“Equipped with his five senses, man explores the universe around him and calls the adventure Science.”

Edwin Powell Hubble
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Mission Statement

The St George’s Science Department philosophy is based on high expectations and standards, and the desire to assist all students to achieve their full potential. The Science Department have created an environment that encourages and rewards good behaviour and all achievement; where students feel valued and secure, are inspired and motivated at all ages, abilities and levels. We aim to provide lifelong skills and confident individuals who can exist alongside our ever evolving world.

Pupils

Through their lessons in Science pupils will:

- become actively involved in their own learning
- enjoy learning about Science and will find interest, challenge and fulfilment
- achieve the highest level of success commensurate with their age, ability and aspirations
- develop an increased awareness of the relevance and significance of Science in today’s world and of its social, economic and environmental applications and implications
- be encouraged to become scientifically literate members of society by improving their knowledge and understanding of Science
- become equipped for adult life by developing scientific skills such as curiosity, objectivity and perseverance, and by exposure to scientific processes such as observing, criticising and evaluating information

Staff

The Science Staff are committed to:

- promote the systematic development of scientific knowledge and understanding
- stimulate interest and enthusiasm in scientific activity. This will enable students to play a full part in their world, now and in the future
- develop appropriate scientific skills which are of immediate use in the context of learning and which may be transferable to other situations
- encourage an awareness of the scope, limitations and costs of scientific activity.
- meet statutory requirements relating to science education
Aims and objectives of the Science Department linked to SPP

• Support the whole school policy and drive to Increase overall Attainment at Key Stage 3 and 4
• Support the whole school policy of 3 levels of progress by increasing the number of students attaining target grades
• Continue to review and adjust where necessary the Key Stage 3 and 4 curriculum and assessment
• To raise achievement, interest and enjoyment of science through continued professional development, sharing of good practice including resources and collective planning
• To further improve opportunity for practical work and technical support for all staff in all laboratories
• Support all whole school policies
How the Science Department supports the Christian Ethos of the School

The science department will support, uphold and contribute to the school’s Christian ethos by contributing to all aspects required within the spirituality opportunities provided by school.

All the teachers of the department contribute to the Christian ethos of the school and promote the moral and ethical code of St Georges School.

Scientists cannot go back in time to directly examine the animals and rocks of long ago. They cannot observe the past or test it and young people should be made aware that whilst the majority of the scientific community hold to evolutionary theory there are still unbelievable and unexplained coincidences behind the origins of living organisms that cannot be explained by science alone. Both Creation and Evolution provide ways of explaining the past that are beyond direct scientific examination and verification. Ultimately, both Creation and Evolution are faith positions.

SMSC

Discussions of topics where students may hold strong opposing views, or where there is the possibility of some students being hurt or offended are carefully handled.

Teachers alert students in advance of a lesson if, for example, they are aware of siblings or parent with a genetic disease that may be discussed. Students are allowed to absent themselves, or leave at any point they choose with direction from the teacher. When discussing illness, where there is a strong emphasis on risk factors within individual control, students of parents with lung cancer or heart disease can be left feeling very bad.

Learning to have these types of discussions with other people is a valuable skill, so should be encouraged. Setting ground rules before the start of the discussion will discourage possible negative outcomes. Teachers encourage pupils to;

- Give people time to make their point and not interrupt
- Do not ridicule other people’s opinions, or put them down
- Consider the effect what you are saying may have on other people
- Listen to and consider other people’s opinions
- Be aware that body language as well as what you say can affect others

When discussing the moral / ethical implications involved in such subject areas, teachers should encourage students to engage with some of these arguments from a Christian point of view for example what do Christians say about cloning, well actually there are whole spectrums of points of view and these are some of them....

With the big bang there are many Christians who are happy to accept this theory but would simply add that God caused the big bang to happen etc. etc.
All Teachers ensure while discussing these moral and ethical topics that they take into account religious sensibilities, to support the school's Church of England ethos.

**Topics in Science which maybe controversial are as follows**

Stem cells (Year 10 and 11 Curriculum)

Cloning (Year 9 and 10 curriculum)

The big Bang theory (Year 10 curriculum)

Evolution (Year 10 Curriculum)

Reproduction (Year 7)

Genetic disease (Year 9 and Year 10)
Organisation of the Science Department

Staffing structure for September 2015

Teaching Staff

Mrs H Tasker – Acting Head of Science, teacher of physics and biology
Miss J Young – Acting Second in Department, teacher of biology
Mrs E Quirk – Acting KS3 Co-ordinator, teacher of chemistry
Miss K Mallaleiu – teacher of chemistry, Acting head of Carlisle College
Mr C Gaitatzis – Deputy Head of School, teacher of physics
Miss A Hunter – teacher of biology and chemistry (part time 0.6)
Dr J Brown – teacher of biology and physics (part time 0.6) – currently on Maternity Leave
Mrs H Gray – teacher of physics (part time 0.5)
Miss L Kennedy – teacher of science and mathematics, head of Lincoln College
Mrs V Danson – teacher of science and PE, head of Chester College
Mr D Macphee – teacher of science, head of computer science
Mr A Cross – teacher of ICT and science

Technical Staff

Mrs C Rhymes – Senior Laboratory Technician and Reprographics Technician
Mr M Entwistle – Laboratory Technician

All science staff are committed to the vigilant monitoring of the Health & Safety policy. A comprehensive Health and Safety policy has been in effect since September 2009.
The Curriculum

Key Stage 3

Key Stage 3 follow The Oxford University Press ‘Activate’ Science Scheme of work which was introduced in 2014-2015. This links directly to the 2013 National Curriculum Science Programme of Study written by the Department for Education. Key Stage 3 achievement has continually improved and the course supports delivery of the knowledge and skills required to access the current Key Stage 4 curriculum.

Year 7: Year 7 is taught in 8 classes which have initially been set on entry from Mathematics KS2 data. The department will use a science Key Stage 2 SAT exam for the new Year 7 classes as additional benchmark information. These exams will be conducted at the start of the year. Teaching staff are expected to uphold the published order of delivery (APPENDIX A), conduct the specified standard assessments and make available examples of work for IV and work scrutiny. There is opportunity for movement within the E and B bands but not between bands. Staff consultations will take place in conjunction with supporting assessment data and parents will be informed if and when any set changes take place.

The topics of study are:

1. Science Skills and Safety in the lab

2. B1 Biology
   - B1.1 Cells
   - B1.2 Structure and function of body systems
   - B1.3 Reproduction

3. C1 Chemistry
   - C1.1 Particles and their behaviour
   - C1.2 Elements, atoms and compounds
   - C1.3 Reactions
   - C1.4 Acids and alkalis

4. P1 Physics
   - P1.1 Forces
   - P1.2 Sound
   - P1.3 Light
   - P1.4 Space

Year 8: Year 8 is taught in 8 classes which have been set by ability within the school banding policy based on Mathematics target grades. Teaching staff are expected to uphold the published order of delivery (APPENDIX B), conduct the specified standard assessments and make available examples of work for IV and work scrutiny. There is opportunity for movement within the E and B bands but not between bands. Staff consultations will take place in conjunction with supporting assessment data and parents will be informed if and when any set changes take place.
The topics of study are:

1. B2 Biology
   - B2.1 Health and lifestyle
   - B2.2 Ecosystem Processes
   - B2.3 Adaptation and Inheritance

2. C2 Chemistry
   - C2.1 The Periodic Table
   - C2.2 Separation techniques
   - C2.3 Metals and acids
   - C2.4 The Earth

3. P2 Physics
   - P2.1 Electricity and Magnetism
   - P2.2 Energy
   - P2.3 Motion and pressure

Year 9: Year 9 is taught in 8 classes which have been set by ability within the school banding policy based on Mathematics target grades. In addition to this, the students in sets 1-3 are taught the separate sciences in a linear format to match the structure of delivery at KS4. Therefore each class has a teacher for biology, chemistry and physics. One of the three teachers will be assigned the role of ‘Lead Teacher’ (APPENDIX D). Sets 4 continue to study science in a modular format with one science teacher. Teaching staff are expected to uphold the specified order of delivery (APPENDIX C).

All Year 9 students will be following a transition course, a collaboration between Edexcel and Pearson, in the Autumn term. The scheme of work has been based upon transition content provided by Edexcel/Pearson, and written and resourced by our own teaching staff. This course has been designed specifically to cover KS3 content from the National Curriculum’s programme of study and prepare this cohort of students for the national changes taking place at GCSE. In the Spring and Summer terms the pupils in Year 9 will begin to study for AQA’s new 9-1 graded GCSE.

Teaching staff are expected keep up with the published order of delivery, conduct the specified standard assessments and make available examples of work for IV and work scrutiny. There is opportunity for movement within the E and B bands but not between bands. Staff consultations will take place in conjunction with supporting assessment data and parents will be informed if and when any set changes take place.

The topics of study are:

Biology

Cell Structures
Transport in Plants
Health and Disease
**Chemistry**

Atomic Structure  
The Periodic Table  
States of Matter  
Metals  
Acids

**Physics**

Springs and Stretching  
Current and Electricity  
Kinetic Theory  
Motion  
Magnetism

**Key Stage 3 administration:**

Mrs E Quirk is the KS3 Science Co-ordinator.

Mrs E Quirk has the overall role to co-ordinate the re-sourcing and delivery of the programme of study in Year 7, Year 8, and Year 9 and the transition to KS 4.

It is imperative that assessments, monitoring of progress and resourcing issues of the schemes in year 7, year 8 and 9 are reported directly to the KS3 co-ordinator (or to HTR in EQ absence).

All science teachers have a responsibility for KS3 topics and during the summer term it is expected that staff review their units in reflection of the academic achievements stimulated by that theme and a judgement is made and reported back to EQ concerning the resources/assessments delivered.

Science staff should discuss their concerns about certain topics/assessments with the responsible member of staff and Mrs Quirk.

It is expected that the KS3 the co-ordinator will set deadlines for the assessment of Units and will provide spreadsheets for all the recorded result.
**Key Stage 4**

All pupils must study science at GCSE level.

At St George’s School we follow OCR Twenty First Century Science.

In year 10 pupils study Core Science modules and complete Core Science Controlled Assessment pieces, which counts towards one GCSE, examined at the end of year 11.

In year 11 pupils study Additional Science modules and complete an Additional Science piece of controlled assessment, which count towards a second science GCSE also examined at the end of year 11.

There is the option for pupils who achieve a minimum of a level 6 in Key Stage 3 Science to study Biology, Chemistry and Physics as separate subjects and achieve 3 GCSEs in Science at the end of year 11.

**Year 10 Core Science**

There are 7 classes set by ability. They receive 8 hours of tuition and study the OCR specifications for Core Science GCSE. This includes the following program of study with linear assessments in June 2017 in the form of 3 exams. The Controlled Assessment component will be carried out in 2 phases – the Case Study and the Data Analysis. These will be completed in the Autumn term.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules tested</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biology</strong></td>
<td>B1 – You and your genes</td>
<td>25</td>
<td>External GCSE</td>
</tr>
<tr>
<td></td>
<td>B2 – Keeping Healthy</td>
<td></td>
<td>Written exam 2017</td>
</tr>
<tr>
<td></td>
<td>B3 – Life on Earth</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chemistry</strong></td>
<td>C1 – Air Quality</td>
<td>25</td>
<td>External GCSE</td>
</tr>
<tr>
<td></td>
<td>C2 – Material Choices</td>
<td></td>
<td>Written exam 2017</td>
</tr>
<tr>
<td></td>
<td>C3 – Chemicals in our life</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physics</strong></td>
<td>P1 – The Earth in our Universe</td>
<td>25</td>
<td>External GCSE</td>
</tr>
<tr>
<td></td>
<td>P2 – Radiation and Life</td>
<td></td>
<td>Written Exam 2017</td>
</tr>
<tr>
<td></td>
<td>P3 – Sustainable Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Controlled Assessment</strong></td>
<td>Case Study Data Analysis</td>
<td>12.5% each</td>
<td>Written Submission May 2017</td>
</tr>
</tbody>
</table>
Year 10 Separate Sciences (2017 cohort):

There is 1 class of pupils studying for Separate Biology, Chemistry and Physics GCSEs.

### Biology

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 10</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B 1 – 3</strong></td>
<td>B1 – You and your genes&lt;br&gt;B2 – Keeping Healthy&lt;br&gt;B3 – Life on Earth</td>
<td>25</td>
<td><strong>External GCSE Written exam Summer 2017</strong></td>
</tr>
<tr>
<td><strong>B 4 – 6</strong></td>
<td>B4 – Processes of Life&lt;br&gt;B5 – Growth and Development&lt;br&gt;B6 – Brain and Mind</td>
<td>25</td>
<td><strong>External GCSE Written exam Summer 2017</strong></td>
</tr>
</tbody>
</table>

#### Unit

<table>
<thead>
<tr>
<th>Modules studied in year 11</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B7</strong></td>
<td>25</td>
<td><strong>External GCSE Written Exam June 2017</strong></td>
</tr>
<tr>
<td>7.1- Peak performance&lt;br&gt;7.2 – Blood and circulation&lt;br&gt;7.3 – Temperature Homeostasis&lt;br&gt;7.4 – Environmental Biology&lt;br&gt;7.5 – New technologies</td>
<td>25</td>
<td><strong>Written Submission May 2017</strong></td>
</tr>
</tbody>
</table>

**Controlled Assessment**

| Full investigation                     | 25             | **Written Submission May 2017** |
### Chemistry

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 10</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 1 – 3</td>
<td>C1 – Air Quality</td>
<td>25</td>
<td>External GCSE Written exam Summer 2017</td>
</tr>
<tr>
<td></td>
<td>C2 – Material Choices</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C3 – Chemicals in our life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 4 – 6</td>
<td>C4 – Chemical Patterns</td>
<td>25</td>
<td>External GCSE Written exam Summer 2017</td>
</tr>
<tr>
<td></td>
<td>C5 – Chemicals in the natural environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C6 – Chemical synthesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C7.1 Green Chemistry</td>
<td>25</td>
<td>External GCSE Written Exam June 2017</td>
</tr>
<tr>
<td></td>
<td>C7.2 Alcohols</td>
<td></td>
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<tr>
<td></td>
<td>C7.3 Energy changes</td>
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<td></td>
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<tr>
<td></td>
<td>C7.4 Reversible reactions and equilibria</td>
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<td></td>
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<tr>
<td></td>
<td>C7.5 Analytical Chemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Full investigation</td>
<td>25</td>
<td>Written Submission May 2017</td>
</tr>
</tbody>
</table>

### Physics

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 10</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 1 – 3</td>
<td>P1 – The Earth in our Universe</td>
<td>25</td>
<td>External GCSE Written exam Summer 2017</td>
</tr>
<tr>
<td></td>
<td>P2 – Radiation and life</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P3 – sustainable energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P 4 – 6</td>
<td>P4 – Explaining Motion</td>
<td>25</td>
<td>External GCSE Written exam Summer 2017</td>
</tr>
<tr>
<td></td>
<td>P5 – Electric Circuits</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P6 – Radioactive Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P7.1 Naked-eye astronomy</td>
<td>25</td>
<td>External GCSE Written Exam June 2017</td>
</tr>
<tr>
<td></td>
<td>P7.2 Telescopes and images</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P7.3 Mapping the Universe</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P7.4 Stars</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Full investigation</td>
<td>25</td>
<td>Written Submission May 2017</td>
</tr>
</tbody>
</table>
**Year 11 Additional Science** there are 6 classes set by ability within the bands allocated by English target grades. They receive 8 hours tuition and study the OCR specifications for Additional Science GCSE which includes the following program of study with linear assessments in June 2016. Each class will be taught by a specialist Biology, Chemistry and Physics teacher as shown below. Controlled Assessment will be carried out by the Chemistry teacher of each class.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules tested</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>B4 – Processes of Life&lt;br&gt;B5 – Growth and Development&lt;br&gt;B6 – Brain and Mind</td>
<td>25</td>
<td>External GCSE Written exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Summer 2016</td>
</tr>
<tr>
<td>Chemistry</td>
<td>C4 – Chemical Patterns (studied at the end of Y10)&lt;br&gt;C5 – Chemicals in the natural environment (studied at the end of Y10)&lt;br&gt;C6 – Chemical synthesis</td>
<td>25</td>
<td>External GCSE Written exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Summer 2016</td>
</tr>
<tr>
<td>Physics</td>
<td>P4 – Explaining Motion&lt;br&gt;P5 – Electric Circuits&lt;br&gt;P6 – Radioactive Materials</td>
<td>25</td>
<td>External GCSE Written exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Summer 2016</td>
</tr>
<tr>
<td>Controlled Assessment</td>
<td>Full Investigation (completed with the Biology and Chemistry teacher)</td>
<td>25</td>
<td>Written Submission May 2016</td>
</tr>
</tbody>
</table>
### Year 11 Separate Scientists (2016 cohort):

There are two classes studying separate science in year 11.

**Biology**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 10</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
</table>
| **B 1 – 3** | B1 – You and your genes  
             B2 – Keeping Healthy  
             B3 – Life on Earth | 25             | External GCSE Written exam  
                               Summer 2016 |
| **B 4 – 6** | B4 – Processes of Life  
             B5 – Growth and Development  
             B6 – Brain and Mind | 25             | External GCSE Written exam  
                               Summer 2016 |

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 11</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
</table>
| **B7** | 7.1- Peak performance  
             7.2 – Blood and circulation  
             7.3 – Temperature Homeostasis  
             7.4 – Environmental Biology  
             7.5 – New technologies | 25             | External GCSE Written Exam  
                               June 2016 |
| **Controlled Assessment** | Full investigation | 25             | Written Submission May  
                               2016 |
## Chemistry

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 10</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
</table>
| C 1 – 3 | C1 – Air Quality  
C2 – Material Choices  
C3 – Chemicals in our life | 25             | External GCSE  
Written exam  
Summer 2016 |
| C 4 – 6 | C4 – Chemical Patterns  
C5 – Chemicals in the natural environment  
C6 – Chemical synthesis | 25             | External GCSE  
Written exam  
Summer 2016 |

### Unit  Modules studied in year 11 Percentage (%) Type

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 11</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
</table>
| C7    | C7.1 Green Chemistry  
C7.2 Alcohols  
C7.3 Energy changes  
C7.4 Reversible reactions and equilibria  
C7.5 Analytical Chemistry | 25             | External GCSE  
Written Exam  
June 2016 |

**Controlled Assessment**

<table>
<thead>
<tr>
<th>Modules studied in year 11</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full investigation</td>
<td>25</td>
<td>Written Submission May 2016</td>
</tr>
</tbody>
</table>

## Physics

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 10</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
</table>
| P 1 – 3 | P1 – The Earth in our Universe  
P2 – Radiation and life  
P3 – sustainable energy | 25             | External GCSE  
Written exam  
Summer 2016 |
| P 4 – 6 | P4 – Explaining Motion  
P5 – Electric Circuits  
P6 – Radioactive Materials | 25             | External GCSE  
Written exam  
Summer 2016 |

### Unit  Modules studied in year 11 Percentage (%) Type

<table>
<thead>
<tr>
<th>Unit</th>
<th>Modules studied in year 11</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
</table>
| P7    | P7.1 Naked-eye astronomy  
P7.2 Telescopes and images  
P7.3 Mapping the Universe  
P7.4 Stars | 25             | External GCSE  
Written Exam  
June 2016 |

**Controlled Assessment**

<table>
<thead>
<tr>
<th>Modules studied in year 11</th>
<th>Percentage (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full investigation</td>
<td>25</td>
<td>Written Submission May 2016</td>
</tr>
</tbody>
</table>
**Key stage 4 administration:**

Miss J Young is the Second in Department with responsibility as KS4 co-ordinator.

Miss J Young has the overall role to support Mrs H Tasker in co-ordinating the resourcing and delivery of the programme of study in Year 10 and year 11 with the support of the other subject leaders. This involves but is not limited to: organising an order of delivery for all KS4 science routes; resourcing and implementing standard assessments and homework tasks; analysing data for KS4; implementing intervention methods where required; recognising and rewarding achievement; departmental moderation and standardisation; internal verification; class setting.

It is imperative that assessments, monitoring of progress and resourcing issues of the schemes in year 10 and year 11 are reported directly to the KS4 co-ordinator (or HTR in her absence).

All science teachers in their subject area have a responsibility for the delivery of the KS4 programme of study.

Science staff should discuss their concerns about the programme of study with the KS4 co-ordinator.

It is expected that the KS4 co-ordinator will set deadlines for the assessment of Units and will provide spreadsheets for all the recorded results.

Provisional exam dates can be found in the appendix (APPENDIX I).

**Class teachers for 2015-2016:**

Information on teaching staff for each class, class size, and lead teacher can be found in APPENDIX F.
Classroom Management

All students are expected to bring with them the following equipment for every lesson: Exercise books (red A4 in Y7 and Y8; A4 in Y9 and KS4 (Blue/Purple Physics, Green Biology, Yellow Chemistry); pens; pencils; planner.

On entry to their science class pupils are expected to have their equipment out of their bags ready, and must all place their bags and coats in a designated spot in their classroom in accordance with the departmental health and safety rules and behaviour for learning strategies we employ.

Lack of equipment should be dealt with by the classroom teacher using individual strategies in line with the school’s positive conduct policy.

We have the highest expectation of our students; however they can let themselves down with the lack of homework, classwork or poor behaviour.

Homework issues are dealt with using the departmental homework policy and homework detention policy (APPENDIX H).

Lack of classwork or poor behaviour should be dealt with using the school behaviour policy. We use the consequence system, where pupils receive ‘consequences’ for poor behaviour. If 3 consequences are issued the teacher will implement an in class sanction – such as the pupil moving to another seat. If the student continues his/her poor & disruptive behaviour he/she could receive a 4th consequence. This would result in a 20 minute detention after school. If the pupil further continues in a display of poor behaviour a 5th consequence may be issued. This results in the pupil’s removal from lesson and a 40 minute after school detention being issued.

In the case of a serious behavioural incident a purple referral form should be filled in and the pupil is withdrawn from lesson immediately. The referral form is passed onto the withdrawal staff and an hour’s detention s issued.

Staff will always seat pupils in a seating plan. These are a way in which we can use positive behaviour for learning strategies. Individual teachers put a great deal of time and thought into their seating plans and are used with different classes for different purposes. An example of this is to seat pupils working at the same level or grade together.
Special Educational Needs and Differentiation

The kinds of abilities and aptitudes which would make learning in a science lesson easy for a pupil newly arrived in Secondary School might be:

- being able to understand the English language
- the ability to read and write well
- being highly motivated to learn
- finding it easy to express her/himself
- getting on well with peers
- finding it easy to concentrate on the task at hand
- being ready and willing to work with the teacher
- having good mathematical skills
- being physically well co-ordinated
- being willing to 'have a go'
- being able to use all senses effectively to make observations

Young people possessing all the attributes have a head start in achieving success in science, no matter what the learning environment. For most students, some qualities will be less developed than others but given an environment which encourages learning, growth will occur. However, some students will have difficulties which may prevent them realising their full potential. The policy of science for all means that rather than excluding students with learning difficulties, as may have been the case in the past, we strive to develop the means whereby young people can gain access to that science education which we now define as a right and a necessity.

By starting with the needs of those with learning difficulties and building on this firm foundation to meet the needs of others, we believe science education will improve for the benefit of all.

Identification

Staff in the Science department should read the information concerning individual pupils with special educational needs that is circulated at the beginning of each academic year. All staff have access to details of pupils in their classes with SEN, details of their SEN, and Individual Learning Strategies for these pupils. Throughout the year staff will be asked to comment on pupils’ progress and the information held about each pupil.

Science staff should discuss any concerns that they have over individual pupils progress with the Special Needs team representative. Special Needs will feature as a regular agenda item at Faculty meetings.

These procedures are important to fulfil early identification as discussed in the Code of Practice.

All staff strive to meet the needs of every individual using the departmental strategies outlined, using information from the SENCO and utilising classroom support in the form of an LST.
If it appears that a pupil's individual needs are not being addressed, a number of further routes may be taken. These would include an increase in differentiation, target setting, class setting and further discussion with the SENCO. Staff may also feel it is appropriate to monitor the academic progress of the individual pupil through the Report Card.

**Curricular Strategies**

The Science department is delivering National Curriculum Science in Years 7, 8, and 9 using Activate Science Schemes of Work provided by Oxford University Press. This is taught using a modular approach for Year 7 and 8. To best prepare Year 9 for GCSE, Sets 1 to 3 are taught individual science disciplines by specialist teachers in that area. The less able pupils in year 9 are taught all science disciplines by one science teacher in a modular format.

In Years 10 and 11 KS4 National Curriculum Science is delivered to all pupils via two GCSE courses. We are currently following OCR 21st Century Science. In Year 10 pupils study GCSE Core Science and in Year 11 pupils study GCSE Additional Science. Pupils who achieve a minimum of level 6 in year 9 have the option to study for three individual GCSEs in Biology, Chemistry and Physics. This would replace Core and Additional Science for those pupils.

**Organisational Strategies**

In all years pupils are set by ability. At KS4 pupils are taught to either Foundation of Higher level, whichever is the appropriate tier level for entry to their GCSE examinations. For Core and Additional Science pupils are taught by specialist science teachers in the separate disciplines - Biology, Chemistry and Physics.

Individual teachers can utilise the organisation of their seating plan to enhance the achievement of individual pupils. For example pupils who are visually or hearing impaired are seated closest to the Interactive Whiteboard.

Groups all use different text books with suitable language levels covering the appropriate tiers at KS4.

1. **Resources**

   a) The Faculty utilises the specialist knowledge/experience of all teaching/non teaching staff as far as possible.

   b) The Faculty uses text books in all years and has texts and worksheets available for extending/enriching Science for the more able and materials for supporting the less able.
c) Pupils have access to Kerboodle, an online learning homework and assessments which are differentiated for foundation or higher level.

d) Pupils who have specially adapted apparatus e.g. measuring instruments are encouraged to use these during investigations.

e) Work will be formatted where necessary for individual students.

f) Work will be provided on the colour background specified in any SEN statement.

2. **Teaching Strategies**

The Science Faculty aims to offer a variety of teaching strategies to help meet individual needs in the laboratory. The following guidelines point out strategies which are useful.

**Oral Work:** - Teacher awareness of vocabulary used is important, especially when introducing new terms. Simple explanations are needed to begin with before concepts can be developed. Science staff should be aware of pupils for whom English is a foreign language. The following strategies are adopted:

- repetition of pupils' responses reinforces learning
- praise for oral responses encourages and reassures the less able
- discussion work in smaller groups helps to build confidence
- when describing experiments demonstrations are invaluable especially to the less able.

Demonstrations are very effective when pupils are sitting around the front bench so they can see clearly the apparatus being used. To help those with short/limited memory recall a list of apparatus on the board will help them remember what to collect and demonstrating a short sequence of the experiment at a time is more effective.

**Written Work:** - To help weak spellers key science vocabulary is displayed on posters in the laboratories. For each topic studied pupils have a keywords sheet to go in their exercise books. To help all pupils with scientific diagrams simple and correctly drawn diagrams of common apparatus are displayed.

Literacy and Numeracy skills are currently at the forefront of the science departments planning and delivery. Specific assessments, lesson plans, resources and T&L strategies have been incorporated into SOW and PP.

3. **Homework**

- Homework is written clearly on the board, with the date it is due in. By establishing this
routine and setting homework well before the end of the lesson, all pupils have the opportunity to succeed. Some pupils require further guidance with organising their planner and ensuring all homework tasks are recorded. Individual teachers will assist with this.

- It does not always have to be the case that all pupils are set the same homework.

4. **Future Developments**

In line with school policy, the science department is focusing on Literacy and Numeracy. Reading activities will be highlighted within SOW. Pupils will be helped with spellings of scientific words by displays in each laboratory. Regular learning and testing of spellings should take place. Strategies for learning scientific spellings will be explained to pupils to help them to learn words correctly. There are standard homework and assessment tasks which are aimed to develop literacy and numeracy skills.
Assessment in Science

Assessment provides teachers, parents and pupils with vital information concerning progress. The information collected from assessment enables effective and appropriate planning and intervention, indication of level of attainment at GCSE, and important school data.

The science department have invested a lot of time, effort and expertise in developing an appropriate schedule of standard assessments for all years which assess the learning objectives, all aspects of scientific inquiry and laboratory skills, scientific literacy and numeracy tasks which support the whole school assessment policy.

There are 4 progress periods in the year, where specific data will be collected and analysed.

It is expected staff will
- Deliver, mark and record data from all standard assessments and input marks in to SIMs by the specified deadline
- Give summative and formative feedback to students, making use of ABCD templates
- Use the data to set targets and implement intervention where students are not making sufficient progress
- Make samples of students work and marking available for moderation/monitoring/scrutiny

The aim is to provide quality feedback to students. In Science books are to be marked every three weeks. In line with the school policy;

- All students have standardised book inserts at the front of their books. These include target grades/levels, current grades/levels from PP. They are updated each progress period.
- All work marked in accordance with the school marking/SPAG policy.
- Specific Assessments and Homework will be marked in the following way:
  A = Achieved – (comment on What Went Well).
  B = Better if – (comment on what to do next time Even Better If).
  C = Corrections – (common SPAG errors/misspelt words).
  D = DIY – (Do it yourself – What do you think you now need to do?)

Exercise books will be routinely collected at different points each term by Head of Science to ensure that homework and classwork are being marked according to policy guidelines.

The school policy outlines the following as a minimum for ABCD marking.

<table>
<thead>
<tr>
<th>Lessons per fortnight</th>
<th>ABCD times (per Progress Period)</th>
<th>*CW denotes classwork Standard</th>
<th>Progress Period</th>
<th>SA requirement (as per Progress Period schedule)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or 2</td>
<td>1 SA</td>
<td></td>
<td>1</td>
<td>1 SA &amp; 1 HW</td>
</tr>
<tr>
<td>3 or 4</td>
<td>1 SA &amp; 1 CW/HW/SA (exam)</td>
<td></td>
<td>2</td>
<td>Exam/Test (Christmas)</td>
</tr>
<tr>
<td>5 or 6</td>
<td>1 SA &amp; 2 CW/HW (exam)</td>
<td></td>
<td>3</td>
<td>1 SA &amp; 1 HW</td>
</tr>
<tr>
<td>7 or 8</td>
<td>1 SA &amp; 3 CW/HW (exam)</td>
<td></td>
<td>4</td>
<td>Exam/Test (Summer)</td>
</tr>
</tbody>
</table>
All standard assessments have been detailed in the orders of delivery for all year groups (APPENDICES A-E)

Standard assessments are verified as suitable before they are used, and after students have completed the standard assessments we have an interval verification process. Samples of work are collected and internally moderated. This process ensures that all students are completing the standard assessments, that grades/levels are awarded are accurate and that all staff are competent in marking and assessing.

The science department IV schedule can be found in the appendix (APPENDIX J)

After each progress period data is reviewed by the teacher and the pupil. The lead teacher will complete a ‘progress against targets’ sheet, distribute amongst other teachers of the same class and display this in the allocated place within the classroom for Y9-11.

The lead teacher will review the level/grade awarded with the class at the end of each progress period and set targets – in line with whole school policy. The lead teacher will also ensure the pupils are completing the section of the book inserts which identifies what topics are being studied in each half term. The should be completed at various points throughout the year – not all at once in the beginning. Orders of delivery may be subject to change throughout the year.

Non-lead teachers need to ensure they use a book insert which gives the pupil’s target and PP attainment only. This must be updated after each progress period. This book insert can be found in shared documents>science staff.

The ‘progress against targets’ sheet can be found in shared documents>science staff.
The Science Department Homework Policy

The Science Department aims to enable every student to fulfil their potential and to make steady progress towards attaining their estimated levels/grades across each Key Stage of the curriculum, an aim which is reinforced through the provision of homework and independent learning activities. It is intended that homework promotes the development of lively, enquiring minds and enables all students to acquire the skills and abilities to work effectively, on their own. This intention is vital in order to prepare all students for life-long learning and the world of work.

Aims

- Teachers need to plan homework to complement (not just complete) classroom learning as part of the agreed scheme of work.
- Wherever possible homework should be differentiated to provide equal and appropriate challenge for all individual learners.
- All teachers should require all students to clearly identify homework tasks in their books.
- Teachers are to record each piece of homework set in their planners together with an indication of whether it was completed on time by each pupil and a mark/level where appropriate.
- All teachers should ensure that all students record their homework assignments in their Student Planner
- Homework is to be set by teachers following the homework timetable.

The role of the Class Teacher

The class teacher controls the direction of homework and the nature of tasks undertaken unless specified below in assessments.

The class teacher will:
- Set homework according to the school timetable.
- Provide the stimulus.
- Give full and comprehensive instructions.
- Set deadlines for completed work and ensure that they are met.
- Mark and return all homework promptly.
- Provide help and support.

Homework

Teachers provide detailed feedback on homework in line with the school marking policy. Pupils will receive comments on what they have achieved (areas of strength), comments on what they could have done better, and any spelling, punctuation or grammar will be corrected. Pupils may also receive a comment which they can act upon. Pupils are to use this detailed feedback to help them focus their revision in preparation for the end of topic test.
Pupils also have access to online homework and the textbooks used in lesson through Kerboodle. Teachers will set homework using this resource from time to time. Key Stage 4 pupils also have access to GCSEPOD where homework can be set. These homework will provide pupils with direct feedback and offer suggestions to the pupils on areas of further focus.

Incentives
The ethos created by the subject teacher and the use of the School Reward System should be utilised for maximum impact.

High quality homework and a good work ethos should be sensitively praised in class.

Where appropriate, homework should be included in display work. Credits and rewards for achievement and sustained effort may be awarded for good homework. For exceptional pieces of homework, a Department letter or postcard may be sent home, or referred to Mr Berry for a Headteacher’s award.

Sanctions in Science

When homework is not completed, teachers will follow the science department homework detention policy (APPENDIX H)
Rewards policy in science

Rewards and incentives are an integral part of the department’s ethos. It is the responsibility of all science teachers to support the positive ethos the school rewards policy promotes, and give recognition and rewards commensurate with effort and achievement. This principle is applied consistently in all classes/sets and in all years. Investing in relationships and rewards supports the schools and the department ethos and raises standards of attainment.

Strategies for supporting the school policy on formal procedures

- Learning credits/commendations
- Monitoring scores
- School Prizes
- Letters to parents (Head of College)
- Certificates
- Official posts - Learning Consultants
- Team Green- Whole school policy to award pupils who are currently working above three levels of progress.

Departmental Strategies:

Departments and year groups have developed strategies to augment the above. Best practice encourages continuous development and innovation which “personalises, departmentalises or cohortises” recognition. The science department supports positive reinforcement and endeavours to use the following strategies to further motivate and encourage achievement

- Achievement Board
- Displays of work
- Achievement ladders
- Stickers
- Postcards to students/parents
- Treats
- Competitions
- Visits by colleagues (to praise)
- Work passed to colleagues (for additional praise/recognition)
Health and Safety

Science Department Health and Safety Policy

Summary guidelines for staff

All teachers, technicians and support staff

1. Teachers and technicians have a general duty to take reasonable care for the health and safety of themselves, of other members of staff and of pupils. They have specific duties: to be familiar with this health and safety policy, its updates, the texts to which it refers and any Appendices. They must cooperate with the employer’s instructions, observe the requirements of this policy and fulfil any special responsibilities it gives them. They must cooperate with colleagues in their specific health & safety duties. They have a duty to report to local management any failure of equipment that has a health & safety function.

2. Staff practice must set a good example to pupils and be consistent with pupil laboratory rules, e.g. over the wearing of eye protection.

3. Staff must be familiar with emergency drills and with the location in each science room of: the escape route; fire-fighting equipment; [the water tap with tubing for eye washing] / [eye wash station]; the main gas cock; the main electricity switch and the nearest spill kit.

4. Laboratories must be left safe. Special arrangements must be made for equipment which has to be left running overnight and hazardous equipment which has to be left out. In general, all gas taps should be completely turned off and all mains operated apparatus switched off. At the end of the day, if practicable, gas should also be turned off at the laboratory main gas cock and electricity at the laboratory main switch.

5. Eating, drinking and the application of cosmetics should not take place in laboratories, storage areas or preparation rooms unless an area in which it is safe to do so has been created. Pupils should not be allowed to drink from water bottles.

6. When staff are alone in the science department, nothing should be done which could lead to an accident requiring remedial measures. A teacher or technician must assess risks very carefully before conducting any practical operation in such circumstances.

7. In general, pupils must not be left unsupervised in a laboratory. Staff needing to leave a class briefly must assess the risks of doing so, perhaps arranging for temporary supervision by a neighbouring member of staff. Special arrangements may be needed for senior students doing project work, depending on the hazards involved, e.g. an experienced member of staff in an adjacent room.

8. Science laboratories, preparation rooms and stores must be locked by staff when not in use. Pupils must never be allowed into preparation rooms. Laboratories must be available for teacher-supervised club activities only by special arrangement.

Teachers

1. At the beginning of each school year, teachers must make sure that their classes have copies of the student laboratory rules and issue them if necessary. They should be stuck into an exercise book, work folder or similar place.

2. Teachers must enforce the student laboratory rules, reminding students of them often enough for them to be familiar. With new students, time should be spent explaining the rules, with appropriate demonstrations.

3. Lesson preparation should be adequate and include checking on risk assessments and, where necessary, the health & safety precautions required. Requisitions must not be handed in at the last minute; technicians must be given adequate time to prepare work safely. Time should be allowed for consulting more-senior colleagues where there is any doubt and to try out experiments, particularly those involving significant hazards. Teachers must only deviate from the scheme of
work (for which the activities have been checked against model risk assessments), after making a further risk assessment, checked with a subject specialist, possibly obtaining a special risk assessment from CLEAPSS. Teachers should explain precautions to students as part of their health & safety education, using the CLEAPSS Student Safety Sheets, where appropriate.

4. Open-ended investigations must be organised to allow the teacher to assess any risks and identify precautions before any hazards are met / practical work begins.

5. If, because of large class size or indiscipline, health and safety cannot be maintained during certain practical work, the work should be modified or abandoned. This decision should be reported to the Head of Science.

6. A teacher is responsible for the health and safety of any of his/her classes taken by a trainee teacher. If the normal class teacher is absent, another science teacher must be given this responsibility by the Head of Department.

7. Teachers in charge of courses are responsible for ensuring that technicians are familiar with the appropriate precautions needed to control any hazards which might be encountered in preparing equipment for their lessons and in clearing the equipment away. Class teachers may need to remind technicians of such warnings.

The role of this policy
This Science Department Health & Safety Policy should be read in conjunction with the employer’s general Health & Safety Policy. The purpose of this document is to record the arrangements made in the science department to implement the policy [in accordance with the Code of Practice or Guidance issued by the employer]. This document is maintained by the science department. It is copied to all new members of staff, i.e. teachers, technicians, trainees, working in the department. Staff are expected to sign the list kept in the Head of Science’s office to show that they have received a copy. A reference copy, together with various Appendices, is kept in the Head of Science’s office, available for consultation by staff and for inspection by visiting HSE inspectors or a representative of the employer. A copy of this document has been and passed to the employer for endorsement.

This document recognises the right of any or every trade union in the workplace to elect health & safety representatives for its members and its right to require a health & safety committee to be set up in the school. The science department will cooperate with any union health & safety representative to promote health, safety and welfare and will address any matters raised by or through such a representative in a manner appropriate to the level of risk.

General aims
Science teaching has an excellent health & safety record and this department is keen to promote practical work as an essential component of good science teaching. It is determined that spurious concerns about health and safety should not be allowed to inhibit good teaching. However, it is the duty of all members of the science staff, staff who work in the department occasionally, technicians, teaching assistants and other support staff (e.g. special needs and bilingual staff) and trainees to:

- take reasonable care for the health and safety of themselves and other persons who may be affected by their acts or omissions during work;
- be familiar with this health & safety policy by periodic reference to it
- look out for any revisions
- follow its provisions, and
- cooperate with other members of staff in promoting health and safety

Health and safety roles
Duties, functions and tasks
The employer has the ultimate duty to ensure the health and safety of employees and others on the site (and hence in this department). This employer has not currently issued any local instructions specific to science.

Within the science department, this task is delegated to the Head of Science who has the particular function of maintaining this policy document.

Communications
It is acknowledged that communication of health & safety information is of the greatest importance and is the task of the Head of Science with the assistance of subject specialists. In this department, all staff are issued with this policy. A reference copy is kept in the Head of Science office. Any new instructions, restrictions or rescinded (lifted) restrictions made by the employer are communicated to all staff in writing as well as being attached to the reference copy of this policy.

Monitoring and checking
The employer expects the science department to monitor the implementation of this policy [and the employer’s Code of Practice for Science]. Records of monitoring are kept by the Head of Department.

Checklists on resources and facilities for annual use by technicians are customised from those suggested in CLEAPSS Guide L248 Running a Prep Room. The timetable for such checks is kept with the reference copy of this policy. Records of the checks are kept by the Head of Science.

Training policy
The person with the task of seeing that training is provided is the Head of Science.

Generally, this department follows guidance in the CLEAPSS documents L238, Health and Safety Induction and Training of Science Teachers and L234, Induction and Training of Science Technicians, suitably customised, to identify the training needs of staff.

Health & safety aspects of the work of newly qualified teachers and other new teachers-The Head of Department

Health and safety of trainees on teaching practice-The Head of Department

Induction of newly-appointed technicians-The Senior Technician

Immediate remedial measures and other emergency procedures (spills, bench fires, )-The Head of Department

Training in the use of specialist equipment, chemicals or procedures (in line with CLEAPSS guides L238 and L234, as customised)-The Head of Science.

Health & safety training of non-science support staff-The Head of Science

Manual handling for all staff using laboratories-The Head of Science

Healthy and safe procedures for laboratory cleaners-The Head of Science

Regular update training (covering new or changed regulations, new equipment etc)- The Head of Science

Records of the training received by members of the science staff are kept in the Safety Check File.

Risk assessments
Every employer is required under various regulations1 to supply employees with a risk assessment before any hazardous activity takes place. Because it is impracticable for the employer to write risk assessments for each of the many activities in school science, this employer follows the recommendation of the Health and Safety Commission to adopt published ‘model’ or ‘general’ risk assessments which school science departments adapt to their local circumstances.

The employer has instructed that the following publications are to be used as sources of model (general) risk assessments.

CLEAPSS2 publications generally

CLEAPSS, Hazcards, current edition
Whenever a new course is adopted or developed, all activities (including preparation and clearing up work) are checked against the model risk assessments and significant findings are incorporated into texts in daily use, i.e. the scheme of work / technician notes. If a model risk assessment for a particular operation involving hazards cannot be found in these texts, a special risk assessment is obtained, following the employer’s instructions, from CLEAPSS.

In order to assess the risks adequately, the following information is collected.

- Details of the proposed activity.
- The age and ability of the persons likely to do it.
- Details of the room to be used, i.e. size, availability of services and whether or not the ventilation rate is good or poor.
- Any substance(s) possibly hazardous to health.
- The quantities of substances hazardous to health likely to be used, including the concentrations of any solutions.
- Class size.
- Any other relevant details, e.g. high voltages, heavy masses, etc.

Since the scheme of work been checked against the model risk assessments, staff should deviate from it only if their proposed activities have been agreed with the Head of Science. We encourage the development of new practical activities (including on open evenings, at science clubs, etc) but these should be undertaken only after a prior check against model risk assessments and/or a special risk assessment has been obtained.

Where an activity must be restricted to those with special training, that restriction is included in a note on the text.

For technicians’ activities in and around the prep room, the assessments in CLEAPSS publication PS25, Model Risk Assessments for Laboratory Technician Activities have been customised.

**Equipment and resources**

**Fume cupboards**

The COSHH Regulations require the regular testing of fume cupboards (maximum interval 14 months) with a quick check before use. Testing normally takes place each year in Summer.

The Head of Science has the function of seeing that this happens. This employer has arranged a contract with BBC who will be allowed access to carry out the tests. The records of the tests are available for staff reference and for inspection by the employer's representative or an HSE Inspector in the Safety Check File.

All users have been trained to carry out a quick check that a fume cupboard is working before use.

No smoking of cigarettes is permitted in the school. However, demonstrations of a ‘smoking machine’ are permitted in fume cupboards in designated laboratories.

**Electrical testing**

To meet the requirements of the Electricity at Work Regulations, this employer requires portable electrical equipment to be inspected and tested regularly. The Head of Science has the function of seeing that this happens within the science department. Completed schedules are kept in the Safety Check File kept in the Head of Science Office and are available for staff reference and for inspection by the employer's representative or an HSE Inspector.

All users have been trained to carry out a quick visual inspection before using mains-powered equipment.
Laboratory rules for students

The rules for students during science lessons are as follows:

**Laboratory Rules**
The biggest danger in the lab is **YOU**! You are at risk when you don’t understand the hazards or you are careless, or both. The person most likely to suffer from your mistakes is **YOU**! Report any accident or breakage to your teacher.

1. Only enter a lab when told to do so by a teacher. Never rush about or throw things in the lab. Keep your bench and floor area clear, with bags and coats well out of the way.
2. Follow instructions precisely; check bottle labels carefully and keep tops on bottles except when pouring liquids from them; only touch or use equipment and materials when told to do so by a teacher; never remove anything from the lab without permission.
3. Wear eye protection when told to do so and keep it on from the very start until all practical work is finished and cleared away.
4. When using naked flames (eg, Bunsen or spirit burners or candles), make sure that ties, hair, baggy clothing etc are tied back or tucked away.
5. Always stand up when working with hazardous substances or when heating things so you can quickly move out of the way if you need to.
6. Never taste anything or put anything in your mouth in the laboratory. If you get something in your mouth, spit it out at once and wash your mouth out with lots of water. Tell your teacher.
7. Always wash your hands carefully after handling chemicals, microbes or animal and plant material.
8. If you are burnt or a chemical splashes on your skin, wash the affected part at once with lots of water. Tell your teacher.
9. Never put waste solids in the sink. Put them in the bin unless your teacher instructs you otherwise.
10. Wipe up all small spills and report bigger ones to your teacher.
Literacy in science

The development of literacy skills in science is vital to raising subject achievement. In order to access the A*-C in science students must develop skills in the following areas

- Write for a variety of purposes and audiences, collect information, organise ideas and write accurately to show “what they know” across subject areas
- Access information and read with understanding and comprehension
- Speak and listen effectively across a range of contexts, developing their ability to negotiate, hypothesise, present information and extend and clarify their ideas and thinking

This will also have an impact on their self-esteem, motivation and ability to work independently. We believe that we should equip our pupils with the necessary transferable skills to be fully literate in the 21st century.

Priorities and intended outcomes

These will be decided as a result of in-school auditing, e.g. work scrutiny, observations, departmental review, data analysis (including teacher assessment) and pupil voice.

Specific Strategies to include in planning, teaching and learning

- Highlight the importance of science specific literacy and literacy in English lessons
- Highlight the links between reading, writing and speaking and listening
- Ensure progression in development in reading, writing, speaking and listening

Assessment

- Departments will take pupils’ literacy skills into account when giving feedback to parents
- Departments will demonstrate high expectations over the standard and presentation of all written work
- Assessment of pupils’ literacy skills will feed into future planning
- Marking for literacy will be consistent with the whole school policy

Teachers in science will:

- Adopt a consistent approach to teaching literacy skills in lessons
- Be familiar with and implement a range of strategies aimed at equipping students with the necessary literacy skills to succeed
- Indicate in schemes of work where skills will be explicitly taught
Specific Strategies: Reading

Pupils will have opportunities to:

- Develop research skills using print, media and multi modal texts
- Develop ability to skim and scan texts, highlighting important information
- Develop comprehension skills
- Develop confidence in handling a variety of texts

Teachers will aim to:

- Specifically highlight reading strategies to support pupils, e.g. skimming, scanning, re reading to check meaning, predicting, empathising
- Highlight structure, layout, format and other “signposts” in texts typical of their subject
- Support pupils in developing effective highlighting and note making skills
- Support pupils in developing their ability to interrogate texts to access literal and implicit meanings
- Support pupils in recognising and challenging bias

Specific Strategies: Writing

Pupils will have opportunities to:

- Write in a variety of forms for different purposes and audiences
- Plan, draft and discuss their writing
- Review different texts, developing their understanding of key features of a range of text types

Teachers will aim to:

- Offer student a range of appropriate models for writing and highlight the key features and criteria for success for each one
- Provide support for effective planning
- Model writing (e.g. the first paragraph) so pupils are able to see “how it’s done”
- Use shared and guided writing where appropriate
- Offer opportunities to complete extended pieces of writing
- Use talk to develop ideas for writing
- Support pupils with spelling strategies
Specific Strategies: Speaking and Listening

Pupils will have opportunities to:

- Use talk for a range of purposes and audiences and in formal and informal contexts
- Use talk to develop, extend and present ideas
- Use talk to hypothesise and test theories
- Use talk to solve problems and work collaboratively
- Listen for specific purposes

Teachers will aim to:

- Provide opportunities to present ideas in a range of formal and informal contexts
- Use questioning techniques (e.g. no hands up, paired talk, use of Blooms Taxonomy to formulate questions, thinking time, open questions) to extend thinking and generate new questions
- Use a variety of grouping strategies (e.g. pairs, triads, jigsaw grouping, envoys)
- Support helpful talk behaviours (e.g. building, challenging, questioning, summarising)
- Give pupils the opportunity to take on various roles within a group (e.g. scribe, chair)
- Model effective listening
- Provide a clear focus for listening
Numeracy in Science

The purpose of the science numeracy policy is to use strategies which support the whole school policy and contribute to higher attainment in science. It is expected that the science department staff will

a) to develop, maintain and improve standards in numeracy
b) ensure consistency of practice including methods, vocabulary, notation, etc. by collaborating with the Mathematics department
c) carry out a numeracy review of the science curriculum to highlight where numeracy is used
d) Use the Mathematics in science place mats developed by The Blackpool Heads of Science for use by all staff in all lesson where numeracy is used

Teachers of science are expected to:

1. Ensure that they are familiar with correct mathematical language, notation, conventions and techniques, relating to their own subject, and encourage students to use these correctly.
2. Be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills.
3. Provide information for mathematics teachers on the stage at which specific numeracy skills will be required for particular groups.
4. Provide resources for mathematics teachers to enable them to use examples of applications of numeracy relating to other subjects in mathematics lessons.
5. Highlight the use of Numeracy in lessons. Use mathematics place mats in science lessons when numeracy is involved
6. BE POSITIVE ROLE MODELS AND PROMOTERS OF MATHEMATICS. It is essential that pupils don’t hear ‘I was never any good at maths anyway’ or ‘I’m Rubbish at maths’ etc. We cannot allow it to be acceptable to be ‘bad’ at mathematics. We would never admit that we ‘can’t read’ or ‘can’t write’. Numeracy is just as important as Literacy
**Able and Ambitious**

The science department will support the whole school policy by

Identifying and contributing to extending the cohort of students deemed able and ambitious

Target at least the top 20% in science sets by

Identifying students with high CATs  Mean 110/115+ or 120+ in an individual area

Subject Nominations

Pupils targeted A* /A or level 7 within science assessment

Pupil Self nomination (if they can evidence their interest and hard work.)

Parent nomination (again with evidence of high level of interest in an area)

Pupils have opportunity to take part in extracurricular activities such as STEM club.

Share strategies and best practice and use it to inform collective and individual planning tasks

Provide INSET and training for science staff

Annual review of students using the following criteria

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**Criteria for selecting Gifted, Able and Talented pupils in Science**

Pupils show their special abilities in science in a variety of ways and at varying points in their development. Pupils who are gifted in science are likely to:

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<tr>
<td>1</td>
<td>Be imaginative and self motivated</td>
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<tr>
<td>2</td>
<td>Be extremely interested in finding out more about themselves and things around them and show intense interest in one particular area of science.</td>
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<tr>
<td>3</td>
<td>Have scientific hobbies and/or be members of scientific clubs and societies</td>
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<td>4</td>
<td>Be able to sustain their interest and go beyond an obvious answer to underlying mechanisms and greater depth</td>
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<tr>
<td>5</td>
<td>Be inquisitive about how things work and why things happen</td>
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<td>6</td>
<td>Enjoy challenges and problem solving, often being self-critical</td>
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<td>7</td>
<td>Think abstractly at an earlier age than usual, understand models, use modelling to</td>
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<tr>
<td>Criteria</td>
<td>Level</td>
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<tr>
<td>10 – 14  Criteria ticked</td>
<td>Gifted</td>
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<tr>
<td>6 – 10   Criteria ticked</td>
<td>Talented</td>
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<tr>
<td>1-6      Criteria ticked</td>
<td>Able</td>
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**Guidance Notes**

Pupils who are gifted in science perform at levels that are unusually advanced for their age but this may not be demonstrated during formal testing alone. Their performance during thinking skills lessons and investigations may provide evidence. When identifying pupils who are gifted in science, it is important to judge whether they are likely to benefit from an enhanced or special programme. The pupils need to be able to keep up with their ordinary work, and teachers need to accommodate them.
# Provisional 2016 Science Exam Dates

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<thead>
<tr>
<th>Science A (J241)</th>
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<tbody>
<tr>
<td>A161/1 Modules B1, B2, B3 Foundation</td>
<td>1 h</td>
<td>Tue</td>
<td>17 May pm</td>
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<td>17 May pm</td>
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<td>A171/1 Modules C1, C2, C3 Foundation</td>
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<td>Thu</td>
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<td>Thu</td>
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<td>1 h</td>
<td>Wed</td>
<td>25 May pm</td>
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