



UST

University Schools Trust



**Royal Greenwich**  
Trust School

the constellation

**Science**  
**Curriculum Booklet**  
**2020-2021**

## **Our Vision and Approach in Science**

We aspire for students to become curious investigators through the study of Science. Through exploring the world of scientific research and experimentation, we hope that students gain a deeper understanding of the world around them.

We plan and implement the Science curriculum across Key Stages 3 -5 in ways that challenge and inspire our students, whilst allowing responsive learning to take place. At all Key Stages we teach the substantive and disciplinary knowledge needed to give students a powerful and rich knowledge that allows them to interpret the word scientifically.

At Key Stage 3, Science is delivered through 8 lessons fortnightly.

Our specifications for Key Stage 4 and 5 are:

### **Key Stage 4**

- AQA Combined Science (Trilogy) is followed from January of Year 9 with the option to study the triple sciences as separate subjects from Year 10. Combined Science is taught across 5 lessons of 40 minutes and Triple Science is taught with an addition of further 4 lessons of 40 minutes a week.

<https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF>

- AQA GCSE Biology <https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF>
- AQA GCSE Chemistry <https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF>
- AQA GCSE Physics <https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF>

### **Key Stage 5**

Post-16 learners will be studying the Pearson BTEC Level 3 National Diploma in Applied Science. This qualification is equivalent to two A Levels. 8 units of which 6 are mandatory and 3 are external. Mandatory content (83%). External assessment (46%).

[https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Science/2016/specification-and-sample-assessments/9781446938195\\_BTECNat\\_AppSci\\_ExtDips\\_Spec.pdf](https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Science/2016/specification-and-sample-assessments/9781446938195_BTECNat_AppSci_ExtDips_Spec.pdf)

All mandatory and optional units contribute proportionately to the overall qualification grade. Students completing their BTEC Nationals in Applied Science will be aiming to go on to employment, often via the stepping stone of higher education. The RGTS science department has handpicked optional units which allow students the opportunity to apply their knowledge and understanding (the cognitive domain) with practical and technical skills (the psychomotor domain). This is achieved through learners performing vocational tasks that encourage the development of appropriate vocational behaviours (the affective domain) and transferable skills. Transferable skills are those such as communication, teamwork, research and analysis, which are valued in both higher education and the workplace.

For Year 12:

- Unit 1 – Principles and application of science 1
- Unit 2 – Practical scientific procedures and techniques

- Unit 3 – Science Investigation
- Unit 4 – Laboratory techniques and their application

For Year 13:

- Unit 5 – Principles and application of science 2
- Unit 6 – Investigative project
- Unit 8 – Physiology of human body systems
- Unit 21 – Medical physics applications

## What students learn

Our curriculum is sequenced to cover a series of topics across the academic year in order to give students a full experience of all three sciences. The breakdown of topics covered across the year groups is detailed in the grid below. Please note this is subject to change as we adapt our curriculum to meet the needs of our students.

Term	Year 7	Year 8	Year 9	Year 10 (Combined Trilogy)	Year 10 Biology (Triple)	Year 10 Chemistry (Triple)	Year 10 Physics (Triple)
Term 1	Becoming a Scientist (introduction to secondary Science)  Cells and Movement	Breathing  Digestion	Atomic structure  Periodic table  Structure and bonding	B2 Organisation  C2 Bonding, Structure and Properties of Matter	B2 Organisation	C2 – Bonding, Structure and properties of matter	P2 – Electricity P3 – Particle Model of Matter
Term 2	Matter  Sound and Waves  Acids and Alkalis	Contact forces and Pressure  Electromagnets	Forces  Pressure in solids  Electromagnetism	P2 Electricity P3 Particle Model of Matter B3 Infection and Response	B3 Infection and Response  B4 Bioenergetics (Photosynthesis and Response)	C3 – Quantative Chemistry  C4 – Chemical Changes	P3 – Particle Model of Matter P4 – Atomic Structure (Radiation)
Term 3	Variation and Reproduction  Forces	Matter  Periodic table	Disease and bioenergetics  Preventing and treating disease	C3 – Quantative Chemistry P4 – Atomic Structure B4 Bioenergetics (Photosynthesis and Respiration)	B5 – Homeostasis and Response	C4 – Chemical Changes  C6 – The rate and extent of chemical changes	P4 – Atomic Structure (Radiation)
Term 4	Variation and Reproduction  Forces	Work Heating and cooling Waves effects Wave properties	Chemical analysis  Organic chemistry (Crude oil and fuels)	P5 – Forces P6 Waves	B5 – Homeostasis and Response  B6 – Inheritance, variation and evolution	C6 – The rate and extent of chemical changes  C7 – Organic Chemistry	P5 – Forces

Term 5	Earth and the Universe Metals and Non-Metals	Climate Earth resources Types of reactions Chemical energy	The Earth's atmosphere and resources	B5 – Homeostasis and Response C4 – Chemical Changes	B6 – Inheritance, variation and evolution	C7 – Organic Chemistry	P5 – Forces
Term 6	Metals and Non-Metals Ecosystems Energy	Respiration Photosynthesis Evolution Inheritance	Reproduction Variation and evolution Genetics and evolution (Possibly Intro only)	P7 – Magnetism and Electromagnetism	B6 – Inheritance, variation and evolution Consolidation	C7 – Organic Chemistry Consolidation	P5 – Forces Consolidation

## **How you can support your child's learning in Science**

Ensure your child:

- completes his/her 1-hour science homework every week which will be given online (Satchel 1) or as a worksheet handed in lesson;
- practises science exam questions (GCSE exam questions or KS3 exam questions) from past exam papers;
- completes all targets written in their class book by the teacher (written in green pen) and is answered by the student in red pen;
- reads around the subject and practises exam questions for an additional 3- 5 hours a week (KS4 and KS5 students) as additional work is required to supplement the homework given. Please see websites below for past science exam papers.

### **Websites that you can visit for KS3 students:**

- <https://www.bbc.co.uk/bitesize/subjects/zng4d2p>

### **Websites that you can visit for KS4 students:**

- <https://revisionscience.com/gcse-revision/science/science-gcse-past-papers/aqa-gcse-science-past-papers>
- <http://www.bbc.co.uk/schools/gcsebitesize/science/>
- <http://www.my-gcsescience.com/>
- [https://www.youtube.com/channel/UCqbOeHaAUXw9I17sBVG3\\_bw](https://www.youtube.com/channel/UCqbOeHaAUXw9I17sBVG3_bw)
- <https://www.primrosekitten.com/products/gcse-revision-pack>
- <https://www.youtube.com/channel/UCBgvmal8AR4QIK2e0EfJwaA>
- <http://www.s-cool.co.uk/>

### **Websites that you can visit for KS5 Students:**

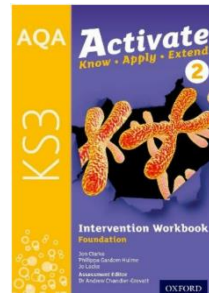
- <https://www.creative-chemistry.org.uk/>
- <http://www.titrations.info/acid-base-titration>
- <http://www.rsc.org/learn-chemistry/resource>
- <http://www.sparknotes.com/chemistry/acidsbases/titrations/section1.rhtml>
- <http://www.virtlab.com/main.aspx>
- <http://www.docbrown.info/index.htm>
- <http://gradegorilla.com/UKschools.php>

### **Books that you may wish to purchase:**

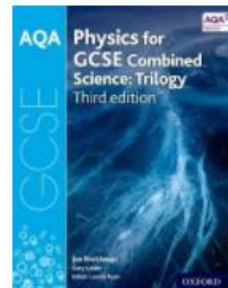
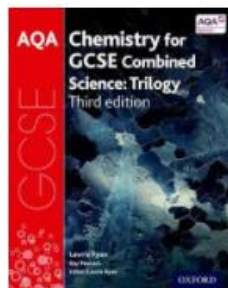
Activate 1 book KS3 AQA (Oxford University Press) – year 7



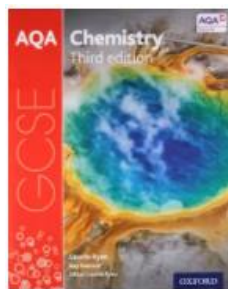
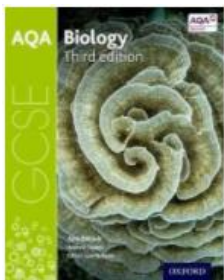
Activate 2 book KS3 AQA (Oxford University Press) – year 8



Any AQA GCSE combined trilogy science books for year's 9 to 10.



Any separate AQA GCSE biology, chemistry and physics science book for year 10 studying triple science only.



BTEC Science

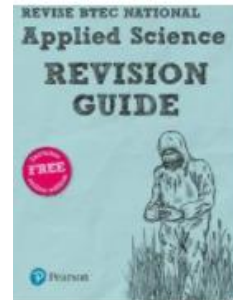
Pearson BTEC National Applied Science. Student Book 1 - BTEC Nationals Applied Science 2016 Frances Annetts



Pearson BTEC National Applied Science. Student Book 2 - BTEC Nationals Applied Science 2016 Frances Annetts



BTEC National Applied Science Revision Guide: (with free online edition) by Mr David Brentnall



BTEC NATIONAL Applied Science: REVISION WORKBOOK by Chris Meunier

