

De Lisle College Curriculum

“Rooted and grounded in Love”.

Science



Intent – ‘Rooted and grounded in Love’

Intent – Rooted

Science is a body of knowledge that all students should have, so they have the power to understand the world they share and make informed decisions

Science (from the Latin word scientia, meaning "knowledge") is a set of ideas about the material world. The science curriculum at De Lisle aims to equip students with the knowledge and skills to apply the insights of science to the wonders of the universe.

Everything we know about the universe, from how plants reproduce to how the Universe itself came into existence, is the result of scientific research and experiment. Human progress throughout history has largely rested on advances in science. From our knowledge of gravity to the development of cutting-edge medicines, scientists have shaped our modern world for the better.

De Lisle students are surrounded by technology and the products of science every day. Government decisions that affect every aspect of our lives, both now and in the future, are based in scientific evidence. The solutions to problems facing our world, such as climate change, plastic pollution and antibiotic resistance, require the contributions of scientists. As De Lisle students grow up in an increasingly technologically and scientifically advanced world, they need to be scientifically literate to succeed.

Studying science is not just about accruing a series of facts: it is also a style of thinking. Science involves generating and testing ideas, gathering valid evidence – including by making observations, carrying out investigations and modelling, and communicating and debating with others – in order to develop scientific knowledge, understanding, and explanations. Scientific progress comes from logical, systematic work and from creative insight, built on a foundation of respect for evidence. By learning to use scientific method De Lisle students are taught how to think, learn, solve problems and make informed decisions. These skills are integral to every aspect of our students’ education and life, supporting them in making an informed and positive contributions to society now and in the future.

In the Science Department we work to inform, enthuse and inspire our students.



Science

Year 7



De Lisle College
A Catholic Voluntary Academy

Curriculum Outline

Link to Catholic Social Teaching:

Dignity of all people: In a module on the organ systems students explore the complexities of the human body and how we care for ourselves

Stewardship of creation: Students study the origin of the universe, experiencing the awesome and wonderful existence we have. Learning about all objects in space highlights the uniqueness of the Earth

Participation: By offering differentiated activities, students can participate at a level that they can be confident at.

Advent 1	Energy and Matter / Forces	Advent 2	Space
Description	Types of energy and energy transfers Particle model, density and state changes Types of forces Pressure	Description	The solar system Objects in space Days, seasons and years The origin of the universe
Lent 1	Atomic structure and the periodic table / Pure substances and mixtures	Lent 2	Chemical reactions / Organisation of living things
Description	Structure of the atom Atoms, elements and compounds Development of the periodic table Separating mixtures	Description	Types of reactions Word and symbol equations Organ systems and the skeleton Plant and animal cells
Pentecost 1	Nutrition and digestion	Pentecost 2	Skills: Hooke's Law
Description	Nutritional groups and a balanced diet The digestive system	Description	Planning and carrying out a scientific investigation Analysing data Using key scientific terminology

Science

Year 8



De Lisle College
A Catholic Voluntary Academy

Curriculum Outline

Link to Catholic Social Teaching:

Dignity of all people: The effects of drugs, alcohol and smoking on the body help students to learn how to live a safe and dignified life

Stewardship of the Earth: Students explore a range of resources and how we can use these resources in a sustainable way, protecting our world for future generations

Participation: By offering differentiated activities, students can participate at a level that they can be confident at.

Advent 1	Forces and motion / Waves and light	Advent 2	Reproduction and Life/Acids and bases
Description	Velocity and speed Resultant forces Springs and stretching Light. colour and sound	Description	Plant reproduction/Human reproduction Puberty and adolescence The menstrual cycle Acids & Alkalis Indicators and pH/Reactions of acids
Lent 1	Chemistry of the metals / Earth and its resources	Lent 2	Biological molecules
Description	The reactivity series Extracting metals The rock cycle Resources and sustainability The atmosphere	Description	Food tests Enzymes and how they work
Pentecost 1	Life processes	Pentecost 2	Skills, electricity, botany
Description	Circulatory system Respiratory system Effects of exercise Effects of drugs, alcohol and smoking Photosynthesis	Description	Planning and carrying out a scientific investigation Analysing data Using key scientific terminology

Science

Year 9



De Lisle College
A Catholic Voluntary Academy

Curriculum Outline

Link to Catholic Social Teaching:

Stewardship of creation: The module on classification and adaptations enlightens students on the wonderful verity of life on Earth that we have a duty to care for

Participation: By offering differentiated activities, students can participate at a level that they can be confident at

Advent 1	Chemistry of the non-metals / Energy in chemical reactions	Advent 2	Ecology
Description	Structure of the non-metals Dot-cross diagrams Reactions of halogens Exothermic and endothermic reactions Rates	Description	Classification Adaptations Food chains Distribution
Lent 1	Genetics and evolution / Fundamentals of physics	Lent 2	Electricity, Maths skills in science
Description	Variation and inheritance Natural selection Biodiversity Equations, units and key ideas	Description	Charge, current and potential difference Series and parallel circuits Energy resources Converting units and rearranging equations
Pentecost 1	GCSE topic – atomic structure and the periodic table	Pentecost 2	GCSE topic – cell biology
Description	Atomic structure Mixtures and separation The periodic table Group 0, 1 and 7	Description	Plant and animal cells Microscopy The cell cycle Stems cells

Science

Year 10



De Lisle College
A Catholic Voluntary Academy

Curriculum Outline

Link to Catholic Social Teaching:

Dignity of all people: The exploration of how health and lifestyle factors affect certain diseases educates students on how to look after their own health
Stewardship of creation: The topic on national and global energy resources helps students to evaluate the most effective changes we can make to protect our planet.

Participation: By offering differentiated activities, students can participate at a level that they can be confident at

Advent 1	Transport/ Structure and bonding / Organisation and digestion/ Chemical calculations	Advent 2	Energy / Chemical changes
Description	Diffusion, osmosis and active transport Ionic, covalent and metallic bonding Enzymes and food tests Quantitative chemistry	Description	Types of energy Specific heat capacity National and global energy resources Acids, bases and salts Electrolysis
Lent 1	Particle model/ Organisation and health	Lent 2	Infection and response / Electricity
Description	State changes, density, pressure Heart and lungs Health and lifestyle factors Treatment of disease	Description	Communicable and non-communicable diseases Immunity and vaccination Charge, current and potential difference Series and parallel circuits Energy resources
Pentecost 1	Plants / Bioenergetics / Ecology	Pentecost 2	Revision and assessment
Description	Plant cells Leaf structure Photosynthesis and respiration Ecosystems and sampling	Description	Reteach of all year 10 topics Practice/application Assessment and feedback

Science

Year 11



De Lisle College
A Catholic Voluntary Academy

Curriculum Outline

Link to Catholic Social Teaching:

Dignity of all people: The topic on DNA and inheritance highlights how special human beings are. Students understand we are fearfully and wonderfully made and the importance of looking after ourselves and each other

Stewardship of creation: The topic on the greenhouse effect helps students understand how to live in a more responsible way and look after our world

Participation: By offering differentiated activities, students can participate at a level that they can be confident at

Advent 1	Homeostasis / Reproduction / Forces	Advent 2	Rates / Variation and evolution
Description	Nervous system/Endocrine system Human reproduction DNA and inheritance Types of forces, motion and Newton's laws	Description	Factors that affect rate of reaction Catalysts Equilibrium Natural selection, selective breeding and genetic engineering Evidence for evolution and formation of fossils
Lent 1	Ecology / Crude oil / Analysis / Atmosphere / Waves	Lent 2	Magnetism / Using resources
Description	Ecosystems, adaptations and biodiversity Crude oil, fractional distillation and cracking Evolution and composition of the atmosphere The greenhouse effect and global warming The EM spectrum	Description	Magnetic fields Permanent and induced magnets, electromagnets Fleming's left-hand rule Uses resources sustainably
Pentecost 1	Revision	Pentecost 2	Revision and examinations
Description	Reteach of all year 10/11 topics Practice/application	Description	Reteach of all year 10/11 topics Practice/application GCSE exams