GCSE Combined Science Synergy

# Course Overview

* **Exam Board** – AQA
* **Usual Age Range** – 16 to 17
* **Qualification** – Two GCSEs
* **Curriculum Time** – Five 50-minute lessons per week in class plus work in Independent Learning Time over one academic year in Year 12.
* **Assessment** – Four 1-hour-45-minute examinations taken at the end of the two-year course. Two papers will assess Life and Environmental Sciences and the other two will assess the Physical Sciences.
* **Grading** – Reformed seventeen-point liner GCSE scale of 9-9, 9-8, 8-8, 8-7, 7-7, 7-6, 6-6, 6-5, 5-5, 5-4, 4-4, 4-3, 3-3, 3-2, 2-2, 2-1, 1-1. UTC students taking Foundation Tier examinations will be awarded within the range of 1-1 to 5-5. UTC students taking Higher Tier examinations will be awarded within the range of 4-4 to 9-9.
* **Full specification** - <https://filestore.aqa.org.uk/resources/science/specifications/AQA-8465-SP-2016.PDF>

# Curriculum Intent

The **intent** of GCSE Combined Science Synergy is to give UTC students an opportunity to develop a broad understanding of the content within the following eight fundamental areas that are further split into twenty-four topics:

Life and Environmental Sciences:

* Building blocks
* Transport over larger distances
* Interactions with the environment
* Explaining change

Physical Sciences:

* Building blocks for understanding
* Interactions over small and large distances
* Movement and interaction
* Guiding Spaceship Earth towards a sustainable future

Students would have met much of the underlying content albeit at a lower level during key stage four. However, this course is instead structured into the two main sections of Life and Environmental Sciences and Physical Sciences. Each of which contains connections between areas of biology, physics and chemistry that sit together. The learning is enriched by teaching that draws on a synergy of different areas that can be naturally linked. At key stage five the maturer students benefit from this as they appreciate these applications to the real world they have experienced and are closer to their career where this synergy of scientific ideas must be put into practice.

At the UTC we specifically intend students to appreciate science’s relevance to the world of work, in particular healthcare science. Healthcare science **careers** are explicitly taught within relevant topics in this 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. A variety of careers outside this specialism are also taught in appropriate topics in this course so students have an appreciation of how science 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 science beyond this course. Suggested **destinations** after completion of this course include progression onto a level 3 course at the UTC such as the Medical Science Diploma.

Throughout the course 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 biology key words as each topic is taught students demonstrate their understanding of a growing scientific 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 science related titles that have been carefully selected by their teachers that are available to borrow in our Learning Resource Centre.

The following five fundamental **numeracy** threads run through both Life and environmental sciences and Physical Sciences:

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

For example, in Life and environmental sciences UTC students may draw and analyse a straight-line graph of the change in mass against concentration of sugar solution in the osmosis practical. Whilst in Physical Sciences students may also draw and analyse a straight-line graph but of the temperature against work done in the specific heat capacity practical. Higher Tier students will also be taught how to complete multi-step calculations. Our students are well prepared in scientific numeracy as 20% of the marks in the examinations now requires such a skill.

# Study Tips

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

* Oxford University Press Revision Textbooks provided by the UTC

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* 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/combined-science-synergy-8465/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 Combined Science Synergy is sequenced as follows.

*Note: the full Curriculum Plans are available on request to* [*info@nefuturesutc.co.uk*](mailto:info@nefuturesutc.co.uk)

**Life and Environmental Sciences**

**Physical Sciences**