

A POWERFUL STARTING POINT

FOR STEM EXCELLENCE





WELCOME TO NUCLEUS

Carmel College's Centre of STEM Excellence.

At Carmel College, Nucleus represents the heart of our STEM provision – a place where curiosity meets creativity and ideas come to life.

Whether you're analysing molecules, designing sustainable products, programming intelligent systems, or exploring the laws of physics, Nucleus provides the perfect environment to think critically, innovate boldly, and build the foundation for your future career.

This is where your STEM journey begins.

The Vision Behind Nucleus

At Carmel College, our goal is to nurture the next generation of innovators and problem-solvers. Through Nucleus, we bring together exceptional teaching, modern facilities, and a network of industry and university partnerships to prepare you for the most dynamic careers of tomorrow.

All of our STEM subjects
are ranked in the

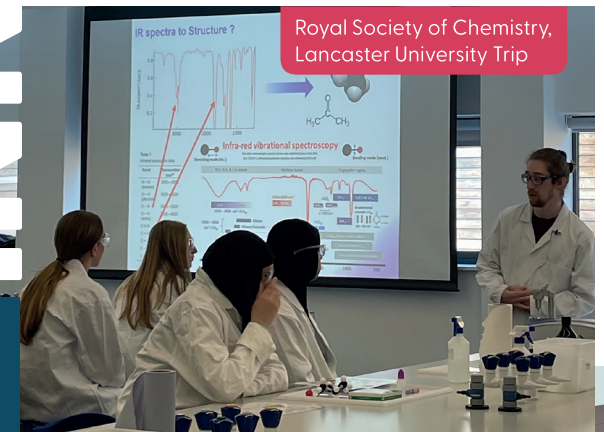
**TOP
25%**
NATIONALLY
For student outcomes

Proven Excellence in STEM

At Carmel College, excellence isn't just a goal – it's proven by results. According to ALPS, **all of our STEM subjects are ranked in the top 25% nationally for student outcomes.** This means our students consistently make outstanding progress and are exceptionally well prepared for their next steps.

We're incredibly proud of the impressive destinations our STEM students progress to – whether that's competitive universities or prestigious degree apprenticeships. Carmel students progress to university at a rate significantly above the national sixth form sector average.

By studying a STEM subject at Carmel College, you are statistically more likely to progress to a competitive destination than if you were to study elsewhere – setting you up to make a positive contribution to society and to thrive in your chosen career.



Inovas Medical's
LCR Ignite Programme



INNOVATION

THE SUBJECTS

Biology

From the microscopic world of cells and organisms to their impact on ecosystems – from organs to systems and from genetics to modern techniques – Biology at Carmel is an exciting journey into what makes living things work.

With excellent lab facilities and expert tutors, students' progress to degrees in Medicine, Biomedical Science, Environmental Science, Pharmacy, Pharmaceuticals, Biochemistry, and Bioinformatics.

Chemistry

Chemistry develops your ability to think analytically, problem-solve, and explore how substances interact – knowledge that underpins everything from medicine to materials science.

Carmel's outstanding results and practical lab experience prepare you for degrees in Chemistry, Pharmacy, Forensics, and Engineering.

Computer Science

You'll gain in-demand skills in programming, data, and systems architecture – preparing you for careers in AI, software development, and cybersecurity.

Our students learn to think logically and creatively to solve real problems, progressing to top universities in Computing, Data Science, Games Development, Maths, Physics, and Mechanical or Electrical Engineering.



Mathematics

Maths is at the heart of all STEM disciplines. You'll develop reasoning, problem-solving, and analytical skills that open doors to careers in Economics, Engineering, and Data Science.

Further Maths is also available for those who want to expand their mathematical knowledge.

High-achieving students aiming for competitive universities receive dedicated support for university admission tests.

Physics

Physics at Carmel develops your ability to think critically, analyse data, and solve complex problems.

Students' progress to degrees in Engineering, Astrophysics, and Theoretical Physics, with many pursuing careers in research and technology.



AAQ Engineering

Our AAQ Engineering course offers hands-on, practical experience in mechanical, electrical, and manufacturing disciplines. You'll learn how theory meets application, gaining skills that are directly relevant to industry and higher apprenticeships.

3D Design

3D Design at Carmel is all about creativity and innovation – you'll explore materials, develop technical skills, and produce stunning design outcomes that solve real-world problems.

Students often progress to Architecture, Product Design, and Engineering degrees, building successful creative and technical careers.

AAQ Applied Science

Gain a broad, practical understanding of Biology, Chemistry, and Physics, exploring how science is applied in real-world settings such as healthcare, forensics, and environmental research.

Through hands-on investigations and applied learning, you'll build the skills and confidence for progression to scientific degrees or careers in health and STEM industries.

AAQ Applied Human Biology

Delve into how the human body works, how diseases develop, and how science drives advances in health and medicine.

You'll study genetics, nutrition, and biomedical techniques, gaining practical experience that leads to degrees or careers in medicine, nursing, or biomedical science.

Beyond the Classroom

At Carmel, STEM learning extends far beyond lessons. Through Nucleus, students take part in a rich programme of enrichment and challenge:

- **STEM Clubs & Competitions** – Join national challenges such as the UKMT Maths Challenge, Science Olympiads, and the Engineering Education Scheme.
- **University Links** – Benefit from partnerships with leading universities including Liverpool, Manchester, and Durham for workshops, mentoring, and taster lectures.
- **Industry Engagement** – Participate in workplace visits, employer projects, and careers events with professionals from the engineering, healthcare, and technology sectors.
- **Research & Innovation** – Collaborate on extended investigations and projects that simulate real-world scientific inquiry.



Future Pathways

STEM opens doors to a world of possibilities. Carmel students' progress to top universities and degree apprenticeships, entering fields such as:

- Medicine & Healthcare
- Life Sciences
- Software & AI Development
- Engineering & Robotics
- Architecture & Design
- Research & Environmental Science
- Data Analysis & Cybersecurity
- Renewable Energy & Sustainability

Carmel students go on to lead change across every industry.

Facilities & Innovation Spaces

Nucleus is supported by Carmel's outstanding facilities, including:

- Modern science laboratories for Biology, Chemistry, and Physics
- Computer rooms for coding, modelling, and simulation
- Engineering and design workshops with CAD/CAM tools
- Collaborative project areas for research and group innovation
- Access to digital resources, microscopes, spectrometers, and 3D printers

These spaces are designed to inspire – giving every student the opportunity to explore, create, and excel in a professional environment.



Future Architects



CREATIVITY



Maths Problem Solving Workshop

MEET OUR STUDENTS



"I thoroughly enjoy my subjects, and the college offers a lot of support both academically and pastorally. It's always easy to ask for help."

EMILY FINCH

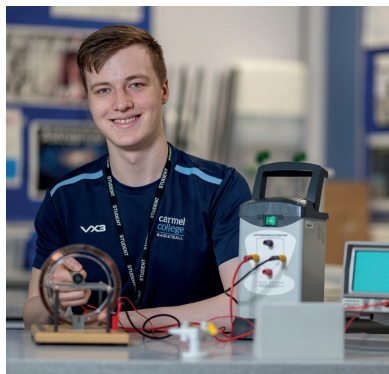
Chemistry, Further Maths, Maths (AAA*). Now studying Mathematics at Durham University.



"Carmel is amazing! The teachers are very supportive and make learning fun. It's a great place to thrive and excel."

LEANNE MABENA

Biology, Chemistry, Maths, EPQ (A*A*A*A*). Now studying Medicine at St Johns College, University of Oxford.



"I've enjoyed studying Physics, especially the practicals! The tutors are really helpful. From playing competitive sport to all the extra support from personal tutors, Carmel has allowed me to grow as a student while also having a fun time."

THOMAS BURROWS

Computer Science, Maths, Physics, EPQ (AAA*A). Now completing a Degree Apprenticeship with the Dyson Institute.

"I received outstanding support with my university application. I genuinely believe I wouldn't have received my offer from Oxford without Carmel's support."

DION JOSH

Biology, Chemistry, Maths (A*A*A*). Now studying Chemistry at the University of Oxford.



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