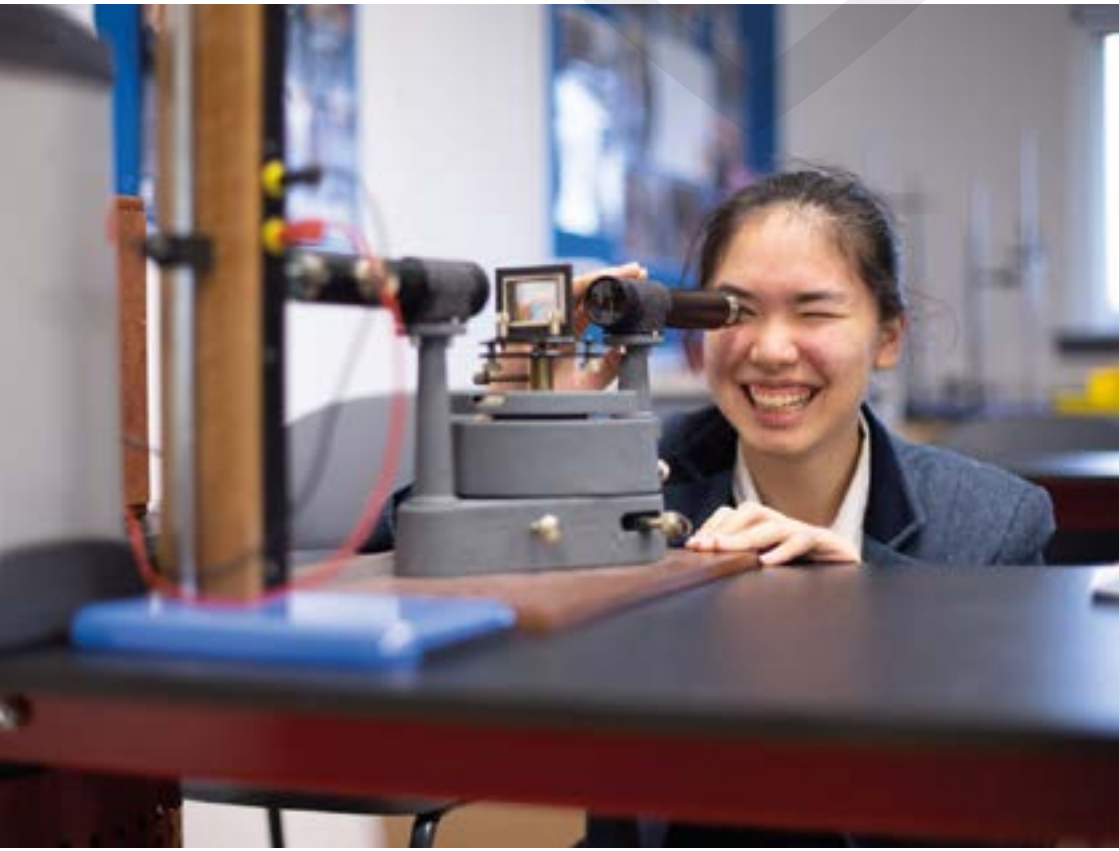
KILGRASTON
SCHOOL

JUNIOR YEARS · SENIOR · SIXTH FORM



# STEM

## Science, Technology, Engineering & Maths

# Welcome to STEM at Kilgraston School

Kilgraston's strong academic reputation is particularly robust in STEM subjects.

Over recent years, the number of Kilgraston pupils studying STEM courses at university has risen with around half of our pupils accepted to study these subjects at undergraduate level.

**This can be attributed to the following:**

- A team of dedicated, experienced Science teachers.
- Lessons in a wide range of immersive activities, such as stop motion videos of mitosis, exciting demonstrations such as the thermite reaction and creating an 'Imaginarium' of 3D creatures adapted to different environments.
- Our continued support of pupils with their learning through subject surgeries.
- Careful tracking of pupils progress, so that appropriate interventions can be applied.
- Superb support of our technicians.
- Investment in high quality science equipment, such as PASCO data-logging equipment.

We pride ourselves in creating a learning environment where pupils feel secure, appreciated and valued. We encourage pupils to take risks with their learning and remove the 'fear of failure', making room for resilient inquiriers.

In 2021, 58% of our Sixth Formers were accepted onto STEM courses at universities.

This is testament not just to the hard work of pupils and teachers, but it also exemplifies what is at the heart of Kilgraston: there should be no limits to your ambition.

# Class of 2021 Testimonial - Ciara

**What are you going to study?**

I am going to study aeronautical engineering at the University of Glasgow.

**Why do you want to study engineering?**

Since joining Kilgraston the school has shown me the possibilities of having a career in STEM. I want to study aeronautical engineering as it will give me a wide range of skills that can be applied not only to the aviation sector but also the growing space of renewable sectors as aeronautical engineering principles can be applied to designing space craft, satellites, wind turbines as well as tidal power generators.

**How has Kilgraston influenced you to choose this subject?**

Kilgraston has allowed me to explore many career options. One of the most important and influential moments for me was a talk from an alumnae, who won an apprenticeship at Rolls Royce, one of the big three aircraft engine manufacturers in the world. The speaker shared how diverse her working day was and the opportunities to grow within the industry as a whole. This definitely was something that opened my eyes to the possibilities within aeronautical engineering.

**How has Kilgraston helped you achieve this goal?**

Kilgraston has helped me in many ways and not only through learning in the classroom. While at Kilgraston I have participated in the STEM club which gave me experience of how to work within a team to overcome scientific and engineering challenges. As well as this I have had the chance to visit the engineering department in charge of designing the Queensferry Crossing. I have also had the opportunity to see the Large Hadron Collider at CERN in Switzerland. These experiences beyond the classroom, as well as brilliant and supportive teachers, have allowed me to be in the position I am in today.

**How long did you attend Kilgraston?**

I came to Kilgraston at the start of Lower Four in 2015 and graduated in 2021, so six wonderful years.

**Have you always wanted to study engineering?**

No, when I was younger I did not know what I wanted to do. However by coming to Kilgraston I learned that I could be an engineer which combined my passion for mathematics and science with my love of problem solving.

**What is your favourite subject and why?**

My favourite subject is physics, as the diversity of topics covered in this subject is amazing. Over the years, in this subject I have learned about everything; from the smallest, most fundamental particles that we have discovered, to how the universe was created and absolutely everything in between.


*In 2020, almost 10% of our Sixth Form were accepted to study Engineering – including Chemical, Mechanical, Biomedical and Aeronautical.*

## Engineering

Kilgraston prides itself on educating our next generation of engineers with a substantial number of our pupils opting to study this at university.

If engineering is what drives a pupil, we fully support them on this path thanks to the high caliber of teaching, dedicated subject surgeries and many exciting opportunities in this field.

# Science

Kilgraston's purpose-built science centre has five state-of-the-art laboratories for our pupils.

In our Junior School, scientific discovery begins with simple experimentation in class and develops further with practical science experiments from specialist teachers in our Senior School.

Physics continues to be an extremely popular subject at Kilgraston and teaches systematic thinking and is ideal for those pupils who have a passion for understanding how things work.

In biology we delve deep into every aspect of what makes us human from the tiniest cells to our most complex organ the brain.

Chemistry, the study of matter and its interactions, contributes essential knowledge and understanding across all aspects of our lives. Pupils studying this subject will examine the links between the particulate nature of matter and the macroscopic properties of the world.

*Kilgraston has five state-of-the-art science laboratories*

# Alumnae Testimonial - Cleodie Lawson

Former Kilgraston Head Girl Cleodie Lawson graduated from Kilgraston in 2019 and is now reading medicine at Exeter University.

**What were your favourite subjects at school and why?**

I always enjoyed biology, in particular the human content, chemistry and geography which I went onto take for my Advanced Highers. I also had an interest in Latin and I took that to Higher level.

**Why did you choose to medicine at university?**

I have never wanted to do an office job and initially was very interested in being a midwife or a paramedic. However, further discussion with Kilgraston staff, including the Sixth Form team, made me realise that medicine is more suited to me as it allows for more options in the future and is much more varied.

**Did Kilgraston help you decide to study this subject – and if so, can you explain how the school helped?**

I had countless conversations with the Careers, Sixth Form, Boarding and Pastoral Care teams all of whom gave me career advice and support and were very knowledgeable of the different options. I was given lots of information about the process and given a lot of warning of the early application and the extra bits I needed for my application such as the UKCAT. Overall I would say the Kilgraston staff played a big part in encouraging me to go for it and making me confident enough to believe in my ability to get a place on a medical degree.

**How did Kilgraston help you on your higher education path?**

In Sixth Form, the team were very helpful at clearly outlining the process of the application, especially the UKCAT. This support and guidance ultimately allowed me to book early for my UKCAT in my Lower Sixth summer, so I felt like I was ahead of the curve in my application.

The Sixth Form staff were also great at prepping me for my MMI interview (multiple mini interviews) once I got one. They had some good books and resources that I could use and also arranged lots of interview practice. They also provided invaluable support and teaching in the different interview styles for the different medical schools and what they look for. They have a superb understanding of the whole process which made my life a lot easier and the process less stressful.

**Looking back, what do you feel were the benefits of studying STEM subjects at Kilgraston?**

Due to the size of the school, I found that I received fantastic teaching and support for my STEM subjects.

STEM subjects can take up quite a lot of your time when you get to Higher and Advanced Higher levels, so the smaller class sizes made my practicals a lot easier. It meant I got more one to one time with the teachers and the amazing science technicians.

**Do you have any advice for Kilgraston pupils interested in STEM subjects?**

The school has amazing science teachers and they have a very good knowledge of the content and exams. In particular when it comes to doing the practicals they support pupils in so many ways and want us to do well which made me try even harder.

In terms of subject choice at university, if you have a particular subject you want to study, then believe in yourself and go for it. It could be that there is still a stigma around it being more of a male dominated field but if it's something you are interested then it shouldn't stop you.

*There are many careers where mathematical skills are important including areas of science, engineering and technology.*

# Mathematics

There are many careers where mathematical skills are important including areas of science, engineering and technology. There are applications in computer technology, encryption security, and equipment design. It is also used throughout the financial services sector, such as in economics, accountancy and actuarial work.

The Higher and Advanced Higher Mathematics Courses enable learners to select and apply mathematical techniques in a variety of situations. Learners interpret, communicate and manage information in mathematical form.

# Outside the Classroom

Alongside our robust academic course-work and learning, Kilgraston is delighted to be able to offer a number of societies to encourage and nurture an interest in STEM subjects.

This begins with our younger pupils who can take part in the Junior Science club and conduct weekly experiments. For our Senior School pupils there is Medical Society, and our Sixth Form can join STEM club where each term they work on projects such as building a soft robotics gripper and a working ammeter and micro-scale.

Science club is open to our senior school pupils and annual projects have included developing a woodland ecosystem with hedgehog huts, bird table and houses, squirrel feeders and insect hotels all being constructed by the girls. In another year, the pupils designed and built their own gliders.

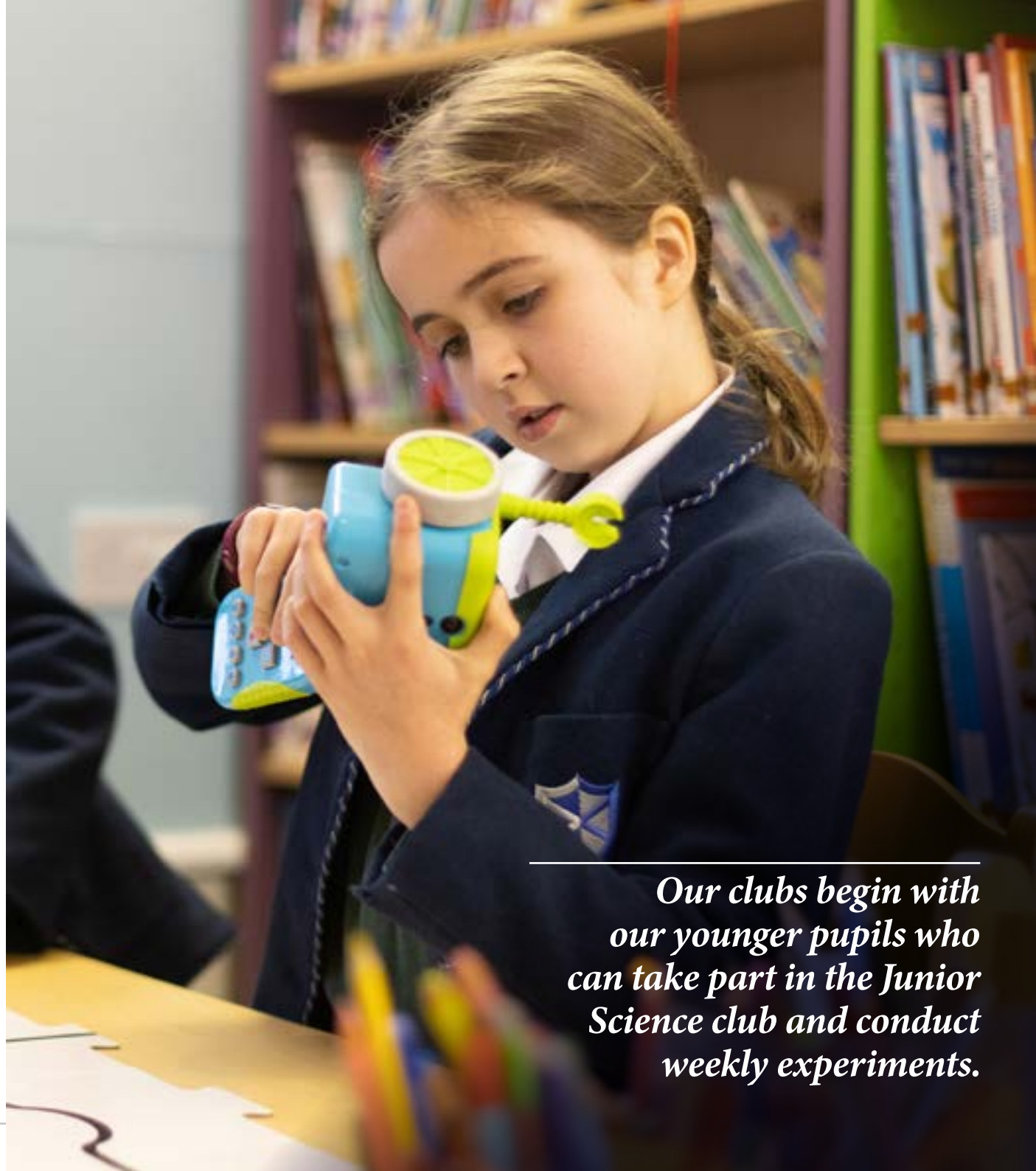
Every year, senior school pupils also have the chance to get involved in Science Week, with activities arranged throughout the week. Previous event topics have included Solar eclipse, soap making and journey themed activities such as building wind-up cars.

An established tradition at Kilgraston is our festive dissection which has been operating for the past six years and is open to our senior school pupils.

Our pupils have a busy calendar of STEM-based visits including annual trips to CERN in Switzerland, and a nuclear power station, as well as to botanical gardens and biology field work.

Our pupils are also offered the opportunity to represent the school in a number of national competitions including the Maths Challenge, and three annual Olympiads in biology, chemistry and physics.

Over the course of our school year, we recognise the importance of science and academic progression in the STEM subjects with awards for effort, attainment and communication at every Achievement Assembly.



***Our clubs begin with our younger pupils who can take part in the Junior Science club and conduct weekly experiments.***


**Experience Kilgraston School, come and visit us.**

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