Curriculum Map

Intent

Our 5-year science curriculum aims to develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Chemistry and Physics. Developing an understanding of the nature, processes and methods of science through different types of science enquiries helps students to answer scientific questions about the world around them. The department’s aim is not just focused on exams but using science to understand the world around us, our own lives and the future we have ahead of us.

We endeavour to excite and enthuse our pupils in Science and share information on career opportunities and links to STEM. Practical skills are an important feature of our teaching and we strive to develop independence and their ability to formulate an investigation, using scientific method and analysing results, linking to the bigger picture.

Enjoyment in Science is key to ensure full engagement and to maximise progress within and throughout lessons.

20-21 we analysed the order of content in years 7 and 8, introduced Practical Investigation Skills Sheets and looked at the way in which we deliver practical lessons.

21-22 we analysed groupings (sets/mixed ability) and made changes accordingly.

Impact: *How does the curriculum you have implemented achieve what you intended – consider progress, examination performance, option numbers, pupil voice, study at A level/degree etc.*

Our curriculum enables pupils to be taught by a specialist throughout their time at LCS and being taught all subjects all the time (not in blocks). This enables them to consistently have a broad and balanced curriculum and enables them to manage their time effectively. They can revise all subjects throughout the year and have access to their specialist teacher throughout, to enable them to go over any misconceptions along the way. All pupils are taught by a specialist, and therefore have 3 teachers for their Science lessons.

Year 7 and 8 are taught in tutor groups (mixed ability), where the initial focus is on safety and familiarity of the Science labs and equipment. We then follow the order above and have developed our own scheme of work around this, based around lessons from the ‘Activate’ and ‘Spotlight on Science’ schemes. Y9, 10 and 11 follow the EDEXCEL GCSE 9-1 Science Syllabus, with Key Concepts being covered in Y9 in Biology, Chemistry and Physics. The department have worked hard to develop a bespoke scheme of work for Biology, Chemistry and Physics. Pupils (from September 2022 onwards) are taught in mixed ability groups in Y9, based on Y7 and 8 data. All pupils complete the same End of Topic and End of Year tests. This ensures inclusivity and fairness across all year groups. These groups are amended in Y10, to accommodate Triple Science. As of September 2022, we will be analysing how this has gone (as we are 2 years into this), with a view to change Year 11 groups to accommodate higher and foundation tier candidates as necessary.

Examination performance shows an upward trend in terms of attainment and progress (see exam analysis sheets completed yearly).

All pupils study science. The Entry Level qualification is available to those pupils who would benefit from it; however, we strive to enable all pupils to attempt the full (double award) GCSE in Combined Science where possible.

Triple Science is an option subject, where pupils study an additional 5 hours per fortnight in Science. Our numbers are healthy, with roughly 20-25% of the cohort opting to take on this additional qualification.

Pupil voice: pupils are regularly given opportunity to give their feedback in terms of what they enjoy, what we do well, and what they would like to see change. On the whole this feedback is positive, with pupils clearly enjoying Science, finding it challenging and exciting at the same time.

A number of pupils go on to study Science at A-Level (actual figure unknown: no school data).

**Curriculum Map**

**Biology**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **½ Term** | **1**  **7 weeks** | **2**  **7 weeks** | **3**  **6 weeks** | **4**  **6 weeks** | **5**  **6 weeks** | **6**  **6 weeks** |
| **7**  **1h/ week** | Microscopes and cells | Microscopes and cells | Body Systems | Body Systems | Reproduction  Year 7 Exam | Reproduction |
| **8**  **1h/ week** | Health and Lifestyle | Health and Lifestyle | Ecosystems | Ecosystems | Adaptations | Adaptations  Year 8 Exam |
| **9**  **1h/ week** | Microscopes and cells | Food tests / Enzymes | Transporting Substances  Year 9 Exams | Mitosis and asexual/ reproduction | Growth and Stem Cells | Nervous System, Eye, Brain |
| **10 3h/ fortnight** | Genetics | Genetics | Natural Selection | Health and Disease | Plant Structures | Plant Structures  Year 10 Exam |
| **10 Triple**  **2h fortnight** | Genetics | Genetics | Natural Selection, Evolution, classification, GM Crops | Health and Disease | Plant Structures | Plant Structures, Plant adaptations  Year 10 Exam |
| **11**  **3h/ fortnight** | Animal Coordination/ Exchange and transport | Exchange and transport | Ecosystems | Ecosystems/ Revision | Key Concepts Revisited  The Bigger Picture  Core practical’s revisited | Revision |
| **11 Triple**  **2h/ fortnight** | Animal Coordination, Thermoregulation and Osmoregulation | Exchange and transport, Surface area to volume ratio and Ficks law | Ecosystems  Mock Exams | Ecosystems/ Revision | Key Concepts Revisited  The Bigger Picture  Core practical’s revisited | Revision |

**Chemistry**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **½ Term** | **1**  **7 weeks** | **2**  **7 weeks** | **3**  **6 weeks** | **4**  **6 weeks** | **5**  **6 weeks** | **6**  **6 weeks** |
| **7**  **1h/ week** | Investigation Skills and Reactions | Investigation Skills and Reactions | Particles, Elements, Atoms | Particles, Elements, Atoms | The Periodic Table | The Periodic Table  Year 7 Exam |
| **8**  **1h/ week** | Reactions | Reactions | Acids and Alkalis | Acids and Alkalis | Metals and the Earth | Metals  Year 8 Exam |
| **9**  **1h/ week** | States of Matter/Pure & Mixtures | Separating subs  Atomic Structure | The Periodic Table  Year 9 Exam | Ionic Bonding | Covalent Bonding | Metallic Bonding  Bonding models |
| **10 3h/ fortnight** | Acids and Alkalis | Acids and Alkalis | Calculations | Electrolysis | Ores and Equilibrium | Bonding recap  Year 10 Exam |
| **10 Triple**  **2h fortnight** | Acids and Alkalis | Acids and Alkalis  Calculations | Calculations  Electrolysis | Ores, Equilibrium and Metals | Calculations, Electrolysis Quantitative Chemistry | Quantitative Chemistry  Year 10 Exam |
| **11 3h/ fortnight** | Groups in the PT  Reaction rates | Fuels | Earth and Atmosphere  Mock Exams | Key Concepts Revisited  Core practicals revisited | Key Concepts Revisited  Core practicals revisited | Revision/Exams |
| **11 Triple**  **2h fortnight** | Groups in the PT  Reactions  Fuels | Fuels, Earth and Atmosphere  Hydrocarbons, Alcohols & Carboxylic Acids | Hydrocarbons, Alcohols, Carboxylic Acids, Polymers  Mock Exams | Testing for Ions, Nanoparticles | Key Concepts Revisited  Core practicals revisited | Revision/Exams |

**Physics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **½ Term** | **1**  **7 weeks** | **2**  **7 weeks** | **3**  **6 weeks** | **4**  **6 weeks** | **5**  **6 weeks** | **6**  **6 weeks** |
| **7**  **1h/ week** | Forces and Motion | Forces and Motion  Energy | Energy | Energy  Waves and Sound | Waves and Sound  Light | Light  Year 7 Exam |
| **8**  **1h/ week** | Space | Space  Electricity | Electricity  Magnetism | Magnetism | Pressure | Pressure  Year 8 Exam |
| **9**  **1h/ week** | Motion | Forces and Motion | Year 9 Exam  Forces and motion | Forces and Motion  Energy | Energy | Energy  Waves and EMS |
| **10 3h/ fortnight** | Waves  Electromagnetic spectrum | Waves  Electromagnetic spectrum  Radioactivity | Radioactivity | Work, force, power | Electricity | Electricity  Year 10 Exam |
| **10 Triple**  **1h fortnight** | Electromagnetic Spectrum  Conduction  Magnetism | Electromagnetic Spectrum | Radioactivity | Radioactivity | Astronomy | Work, power, energy  Year 10 Exam |
| **11 3h/ fortnight** | Electricity  Electromagnetic Induction | Electromagnetic Induction | Particles and Matter  Mock Exams | Key Concepts Revisited  Core practicals revisited | Key Concepts Revisited  Core practicals revisited | Revision/Exams |
| **11 Triple**  **1h fortnight** | Particles and Matter | Particles and Matter | Particles and Matter | Particles and Matter | Key Concepts Revisited  Core practicals revisited | Revision/Exams |