

Curriculum Statement KS3 for Science at LCA

Subject Overview: KS3 science aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- Help pupils to become equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.
- In year 7 and year 8 students follow the Activate program. This program is designed to cover the new tougher KS3 National Curriculum and prepare students for the new linear tougher GCSE exams from 2016.
 - **Maths, literacy and working scientifically** are embedded throughout to develop key skills
 - Incorporates **formative** and **summative** auto-marked assessments, progress tasks and trackers, plus course-work style-tasks and exam-style papers
 - Prepares students for GCSE with **exam-style questions** with GCSE command words and **Quality of Written Communication (QWC)** questions incorporated throughout
 - The content has also been increased at KS3 to include more challenging areas that will be necessary to prepare students for the new GCSE in 2016
 - Students are assessed using a banding system. At LCA we then apply a Science progress level to the student. This is similar but not the same as the old NC Level as has been developed to provide a good indicator of how well the student is progressing towards the new GCSE criteria. New yr 7 students will undertake a baseline assessment at the start of yr7 to establish themselves on the new system. Current yr 8 have already been assessed and students may notice a slight dip in level as we move to the new level system which is harder and is linked to the new GCSE Grade boundaries

Activate Band	Developing		Secure		Extending	
Science Progress Level	3	4	5	6	7	8
(Approx) Old NC Level	3	4	5	6	7	
GCSE grade equivalent	E	D	C	B	A	A*

Key topics:	Working Scientifically Skills Developed	Literacy Skills Developed	Numeracy Skills Developed
<p>WORKING SCIENTIFICALLY</p> <ul style="list-style-type: none"> • Asking scientific questions • Planning Investigations • Recording Data • Analysing Data • Evaluating Data 	<p>Ask questions to develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience</p> <p>Select plan and carry out the most appropriate types of scientific enquires to test predictions including identifying independent dependent and control variables</p> <p>Using appropriate techniques apparatus and materials during fieldwork and laboratory work, paying attention to health and safety.</p> <p>Present observations and data using appropriate methods including tables and graphs</p> <p>Evaluate data showing awareness of potential sources of random and systematic error</p> <p>Evaluate the reliability of methods and suggest possible improvements</p>	<p>Use of scientific terms</p> <p>Adopting an appropriate writing style</p> <p>Presenting ideas in structured sentences</p> <p>Summarising and presenting</p>	<p>Calculating means</p> <p>Constructing and interpreting graphs to find relationships</p>

<p>B1 BIOLOGY</p> <ol style="list-style-type: none"> 1. Cells <ul style="list-style-type: none"> • Observing Cells • Plant and Animal Cells • Specialised Cells • Movement of Substances • Unicellular Organisms 2. Structure and function of body systems <ul style="list-style-type: none"> • Levels of Organisation • Gas Exchange • Breathing • Skeleton • Joints • Muscles 3. Reproduction <ul style="list-style-type: none"> • Adolescence • Reproductive Systems • Fertilisation and Implantation • Development of a Fetus • The menstrual cycle • Flowers and Pollination • Fertilisation and Germination • Seed dispersal 	<p>Using appropriate techniques apparatus and materials during fieldwork and laboratory work, paying attention to health and safety.</p> <p>Present observations and data using appropriate methods including tables and graphs</p> <p>Make and record observations using a range of methods.</p> <p>Interpret observations of data including identifying patterns and using observations, measurements and data to draw conclusions.</p> <p>Evaluate the reliability of methods and suggest possible improvements</p>	<p>Identifying meanings in text taking into account bias</p> <p>Summarise a range of information from different sources</p> <p>Using scientific terms correctly</p> <p>Taking different roles in discussion and show understanding of ideas and sensitivity to others</p> <p>Using correct form in a range of writing styles including relevant information for the audience</p> <p>Developing coherent sentences and paragraphs and using alternative ways of presenting information (tables etc) correctly.</p>	<p>Understanding number size and scale and the quantitative relationship between units</p> <p>Understanding when and how to use estimation</p> <p>Calculating percentages</p> <p>Plot and drawing line graphs and selecting appropriate scales</p> <p>Understanding and using common measures and simple compound measures such as speed.</p> <p>Carry out calculations using $\pm x$ / singly or in combination.</p>
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<p>C1 CHEMISTRY</p> <p>1. Particles and their behaviour</p> <ul style="list-style-type: none"> • The particle model • States of matter • Melting and freezing • Boiling • More changes of state • Diffusion • Gas Pressure <p>2. Elements Atoms and Compounds</p> <ul style="list-style-type: none"> • Elements • Atoms • Compounds • Chemical Formulae <p>3. Reactions</p> <ul style="list-style-type: none"> • Chemical Reactions • Word Equations • Burning Fuels • Thermal Decomposition • Conservation of Mass • Exothermic and Endothermic 	<p>identifying independent dependent and control variables</p> <p>Present observations and data using appropriate methods including tables and graphs</p> <p>Interpret observations of data including identifying patterns and using observations, measurements and data to draw conclusions.</p> <p>Evaluate data showing awareness of potential sources of random and systematic error</p> <p>Make and record observations using a range of methods</p> <p>Understand and use SI units and IUPAC chemical nomenclature</p> <p>Ask questions to develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience</p> <p>Present reasoned explanations explaining data in relation to predictions and hypothesis.</p>	<p>Predicting making inferences and describing relationships</p> <p>Assessing information to ascertain meaning using word skills and comprehension strategies</p> <p>Communicating ideas to a wider range of audiences adapting writing style to suit audience and purpose</p> <p>Making connections within/across a range of texts/themes and from personal experience.</p> <p>Using scientific terms</p> <p>Organisation of ideas</p> <p>Collaboration and exploratory talk</p> <p>Legibility and SPAG</p>	<p>Understanding number size and scale and the quantitative relationship between units</p> <p>Understanding when and how to use estimation</p> <p>Use of calculations and conversion between fractions ratios and percentages</p> <p>Plot and drawing line graphs and selecting appropriate scales</p> <p>Understand when and how to use direct proportion and ratios</p> <p>Carry out calculations using $\pm x$ / singly or in combination.</p> <p>Understand the terms = <> ~</p>
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<p>4. Acids and Alkalis</p> <ul style="list-style-type: none"> • Acids and Alkalis • Indicators and PH • Neutralisation • Making Salts 			
<p>P1 PHYSICS</p> <p>1. Forces</p> <ul style="list-style-type: none"> • Introduction to Forces • Squashing and Stretching • Drag Forces and Friction • Forces at a distance • Balanced and unbalanced <p>2. Sound</p> <ul style="list-style-type: none"> • Waves • Sound and Energy Transfer • Loudness and Pitch • Detecting Sound • Echoes and Ultrasound <p>3. Light</p> <ul style="list-style-type: none"> • Light • Reflection • Refraction • The eye and the camera • Colour 	<p>Make predictions using scientific knowledge and understanding</p> <p>Interpret observations of data including identifying patterns and using observations, measurements and data to draw conclusions</p> <p>Understand that scientific methods develop as earlier explanations are modified to take account of new evidence and ideas.</p> <p>The importance of publishing results and peer review</p> <p>Using appropriate techniques apparatus and materials during fieldwork and laboratory work, paying attention to health and safety.</p> <p>Present observations and data using appropriate methods including tables and graphs</p>	<p>Identifying meanings in text taking into account bias</p> <p>Summarise a range of information from different sources</p> <p>Using scientific terms</p> <p>Identify the main ideas and supporting evidence in text</p> <p>Using correct form in a range of writing styles including relevant information for the audience</p> <p>Organising ideas into well developed linked paragraphs.</p>	<p>Calculating means</p> <p>Quantitative problem solving</p> <p>Understanding number size and scale and the quantitative relationship between units</p> <p>Plot and drawing line graphs and selecting appropriate scales</p> <p>Extract and interpret information from charts graphs and tables</p> <p>Understanding when and how to use estimation</p> <p>Understand when and how to use direct proportion and ratios</p> <p>Carry out calculations using $\pm x$ / singly or in combination.</p> <p>Substitute numerical values into</p>

<p>4. Space</p> <ul style="list-style-type: none"> • The night sky • The Solar System • The Earth • The moon 	<p>Evaluate data showing awareness of potential sources of random and systematic error</p> <p>Present reasoned explanations explaining data in relation to predictions and hypothesis</p> <p>Evaluate risks</p> <p>Select plan and carry out the most appropriate types of scientific enquires to test predictions including identifying independent dependent and control variables</p>		<p>formulae using appropriate units.</p>
<p>B2 BIOLOGY</p> <p>1. Health and Lifestyle</p> <ul style="list-style-type: none"> • Nutrients • Food Tests • Unhealthy Diet • Digestive System • Bacteria and Enzymes • Drugs • Alcohol • Smoking <p>2. Ecosystem Processes</p> <ul style="list-style-type: none"> • Photosynthesis • Leaves 	<p>Understand that scientific methods develop as earlier explanations are modified to take account of new evidence and ideas.</p> <p>Present reasoned explanations explaining data in relation to predictions and hypothesis</p> <p>Present observations and data using appropriate methods including tables and graphs</p> <p>Interpret observations of data including identifying patterns and using observations, measurements</p>	<p>Identifying meanings in text taking into account bias</p> <p>Summarise a range of information from different sources</p> <p>Using scientific terms</p> <p>Approach detailed writing tasks by creating a structural plan</p> <p>Present arguments discussing issues, ethics and opinions of others</p> <p>Using correct form in a range of writing styles including relevant</p>	<p>Quantitative problem solving</p> <p>Understanding number size and scale and the quantitative relationship between units</p> <p>Use of calculations and conversion between fractions ratios and percentages</p> <p>Plot and drawing line graphs and selecting appropriate scales</p> <p>Extract and interpret information from charts graphs and tables</p>

<ul style="list-style-type: none"> • Plant Materials • Chemosynthesis • Aerobic Respiration • Anaerobic Respiration • Food Chains and webs • Disruptions to food chains and webs • Ecosystems <p>3. Adaptation and inheritance</p> <ul style="list-style-type: none"> • Competition and Adaptation • Adapting to change • Variation • Continuous and Discontinuous • Inheritance • Natural Selection • Extinction 	<p>and data to draw conclusions</p> <p>Apply sampling techniques</p> <p>Evaluate data showing awareness of potential sources of random and systematic error</p> <p>Select plan and carry out the most appropriate types of scientific enquires to test predictions including identifying independent dependent and control variables</p> <p>Undertake basic data analysis including simple statistical techniques</p> <p>Make and record observations using a range of methods</p> <p>Using appropriate techniques apparatus and materials during fieldwork and laboratory work, paying attention to health and safety.</p> <p>Present observations and data using appropriate methods including tables and graphs</p>	<p>information for the audience</p> <p>Taking different roles in discussion and show understanding of ideas and sensitivity to others</p> <p>Organising ideas into well developed linked paragraphs.</p> <p>Using alternative ways appropriately to present ideas.</p>	<p>Carry out calculations using $\pm x /$ singly or in combination.</p> <p>Understand and use common units and simple compound units</p>
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<p>C2 CHEMISTRY</p> <ol style="list-style-type: none"> 1. The Periodic Table <ul style="list-style-type: none"> • Metals and non -metals • Groups and Periods • The elements of group 1 • The elements of group 7 • The elements of group 0 2. Separation Techniques <ul style="list-style-type: none"> • Mixtures • Solutions • Solubility • Filtration • Evaporation and distillation • Chromatography 3. Metals and Acids <ul style="list-style-type: none"> • Acids and metals • Metals and Oxygen • Metals and Water • Metal Displacement Reactions • Extracting Metals • Ceramics • Polymers • Composites 	<p>Interpret observations of data including identifying patterns and using observations, measurements and data to draw conclusions.</p> <p>Apply mathematical concepts and calculate results</p> <p>Make and record observations using a range of methods</p> <p>Evaluate risks</p> <p>Using appropriate techniques apparatus and materials during fieldwork and laboratory work, paying attention to health and safety.</p> <p>Select plan and carry out the most appropriate types of scientific enquires to test predictions including identifying independent dependent and control variables</p> <p>Make predictions using scientific knowledge and understanding</p> <p>Present observations and data using appropriate methods including tables and graphs</p>	<p>Identifying meanings in text taking into account bias</p> <p>Summarise a range of information from different sources</p> <p>Using scientific terms</p> <p>Collaboration and contribution to group discussion</p> <p>Organising ideas into well developed linked paragraphs.</p> <p>Identifying the main ideas and supporting evidence in text</p> <p>Using correct form in a range of writing styles including relevant information for the audience</p>	<p>Quantitative problem solving</p> <p>Understand when and how to use direct proportion and ratios</p> <p>Use of calculations and conversion between fractions ratios and percentages</p> <p>Calculating means</p> <p>Extract and interpret information from charts graphs and tables</p> <p>Understanding number size and scale and the quantitative relationship between units</p> <p>Carry out calculations using $+ - \times /$ singly or in combination.</p> <p>Understand the terms = <> ~</p>
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<p>4. The Earth</p> <ul style="list-style-type: none"> • The Earth and its atmosphere • Sedimentary Rocks • Igneous Rocks • The Rock Cycle • The Carbon Cycle • Climate Change • Recycling 			
<p>P2 PHYSICS</p> <p>1. Electricity and Magnetism</p> <ul style="list-style-type: none"> • Charging up • Circuits and Current • Potential Difference e • Series and parallel • Resistance • Magnetic and magnetic fields • Electromagnets • Using electromagnets <p>2. Energy</p> <ul style="list-style-type: none"> • Food and fuels • Energy acts up • Energy and temperature • Energy Transfer :particles • Energy transfer: radiation • Energy and Power 	<p>Interpret observations of data including identifying patterns and using observations, measurements and data to draw conclusions</p> <p>Make and record observations using a range of methods</p> <p>Using appropriate techniques apparatus and materials during fieldwork and laboratory work, paying attention to health and safety.</p> <p>Select plan and carry out the most appropriate types of scientific enquires to test predictions including identifying independent dependent and control variables</p> <p>Make predictions using scientific knowledge and understanding</p>	<p>Select synthesise and compare information from a variety of sources</p> <p>Using scientific terms confidently</p> <p>Organising ideas and evidence</p> <p>Organising ideas into well developed linked paragraphs.</p> <p>Identifying the main ideas and supporting evidence in text</p> <p>Using correct form in a range of writing styles including relevant information for the audience</p>	<p>Quantitative problem solving</p> <p>Extract and interpret information from charts graphs and tables</p> <p>Calculating means</p> <p>Plot and drawing line graphs and selecting appropriate scales</p> <p>Understand when and how to use direct proportion and ratios</p> <p>Understanding when and how to use estimation</p> <p>Understanding number size and scale and the quantitative relationship between units</p> <p>Substitute numerical values into</p>

<ul style="list-style-type: none"> • Work Energy and Machines <p>3. Motion and Pressure</p> <ul style="list-style-type: none"> • Speed • Motion graphs • Pressure in gases • Pressure in liquids • Pressure on Solids • Turning forces • 	<p>Evaluate the reliability of methods and suggest possible improvements</p> <p>Identify further questions from results</p> <p>Present reasoned explanations explaining data in relation to predictions and hypothesis</p> <p>Evaluate data showing awareness of potential sources of random and systematic error</p> <p>Evaluate risks Make predictions using scientific knowledge and understanding</p> <p>Present observations and data using appropriate methods including tables and graphs</p>		<p>formulae using appropriate units.</p> <p>Plot and drawing line graphs and selecting appropriate scales</p> <p>Carry out calculations using $\pm x$ / singly or in combination</p>
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What will my child study and when?

This will depend on what class they are in and what year group. Year 7 will complete B1 C1 and P1 but for year 8 they will take a mix of all 6 depending on which modules under the old scheme they have covered in year 7. Timings are approximate.

Year 7

Set	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1`	Summer 2
7X1 FAP	Baseline Test and Working Scientifically P1.1	P1.2 P1.3 P1.4	Physics Assessment and Physics big practical task B1.1 B1,2	B1.3 Biology Assessment	Biology Big Practical task C1.1 C1.2	C1.3 C1.4 Chemistry Assessment.
7X2 KME	Baseline Test and Working Scientifically B1.1	B1.2 B1.3 Biology Assessment	Biology Big Practical Task C1.1 C1.2	C1.3 C1.4 Chemistry Assessment	Chemistry Big Practical task P1.1 P1.2	P1.3 P1.4 Physics Assessment
7Y1 KME	Baseline Test and Working Scientifically B1.1	B1.2 B1.3 Biology Assessment	Biology Big Practical Task C1.1 C1.2	C1.3 C1.4 Chemistry Assessment	Chemistry Big Practical task P1.1 P1.2	P1.3 P1.4 Physics Assessment
7Y2 LHA	Baseline Test and Working Scientifically C1.1	C1.2 C1.3 C1.4 Chemistry Assessment	Chemistry Big Practical Project P1.1 P1.2	P1.3 P1.4 Physics Assessment	Physics Big Practical Task B1.1 B1.2	B1.3 B1.4 Biology Assessment.

Year 8

Set	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1`	Summer 2
8.1 LHA	C1.2 C1.3 'recap on acids' and Chemistry Assessment	P1.2 P1.3 P1.4	P1.4 +'Forces recap' and Physics Assessment. B1.1	B1.1 B1.2 B1.3 Biology Assessment	Biology 'Big Practical' task.	Set 1 start triple GCSE
8.2 TKN/LMA	B1.1 B1.2 B1.3	B1.3 Biology Assessment and Biology 'Big Practical Task'	C1.2 C1.3 'recap on acids' and Chemistry Assessment	P1.2 P1.3 P1.4	P1.4 +'Forces recap' and Physics Assessment Physics big Practical task	B2.1 B2.2
8.3 KME	P1.2 P1.3 P1.4	P1.4 +'Forces recap' and Physics Assessment Physics big Practical task	B1.1 B1.2 B1.3 Biology Assessment	Biology Big Practical Task C1.2	C1.3 'recap on acids' and Chemistry Assessment	B2.1 B2.2
8.4 FAP	P1.2 P1.3 P1.4	P1.4 +'Forces recap' and Physics Assessment Physics big Practical task	B1.1 B1.2 B1.3 Biology Assessment	Biology Big Practical Task C1.2	C1.3 'recap on acids' and Chemistry Assessment	B2.1 B2.2

Year 9

In year 9 Set 1 start Triple Science GCSE. Set 2,3,4 study units from Activate most relevant to preparing them for GCSE starting after Christmas . Set 5 begin Entry Level Science, a course design to develop enthusiasm for science and scientific skills as preparation for GCSE.

Set	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1`	Summer 2
9.1	SEE GCSE CORE SCIENCE CURRCIULUM STATEMENT					
9.2	C2 Chemistry big practical project B2.2	C3.1 C3,4 Written Assessment	SEE GCSE CORE SCIENCE CURRCIULUM STATEMENT			
9.3	C2 Chemistry big practical project B2.2	C3.1 C3,4 Written Assessment	SEE GCSE CORE SCIENCE CURRCIULUM STATEMENT			
9.4	C2 Chemistry big practical project B2.2	C3.1 C3,4 Written Assessment	SEE GCSE CORE SCIENCE CURRCIULUM STATEMENT			
9.5	SEE ENTRY LEVEL SCIENCE CURRICULUM STATEMENT					