



## AQA GCSE Separate Science

Course code: GCSE Biology 8416, Chemistry 8462 and Physics 8463.

### Aims:

- To teach students a love of science through a variety of engaging, creative and motivational lessons by teaching both project based learning and stand-alone science lessons, providing opportunities for a hands on application of knowledge and skills.
- To use big ideas and mastery goals to equip all of the students for the future, providing students with the ability to connect concepts, ensuring that they can see the world analytically, explain phenomena and make predications
- To ensure that all students will gain the knowledge and practical skills to obtain appropriate GCSE grades, enabling them to become successful in science beyond GCSE.

### Content:

In Year 10 and 11 students will have 8 science lessons per week. Our curriculum is based on the AQA KS4 Separate Science Curriculum in which students will achieve 3 GCSE grades in Biology, Chemistry and Physics. This route is specifically designed for students who wish to be challenged further in science. This course covers all of the content explored in the combined science route, with additional lessons embedded within. In both years, we re-explore and develop a range of modules that students have been introduced to in year 7, 8 and 9, splitting these into the distinct disciplines of Biology, Chemistry and Physics. Students will be given the opportunity to explore their ideas and questions, follow the evidence from results and question everything. Students are taught using a variety of theoretical and practical based learning.

### Curriculum Map

Year	Curriculum Overview	Assessment
Year 10	Additional Content includes the production of antibodies in fighting disease, looking in depth at the eye and the brain, alternative fuels, Nuclear fusion and fusion reactions, radiation	Formal Exam style assessments, knowledge recall and creative extended learning pieces and retrieval quizzes in lessons.
Year 11	Additional content includes exploring cloning and sustainable food production, the use of fertilisers, how microphones work and a study of space.	Formal Exam style assessments, knowledge recall and creative extended learning pieces and retrieval quizzes in lessons.

### Assessment:

This qualification is linear, meaning that all students will sit all their exams at the end of the course. There are six papers: two Biology, two Chemistry and two Physics. Each paper will assess knowledge and understanding from distinct topic areas. Each paper is 1 hour and 45 minutes in length, consists of 100 marks and has a range of multiple choice, structured, closed short answer and open response questions. Each paper accounts for 50% of the Biology, chemistry or Physics GCSE. Students will achieve 3 Grades.

- Biology topics 1–4: Cell Biology; Organisation; Infection and response; and Bioenergetics.
- Biology topics 5–7: Homeostasis and response; Inheritance, variation and evolution; and Ecology.
- Chemistry Topics 1–5: Atomic structure and the periodic table; Bonding, structure, and the properties of matter; Quantitative chemistry, Chemical changes; and Energy changes.



- Chemistry Topics 6–10: The rate and extent of chemical change; Organic chemistry; Chemical analysis, Chemistry of the atmosphere; and Using resources.
- Physics Topics 1-4: Energy; Electricity; Particle model of matter; and Atomic structure.
- Physics Topics 5-8: Forces; Waves; Magnetism and electromagnetism; and Space physics.

There is also a practical aspect to the course with the practical assessment being designed to support and consolidate scientific concepts, develop investigative skills and build and master practical skills. Questions in the written exams will draw on the knowledge and understanding students have gained by carrying out the practical activities. These questions will count for at least 15% of the overall marks for the qualification.

#### Extended Learning:

Extended learning in science takes the form of Mode A extended learning, where the extended learning focusses on knowledge recall and Mode B, where the students are invited to express themselves creatively in order to succeed. There will also be opportunity for students to engage with science outside of the classroom through the enhanced curriculum provided at John Taylor Free School. This includes the STEAM club (Science Technology, Engineering, Arts and Maths) and attending science educational visits.

#### Connection to the JTFS Approach

Whole School Theme	How does Science support this?
STRIPE	STRIPE habits are used constantly within science; team player during experimental teamwork and the reflective and resilient strand where students are encouraged to reflect and refine their methodology. Students are also constantly encouraged to be innovative when designing investigations.
STEAM	As science is one of the key strands of STEAM, we focus on many opportunities for students to connect their learning to other subjects. We also focus on job opportunities and possibilities that exist for students beyond GCSE
Literacy	Students are encouraged to write like a scientist. This includes learning many new science specific words and using them appropriately within their work. This is particularly relevant when recording the required practical element of the course and for achieving high marks in open response questions.
Numeracy	Students are encouraged throughout this module to relate the content that they study to the skills they have learnt in maths. Modules in physics encourage students to re-arrange equations, convert figures and perform complex calculations.
SMSC, British Values and Citizenship	Students will investigate fuels for the future and methods to reduce the impact of climate change. They are encouraged to build respect for others in the community with lessons around cloning and contraception. Students considering how scientific perceptions can alter due to the development of new technologies. Students will consider local issues that develop British values, such as light pollution in Astronomy or Recycling