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**

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| **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  | ReproductionYear 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 StructuresYear 10 Exam |
| **10 Triple****2h fortnight** | Genetics  | Genetics | Natural Selection, Evolution, classification, GM Crops   | Health and Disease | Plant Structures | Plant Structures, Plant adaptationsYear 10 Exam |
| **11****3h/ fortnight** | Animal Coordination/ Exchange and transport | Exchange and transport  | Ecosystems | Ecosystems/ Revision  | Key Concepts RevisitedThe Bigger PictureCore practical’s revisited | Revision |
| **11 Triple****2h/ fortnight** | Animal Coordination, Thermoregulation and Osmoregulation | Exchange and transport, Surface area to volume ratio and Ficks law | EcosystemsMock Exams | Ecosystems/ Revision  | Key Concepts RevisitedThe Bigger PictureCore practical’s revisited | Revision |

**Chemistry**

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| **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 subsAtomic Structure | The Periodic TableYear 9 Exam | Ionic Bonding | Covalent Bonding | Metallic BondingBonding models  |
| **10 3h/ fortnight** | Acids and Alkalis | Acids and Alkalis  | Calculations | Electrolysis | Ores and Equilibrium | Bonding recapYear 10 Exam |
| **10 Triple****2h fortnight** | Acids and Alkalis | Acids and AlkalisCalculations | CalculationsElectrolysis | Ores, Equilibrium and Metals | Calculations, Electrolysis Quantitative Chemistry | Quantitative ChemistryYear 10 Exam  |
| **11 3h/ fortnight** | Groups in the PT Reaction rates  | Fuels | Earth and AtmosphereMock Exams | Key Concepts RevisitedCore practicals revisited | Key Concepts RevisitedCore practicals revisited | Revision/Exams |
| **11 Triple****2h fortnight** | Groups in the PT ReactionsFuels  | Fuels, Earth and AtmosphereHydrocarbons, Alcohols & Carboxylic Acids  | Hydrocarbons, Alcohols, Carboxylic Acids, PolymersMock Exams  | Testing for Ions, Nanoparticles  | Key Concepts RevisitedCore practicals revisited | Revision/Exams |

**Physics**

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| **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 MotionEnergy | Energy  | Energy Waves and Sound | Waves and SoundLight  | LightYear 7 Exam |
| **8** **1h/ week** | Space  | SpaceElectricity | ElectricityMagnetism | Magnetism  | Pressure  | PressureYear 8 Exam |
| **9****1h/ week** | Motion   | Forces and Motion | Year 9 ExamForces and motion  | Forces and MotionEnergy | Energy   | EnergyWaves and EMS |
| **10 3h/ fortnight** | Waves Electromagnetic spectrum   | WavesElectromagnetic spectrumRadioactivity | Radioactivity | Work, force, power  | Electricity | ElectricityYear 10 Exam |
| **10 Triple****1h fortnight** | Electromagnetic SpectrumConduction Magnetism | Electromagnetic Spectrum | Radioactivity  | Radioactivity   | Astronomy  | Work, power, energyYear 10 Exam |
| **11 3h/ fortnight** | ElectricityElectromagnetic Induction | Electromagnetic Induction | Particles and MatterMock Exams | Key Concepts RevisitedCore practicals revisited | Key Concepts RevisitedCore practicals revisited | Revision/Exams |
| **11 Triple****1h fortnight** | Particles and Matter | Particles and Matter | Particles and Matter | Particles and Matter | Key Concepts RevisitedCore practicals revisited | Revision/Exams |