



## SCIENCE DEPARTMENT

The department occupies a suite of 8 state-of-the-art laboratories, each equipped with gas, water, and electricity. Each lab has access to one of three portable fume hoods which can also be equipped with gas, water, and electricity. All labs are equipped with state-of-the-art smartboards linked to desktop computers. The desktop is linked to a classroom speaker system. There are also 2 standard whiteboards in each lab. The department has a set of portable netbooks available to staff on a booking basis.



In addition, the department also occupies two classrooms, which do not have practical facilities but are equipped with the same state-of-the-art smartboards, speaker system and whiteboards found in the laboratories.

There are currently 17 members of staff in the department, 12 of which are full time. 1 member of staff is a member of the SLT, 1 Head of Year and 1 is the Head of the Teaching and Learning Team. The department also has a technician 3 days per week, and three SCITT student teachers throughout the year.

Each science subject (Biology, Chemistry and Physics) has its own head of subject, with one of the subject heads acting as the Head of Department.

### Aerial view model of St Mary's



### **KS3**

Key Stage 3 provision is currently 6 x 1-hour lessons per 2-week cycle, this is split evenly across the three science subjects. Lessons follow a bespoke and comprehensive scheme of work tailored for the needs of our students, with pre-prepared resources for all topics covered. Each subject scheme of work provides for structured learning and regular assessment. Students are encouraged to develop their practical based skills, knowledge and understanding of Physics, Chemistry and Biology using varied approaches to learning.

In Year 7, students study 18 topics across the three science subjects. Cell Structure, Ecology, Photosynthesis, Respiration, Variation, and Human Reproduction in Biology. The Particle Model, Elements and Compounds, Metals and Non-Metals, Acids and Alkalis, Chemical Reactions, and Separating Mixtures in Chemistry. Forces and Motion, Energy Stores, Thermal Energy Transfer, Waves, Sound, and Light in Physics.

In Year 8, students study 18 topics across the three science subjects which build upon skills learnt in Year 7. Movement, Evolution, Plant Reproduction, Inheritance, Digestive Systems, and Biodiversity in Biology. Periodic Table, Atomic Structure, Chemistry of the Atmosphere, Using Resources, Chemical Energy, and Chemical Analysis in Chemistry. Magnetism, Electromagnetism, Energy Stores, Advanced Forces, Space, Work, and Energy Resources in Physics.

Three times a year there is a formal assessment period across the three science subjects which allows a teacher judgement to be made on whether students are making the appropriate progress in Key Stage 3 along with homework and class work activities. This information is then reported home.

### **KS4**

We currently deliver the AQA Science Trilogy Combined Science course as well as the three Separate Science courses.

### **Setting**

In Year 7, students enter the school and are set using a mixture of Key Stage 2 data from primary schools as well as CAT scores taken in the first term. For the rest of the Key Stage 3 course the students are grouped by ability. For the GCSE programmes in Key Stage 4, the students are also grouped by ability. Sets are reviewed every term and updated using students' assessment performance. Class sizes in KS3 are typically 30 pupils in sets 1 and 2, 25 in sets 3 and 4 and 15 in set 5. GCSE classes follow the same pattern.

We have two A-Level Biology groups in Year 12 with a total of 36 students and two A-Level Biology groups in Year 13 comprising of 24 students.

We have two A-Level Chemistry groups in Year 12 with a total of 29 students and one A-Level Chemistry group in Year 13 comprising of 16 students.

We have two A-Level Physics groups in Year 12 with a total of 28 students and one A-Level Chemistry group in Year 13 comprising of 29 students.

In addition, we have one Applied Science group in Year 12 with 3 students and one Applied Science group in Year 13 which has 9 students.

### **KS4 Separate Science**

Key Stage 4 provision for Year 10 and 11 Science is currently 3 or 4 x 1-hour lessons per 2-week cycle for each separate subject. We currently have 4 classes carrying out this course in Year 10 and 5 classes in Year 11. We follow the AQA Science syllabus for each subject and students sit 2 examinations at the end of the course. Each examination is 1hr 45 minutes long and makes up 50% of the overall grade.

The Biology course covers Cell Biology, Organisation, Infection and Response and Bioenergetics in Paper 1, and Homeostasis and Response, Inheritance, Variance, Evolution and Ecology in Paper 2.

The Chemistry course covers Atomic Structure and Periodic Table, Bonding and Structure, Quantitative Chemistry, Energy Changes and Chemical Changes in Paper 1. In Paper 2, Rate of Chemical Change, Organic Chemistry, Chemical Analysis, The Atmosphere and Using Resources are covered.

The Physics course covers Energy, Electricity, Atomic Structure and Particle Model of Matter in Paper 1. In Paper 2, Forces, Motion, Waves, Space Physics and Electromagnetism are covered.

Assessment is on-going - students sit mock examinations in Year 10 and 11 and grades are reported to parents/carers. In addition, a synoptic assessment takes place in class in every subject every term to inform teacher evaluation on student progress.

### **KS4 Combined Science**

Key Stage 4 provision for Combined Science is currently 9 x1 hour lessons per 2-week cycle. We currently have 6 classes carrying out this course in Year 10 and 5 classes in Year 11.

We follow the AQA Trilogy syllabus where students will receive a double grade for science.

Each subject carries out two examinations at the end of Year 11. Each examination is 1hr 15 minutes long and makes up 16% of the overall grade.

The Biology course covers Cell Biology, Organisation, Infection and Response and Bioenergetics in Paper 1, and Homeostasis and Response, Inheritance, Variance, Evolution and Ecology in Paper 2.

The Chemistry course covers Atomic Structure and Periodic Table, Bonding and Structure, Quantitative Chemistry, Energy Changes and Chemical Changes in Paper 1. In Paper 2, Rate of Chemical Change, Organic Chemistry, Chemical Analysis, The Atmosphere and Using Resources are covered.

The Physics course covers Energy, Electricity, Atomic Structure and Particle Model of Matter in Paper 1. In Paper 2, Forces, Motion, Waves and Electromagnetism are covered.

Assessment is on-going - students sit mock examinations in Year 10 and 11 and grades are reported to parents/carers. In addition, a synoptic assessment takes place in class in every subject every term to inform teacher evaluation on student progress.

## **KS5 Science**

The Key Stage 5 provision is currently 10 x 1 hour lessons per 2-week cycle per subject.

The department offers A-Level courses in Chemistry, Physics and Biology. We follow the AQA syllabus for Biology and Physics, and the OCR syllabus for Chemistry.

Assessment is on-going with students sitting mock exams in Year 12 and Year 13 with grades reported home before all terminal examinations taking place at the end of Year 13. Whilst examinations vary in length between 1hr 30 and 2hr 15, all subjects have three examinations.

In addition to A-Level courses, the department also offers Applied Science. This is a vocational BTEC National qualification which follows the EdExcel specification. Students complete a mixture of coursework projects and examinations. Students sit three examinations in Year 12, each 40 minutes long and one examination in Year 13 which is 3 hours long.