GCSE Physics

# Course Overview

* **Exam Board** – AQA
* **Usual Age Range** – 14 to 16
* **Qualification** – One GCSE
* **Curriculum Time** – Three 50-minute lessons per week in class plus work in Independent Learning Time
* **Assessment** – Two 1-hour-45-minute examinations taken at the end of the two-year course
* **Grading** – Reformed Liner GCSE Scale of 9, 8, 7, 6, 5, 4, 3, 2, 1. UTC students taking Foundation Tier examinations will be awarded within the range of 1 to 5. UTC students taking Higher Tier examinations will be awarded within the range of 4 to 9.
* **Full specification** - <https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF>

# Curriculum Intent

The **intent** of GCSE Physics is to give UTC students an opportunity to develop a broad understanding of the content within the following four fundamental areas that are further split into topics and to be able to apply this understanding to explain physical phenomena:

* Energy and energy resources
* Particles at work
* Forces in action
* Waves, electromagnetism and space

At the UTC we specifically intend students to appreciate the subject’s relevance to the world of work, in particular healthcare science. Healthcare science **careers** are explicitly taught within relevant topics in the GCSE Physics sequence of learning. Students will also have direct first-hand experience of our healthcare science partners through project days and other aspects of UTC life such as our extensive UTC extra programme or via our assessed non-GCSE technical healthcare science curriculum. A variety of careers outside this specialism are also taught in appropriate topics in GCSE Physics so students have an appreciation of how physics relates to the wider world of work so they can make an informed choice to the career they would like to pursue.

A further intent is to motivate all students to pursue further study in physics beyond GCSE, irrespective of prior attainment. All students are motivated through the study of separate science GCSE Physics; commonly known as a triple science, as GCSE Physics is available at Higher Tier and Foundation Tier at this UTC.

Suggested **destinations** after completion of this course include progression onto a level 3 course at the UTC such as A-level Physics along with the other related A-level sciences of A-level Biology and A-level Chemistry. For students who would benefit from another year on a science specific level 2 course before moving onto a level 3 course at the UTC, the GCSE Combined Science Synergy is an excellent choice. Therefore, all students with a passion for physics can continue their study in our sixth form.

Throughout GCSE Physics students are encouraged to develop their **literacy skills**. Students are regularly exposed to reading material in class and extended writing activities such as experimental write ups. Extended response questions allow students to demonstrate their ability to construct and develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured. Through the explicit teaching of specific physics key words as each topic is taught students demonstrate their understanding of a growing chemistry vocabulary as topics are taught through carefully designed written tasks, as well as verbally through questioning techniques used by their teacher. This **love of reading** is further developed by both non-fiction and fiction physics related titles that have been carefully selected by their physics teachers that are available to borrow in our Learning Resource Centre.

The following five fundamental **numeracy** threads running through all three GCSE sciences are taught via the context of GCSE Physics in collaboration with our mathematics specialists. These are reinforced further albeit through a complementary subject in GCSE Biology and GCSE Chemistry:

* Arithmetic and numerical computation
* Handling data
* Algebra
* Graphs
* Geometry and trigonometry

For example, in GCSE Physics UTC students may draw and analyse a straight-line graph of the temperature against work done in the specific heat capacity practical. Whilst in GCSE Biology students may draw and analyse a straight-line graph of the change in mass against concentration of sugar solution in the osmosis practical. Students in GCSE Chemistry may draw and analyse a straight-line graph of total volume of sodium hydroxide added against mean maximum temperature in the temperature changes practical. Higher Tier students will also be taught how to complete multi-step calculations and calculate the speed from a graph using a tangent. Our students are well prepared in physics numeracy as 30% of the marks in GCSE Physics examinations now requires such a skill.

The students at our UTC experience more that the ten required practical activities that the examination board requires. All students benefit from a combination of a hands-on approach and written work. Students are well prepared for further study and careers with a practical and procedural component. Students are engaged in physics because they have this opportunity.

# Study Tips

Students will benefit from additional study on-site using the:

* Oxford University Press Revision Guides and Textbooks provided by the UTC

Students will benefit from additional study off-site using the:

* Oxford University Press Student Kerboodle Login provided by the UTC

Students should use the following websites:

* Free Science Lessons – <https://www.freesciencelessons.co.uk>
* AQA Practice Papers - <https://www.aqa.org.uk/subjects/science/gcse/physics-8463/assessment-resources?f.Resource+type%7C6=Question+papers>

Students may choose to use the following additional websites:

* GCSE Pod – <https://www.gcsepod.com>
* Seneca – <https://senecalearning.com/en-GB/>

# Curriculum Overview

The learning in GCSE Physics is sequenced as follows.

*Note: the full Curriculum Plans are available on request to* *info@nefuturesutc.co.uk*

**Key Units**

**Year 10:**

**Year 11:**