

De Lisle College Curriculum

**“Rooted and grounded in Love”.**

# (T Level) Science





## Intent – ‘Rooted and grounded in Love’

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.



# T Level Science

## Year 12



### Curriculum Outline

#### Link to Catholic Social Teaching:

- Dignity - studying cells and biological molecules develops an appreciation of the complexity and value of life. The study of health and disease looks at the need for protecting human health and the importance of each life.
- The common good - health and safety practices emphasise responsibility for protecting human life and wellbeing.
- Participation - exploring careers in science highlights the importance of work that contributes positively to society.
- Option for the poor - communication technologies demonstrate how science can connect communities and support human development.
- Stewardship – the study of ecology looks at the environment, conservation and the protection of the natural world.

| Advent 1    | Unit 1 Principles and Applications of Science                                                                                                                                                                                                                                      | Advent 2    | Unit 1 Principles and Applications of Science                                                                                                                                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p><b>Biology:</b> Cells and tissues, biological molecules</p> <p><b>Chemistry:</b> Atomic structure, moles and equations, health and safety</p> <p><b>Physics:</b> Working in the health and science sector. The science sector. Electricity. Magnetism and electromagnetism.</p> | Description | <p><b>Biology:</b> exchange and transport and genetics</p> <p><b>Chemistry:</b> oxidation and reduction, acids and bases, titrations</p> <p><b>Physics:</b> Good scientific and clinical practice, waves, radioactivity. Digital and analogue signals.</p> |

|                    |                                                                                                                                                                                                                                            |                    |                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lent 1</b>      | Unit 2 Practical and Scientific / Procedures and Techniques                                                                                                                                                                                | <b>Lent 2</b>      | Unit 2 Practical and Scientific / Procedures and Techniques                                                                                                                                                          |
| Description        | <b>Biology:</b> Microbiology and immunology, the use of data<br><b>Chemistry:</b> Structure and bonding, materials and properties<br><b>Physics:</b> Units and significant figures. Good laboratory practice, good manufacturing practice. | Description        | <b>Biology:</b> Pathogens and disease, employer set project<br><b>Chemistry:</b> Periodic table (metals, groups), polymers<br><b>Physics:</b> Statistics, handling of nanostructures. Excel and presentation skills. |
| <b>Pentecost 1</b> | Unit 2 Practical and Scientific / Procedures and Techniques                                                                                                                                                                                | <b>Pentecost 2</b> | Unit 2 Practical and Scientific / Procedures and Techniques                                                                                                                                                          |
| Description        | <b>Biology:</b> Respiration<br><b>Chemistry:</b> Organic Chemistry, rates of reaction<br><b>Physics:</b> Gas laws, pressure, fluids and viscosity.                                                                                         | Description        | <b>Biology:</b> Ecology<br><b>Chemistry:</b> analytical techniques, physical chemistry, ethics<br><b>Physics:</b> Electronics, measurement, laboratory skills.                                                       |

# T Level Science

## Year 13



De Lisle College  
A Catholic Voluntary Academy

### Curriculum Outline

#### Link to Catholic Social Teaching:

- The common good - following laboratory regulations and safety protocols demonstrates respect for human life and wellbeing. Practical techniques such as microscopy, chromatography and electrophoresis contribute to healthcare, environmental monitoring and scientific advancement for the common good.
- Dignity - accurate scientific practice helps ensure that research, medical treatments and technological developments are safe and reliable, ensuring that the value of human life is respected. Students learn that science should serve people and improve lives rather than simply generate knowledge.
- Stewardship - continuous improvement reflects a commitment to excellence and responsible stewardship of knowledge and resources. Collaborative scientific work demonstrates participation in a community working towards shared goals.

| Advent 1    | Unit 3 Science Investigation Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Advent 2    | Unit 3 Science Investigation Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p><b>Occupational specialism:</b></p> <p><b>Performance outcome 1:</b> Perform a range of appropriate scientific techniques to collect experimental data in a laboratory setting, complying with regulations and requirements</p> <p><b>Performance outcome 2:</b> Plan, review, implement and suggest improvements to scientific tasks relevant to a laboratory setting</p> <p><b>Performance outcome 3:</b> Identify and resolve issues with scientific equipment or data errors</p> | Description | <p><b>Biology:</b> Haemocytometers, chromatography, gel electrophoresis and gram staining.</p> <p><b>Chemistry:</b> Thin layer chromatography (TLC), distillation acid-base and redox titration, refluxing, filtration. prepare a solution of defined molar concentration</p> <p><b>Physics:</b> Measuring, using oscilloscopes, capacitance, temperature probes, thermal conductivity, measuring magnetic fields, specific heat capacity, manometers, the Young modulus, logic gates. Calibration.</p> |

|                    |                                |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------|--------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lent 1</b>      | Work placement                 | <b>Lent 2</b>      | <b>Occupational specialism</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description        | N/A                            | Description        | <p><b>Performance outcome 1:</b> Perform a range of appropriate scientific techniques to collect experimental data in a laboratory setting, complying with regulations and requirements</p> <p><b>Performance outcome 2:</b> Plan, review, implement and suggest improvements to scientific tasks relevant to a laboratory setting</p> <p><b>Performance outcome 3:</b> Identify and resolve issues with scientific equipment or data errors</p> |
| <b>Pentecost 1</b> | <b>Occupational specialism</b> | <b>Pentecost 2</b> | <b>Occupational specialism</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description        | Same as Lent 2                 | Description        | Same as Lent 2                                                                                                                                                                                                                                                                                                                                                                                                                                   |