.

### What will it cover?

The course consists of three main areas of study in the first year;

- Physical Chemistry, including atomic structure, bonding, energetics, kinetics, equilibria and redox.
- Inorganic Chemistry, including periodicity, groups 2 and 7.
- Organic Chemistry, including alkanes, alkenes, halogenoalkanes, alcohols and organic analysis.

These fundamental ideas are then built upon in the second year of study.

Practical work is carried out throughout the course using a range of apparatus and techniques.

Questions may be set on these practical activities within the written exams.

## A Level Physics

### What is it?

At the UTC you will study the OCR Physics B (Advancing Physics) course -code H557

The Advancing Physics course enables candidates to learn both about fundamental physical concepts and about physics in everyday and technological settings. The course shows how physics is practised and used today. It also shows the usefulness of the subject, and illustrates the kind of impact which discoveries in physics have had on the way we live.

### How is it assessed?

The course is taught over two years and candidates sit three written examinations in the summer of the second year.

### What will it cover?

In the course students will study the subject in a range of different contexts, conveying the excitement of contemporary physics. Candidates will learn about fundamental physical concepts and about physics in everyday and technological settings. Practical skills are developed and learners are expected to carry out practical work. In the first year, topics such as Imaging and Signalling, Sensing and Materials are studied. We will also compare waves and quantum behaviour and gain a basic understanding of mechanics.

# A Level Computer Science

## What is it?

Computer Science is a practical subject where learners can apply the academic principles learned in the classroom to real world systems. It is an intensely creative subject that combines invention and excitement, and can look at the natural world through a digital prism. OCR's A Level in Computer Science will value computational thinking, helping learners to develop the skills to solve problems, design systems and understand the power and limits of human and machine intelligence.

## How is it assessed?

There are three units for this qualification. Units 1 and 2 are both external exams and will last 2 hours 30 minutes each and making up 40% of the overall grade each. The programming project is a coursework based assessment and will make up 20% of the final grade.

## What will it cover?

### *Unit 1*

In unit 1 you will study the following:

- The characteristics of contemporary processors, input, output and storage devices
- Software and software development
- Exchanging data
- Data types, data structures and algorithms
- Legal, moral, cultural and ethical issues

### *Unit 2*

In unit 1 you will study the following:

- Elements of computational thinking
- Problem solving and programming
- Algorithms to solve problems and standard algorithms

### *Unit 3*

In this unit you will plan, produce, test and evaluate a program of your choice. This can be done in any almost any programming language.