Level 3 Certificate in Mathematical Studies (Core Maths)
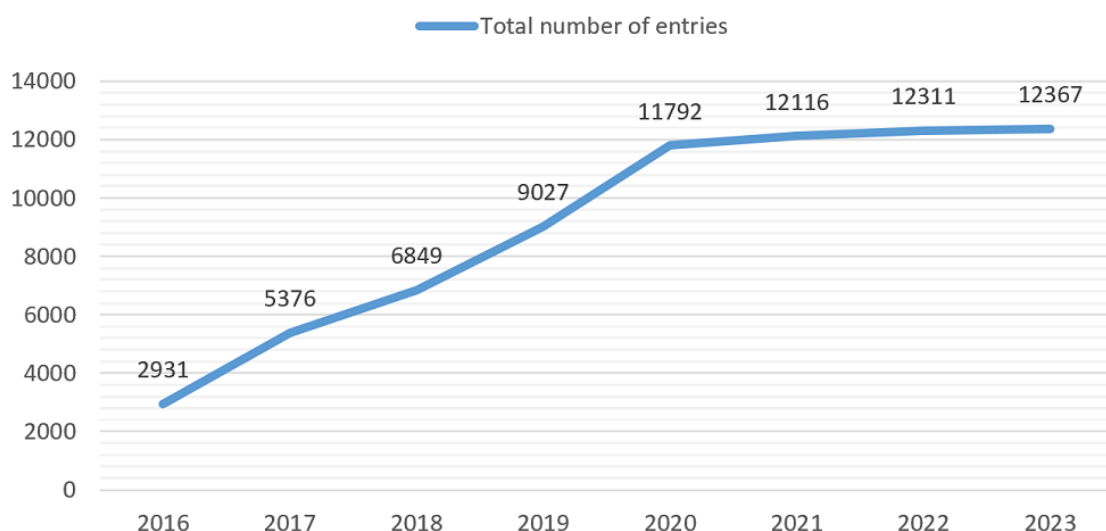
Why Core Maths?

Core Maths develops your ability to solve real world problems and keeps your maths skills up to date. It covers the kind of maths you'll meet in other subjects, future careers and day-to-day life.

Core Maths gives students a better understanding of the maths students will meet in other subjects - particularly biology, geography and psychology - and of the maths needed to navigate the world.

Core Maths runs on three lessons a week over one year - the exams are taken in May of Year 12. This means that students can fully concentrate on their other subjects during Year 13.

Core Maths is growing in popularity – more schools and colleges are offering it and more students want the opportunity to take it (see graph from AMSP below…)

Some universities have shown their recognition of Core Maths, by giving **reduced offers** for admissions to some of their degree courses. These universities recognise the benefits students gain from studying Core Maths, which will not only support their university studies, but also their future careers and employment.

In class you may be directed to websites such as **QUIBANS** (Questions Inspired By A News Story), a blog site with lots of news items that can be used to provoke mathematical questions, and **What's Going On in This Graph?** featuring graphs, maps and charts from The NY Times. You will be encouraged to analyse these critically. You should develop an awareness of how data can be presented in different ways and how this can influence readers. You will also learn useful financial skills and information, such as how savings and mortgages work and the world of tax. You will use lots of skills from GCSE Mathematics, but in new contexts and with more application to real life scenarios.

Course Overview

- **Exam Board** – AQA
- **Usual Age Range** – 16-18
- **Qualification** – Equivalent to ½ A-Level
- **Curriculum Time** – Three 50-minute lessons per week covered over 1 year
- **Assessment** – this curriculum is assessed via 2x 90-minute exams including pre-released material and is composed of core content in paper 1 and one of three options for paper 2. At the UTC students will study Paper 2c Graphical Techniques
- **Grading** – A*, A, B, C, D, E, U
- **Full specification** - https://filestore.aqa.org.uk/resources/mathematics/specifications/AQA-1350-SP-2014.PDF

Curriculum Intent

The Level 3 Certificate in Mathematical Studies is an exciting subject which links mathematics to the real world, including personal finance. Students will develop their reasoning and inference skills as well as the ability to analyse, interpret and present data. They will be asked to complete 'mini projects' which allows the theoretical content studied in class to meet real life scenarios. The problem solving skills acquired on this course are transferable across many other subjects and real life scenarios, making this course a sought after qualification from both employers and further education institutions. Mathematics is, inherently, a sequential subject. There is a progression of material through all levels at which the subject is studied. It is assumed that students will already have confidence and competence with the content in the GCSE mathematics specification as set out in this assumed knowledge booklet from AQA. Students will make use of elements of this content when addressing problems within this Level 3 Certificate in Mathematical Studies specification but this is not explicitly set out in subject content. The Level 3 Certificate in Mathematical Studies specification builds upon the knowledge, understanding and skills established in GCSE mathematics.

Our mathematics curriculum will give students the opportunity to:

- Become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- Can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and preserving in seeking solutions.
- Communicate, justify, argue and prove using mathematical vocabulary.

All lessons are placed on Google Classroom, enabling students to go back over topics for revision. Students are encouraged to think about how the mathematical concepts delivered in the classroom relate to careers and the real world.

Preliminary materials are released ahead of the examination in order for students to become familiar with the data beforehand and explore potential scenarios that may be examined.

Suggested next step destinations after completion include: Pathways into degree courses with a distinct mathematical or statistical element – this includes courses like Psychology where students might not initially make the link with Mathematics.

Almost all future career paths will require a certain level of mathematics, be they in technology, health care or industry. Employers value the many 'soft' skills that mathematics builds up – such as problem solving, critical thinking and numerical awareness.

Study Tips

Students will benefit from additional study using the following resources:

- The AMSP has lots of resources and information about Core Maths, including why you should study it! - https://amsp.org.uk/teachers/core-maths/resources

- When you sign up for the course, you will be given access to the Core Maths Platform which includes revision materials and interactive resources

- The Core Maths Collection is a relatively new but useful site including revision resources, calculator guides, and a Frequently Asked Questions section

- Padlet - https://padlet.com/catherine_vansaarloos/getting-started-with-core-maths-oqxxornqk1rzmphy
- You may need to use other sites to revise GCSE concepts:

- Sparx Maths - https://www.sparxmaths.uk/ (school login required)

- CorbettMaths – https://corbettmaths.com
- Kerboodle - https://www.kerboodle.com/users/login (school login required)
- MyMaths – https://mymaths.co.uk (school login required)
- Exam Solutions - https://www.examsolutions.net/
- Practice Assessments and papers - https://www.aqa.org.uk/subjects/mathematics/level-three/mathematics-1350/assessment-resources

Core Maths

The learning in Core Maths is structured as follows.

Half term 1
Recap GCSE content
Introduction to Spreadsheets
Types of Data & Collecting Data
Calculations & Percentages
Fermi Estimation
Representing Data Numerically & Diagrammatically

Half term 2
Interest rates
Equation of a line and graphical methods
Sampling
Shape - perimeter, area, circumference, Pythagoras' theorem, similarity

Half term 3
Find solutions to financial problems
Critical analysis e.g. data used in political campaigns and marketing
Shape - surface area and similarity
Graphical representations of financial contexts
Credit and repayments e.g. APR & student loans
Rates of change

Half term 4
Limits of accuracy
Taxation including Value Added Tax
Exponential functions
Taxation - Income Tax and National Insurance
Preliminary materials released - mini projects

Half term 5
Revision and Examination