

THE  TIMES  
CHELTENHAM FESTIVALS

**SCIENCE**

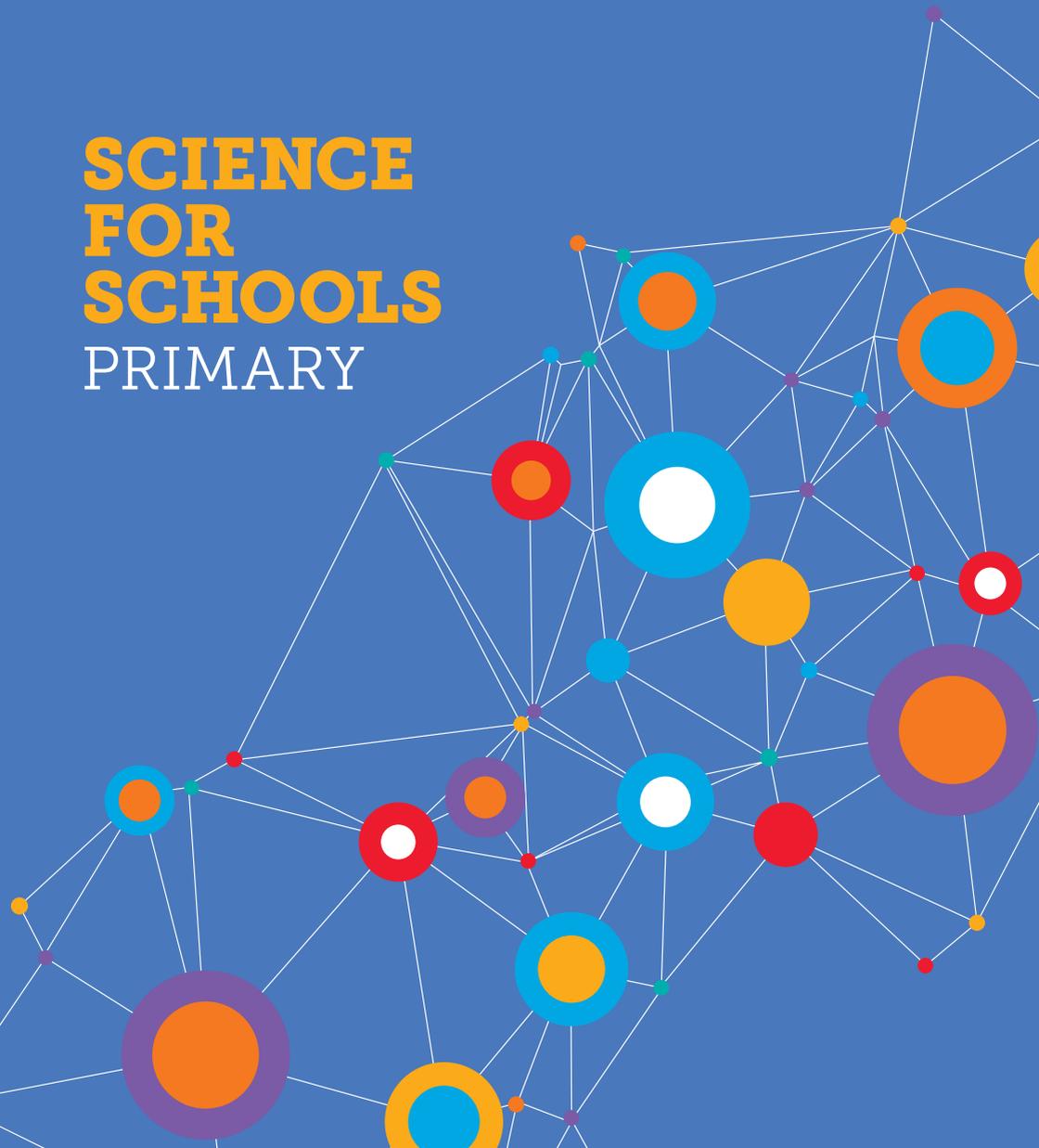
in association with



7-10 June 2016

Book online:  
[cheltenhamfestivals.com/  
scienceforschools](http://cheltenhamfestivals.com/scienceforschools)

# SCIENCE FOR SCHOOLS PRIMARY



# Planner

	10am	11am	12noon	1pm	2pm	3pm
<b>TUESDAY</b>						
EDF Energy Arena	SS01 Powering The Planet					
Helix Theatre		MP01-MP03 Team Tim		MP04-MP06 Team Tim		
ExperiTent	FS01 Criminal Chromatography	FS02 Criminal Chromatography	FS03 Criminal Chromatography	FS04 Criminal Chromatography		
Siemens Curiosity Zone	FS05 The Power Of Wind	FS06 The Power Of Wind	FS07 The Power Of Wind	FS08 The Power Of Wind		
GE Pavilion						
Discover Zone						
<b>WEDNESDAY</b>						
EDF Energy Arena		SS06 Chocolatology				
The Crucible	SS05 Mega Mechanics					
ExperiTent	FS13 K'nex Creatures	FS14 K'nex Creatures	FS15 K'nex Creatures	FS16 K'nex Creatures		
Siemens Curiosity Zone	FS17 The Power Of Wind	FS18 The Power Of Wind	FS19 The Power Of Wind	FS20 The Power Of Wind		
GE Pavilion						
Discover Zone						
<b>THURSDAY</b>						
EDF Energy Arena	SS13 The Science Of Everyday Life					
The Crucible		SS16 Shapes And Smoke Rings				
Venue TBC	SS17 The Science Behind Beauty	SS18 The Science Behind Beauty	SS19 The Science Behind Beauty	SS20 The Science Behind Beauty		
ExperiTent	FS25 Expressive Forces	FS26 Expressive Forces	FS27 Expressive Forces	FS28 Expressive Forces		
Siemens Curiosity Zone	FS29 The Power Of Wind	FS30 The Power Of Wind	FS31 The Power Of Wind	FS32 The Power Of Wind		
GE Pavilion						
Discover Zone						
<b>FRIDAY</b>						
EDF Energy Arena	SS25 Evolution Revolution		SS27 Sensational Senses			
The Crucible	SS26 Planet On Your Plate					
Helix Theatre	SS28 Underwater World Detectives	SS29 Underwater World Detectives	SS30 Underwater World Detectives	SS31 Underwater World Detectives		
St Andrew's Church	SS34 Lego Mindstorms Robotics	SS35 Lego Mindstorms Robotics	SS36 Lego Mindstorms Robotics	SS37 Lego Mindstorms Robotics		
ExperiTent	FS37 The Hip Bone's Connected To...	FS38 The Hip Bone's Connected To...	FS39 The Hip Bone's Connected To...	FS40 The Hip Bone's Connected To...		
Siemens Curiosity Zone	FS41 The Power Of Wind	FS42 The Power Of Wind	FS43 The Power Of Wind	FS44 The Power Of Wind		
GE Pavilion						
Discover Zone						
Space Experience						

2 ■ KS1 ■ KS2 ■ ALL AGES

# Welcome

A warm welcome to Science for Schools 2016, four action-packed days for children and young people which promise to excite and inspire in equal measure.

We have a great mix of shows, hands-on workshops and interactive zones to explore and discover. Whether you wish to bring a small number or a whole year group we look forward to welcoming you in June.

**Ali Mawle**  
Director of Education

**Sharron Pearson**  
Education Manager

## Science for Schools contacts

If you would like to contact a member of the Education Team, email us at: [education@cheltenhamfestivals.com](mailto:education@cheltenhamfestivals.com)

Or give us a call:

Sharron Pearson	01242 537 250
Philippa Claridge	01242 537 267
Rose Wood	01242 537 268

## Overview of prices

Event (50 minute science shows)	£5.50 per pupil
Workshops	£6.50 per pupil
KS1 Mini Package	£5.50 per pupil
Young Scientist Day	£10 per pupil

A £5 booking fee will be added to the total cost of your booking

Discover Zone, ExperiTent workshops, GE Pavilion, Siemens Curiosity Zone, Science Trail: Free in conjunction with an event/workshop

## A word from our Associate Title Partner



EDF Energy is delighted to be the Associate Title Partner of The Times Cheltenham Science Festival, and to continue to support the Science for Schools programme.

We are passionate about engaging young minds with science, so we support this extensive programme as well as Cheltenham Festivals' ambitious year-round activities for schools. LabLive takes the best of the Festival to towns around the country, and FameLab Academy develops hundreds of local secondary students as confident science communicators each year. We hope that by inspiring as many children and young people as possible that this will lead to many brilliant careers in STEM.

**Stuart Crooks**  
Managing Director - Generation, EDF Energy

## Education Programme Partners





**Friday 10 June, 9.15am-3pm**  
**Young Scientists' Day**

**Cheltenham College Preparatory School**  
 Years 5-6  
**£10** per pupil

How do we get to space and what will we find there? These questions and more will be tackled at the in-depth Young Scientists' Day. Specially curated workshops on chemistry, biology and design technology have been themed to bring space science to life, with all activities delivered by Cheltenham College Preparatory School's Science and Design teams in their dedicated science labs and DT rooms.

**The Workshops**

**Extraterrestrial Life:** Is there life out there? Become a NASA scientist and recreate some of their original experiments that first analysed the surface of Mars. Investigate soil samples recently recovered from another planet – look out for possible indicators of life such as carbohydrates, lipids and proteins, and see if you can discover an alien life form.

**Power Up:** Rockets need a massive amount of force to get into space. How can we create such a huge explosion? Find out how to create the perfect conditions for launch, learn about different propellants and their properties, and watch some big bangs.

**Rocket Racing:** Could you get a rocket to the Moon? What about Mars, Jupiter or Saturn? Design and develop the best rocket you can before dispatching it to the launchpad for testing. Whose rocket will fly the furthest?

**About the day**

The day is devised with both pupils and teachers in mind. We are inviting you to put forward five pupils from Year 5 or 6 and one teacher to take part in the Young Scientists' day. Lunch and refreshments will be provided.

**Tuesday 7 June 2016**  
**KS1 Mini Packages**

**£5.50** per pupil

The KS1 Mini Packages comprise an event and an opportunity to do some hands-on activities in our Discover Zone. All the activities are designed for 5-7 year olds. The cost is £5.50 per pupil and tickets for accompanying adults are free.

MP01  
**9.30-10am** Discover Zone  
**10.45-11.45am** Team Tim

MP02  
**10-10.30am** Discover Zone  
**10.45-11.45am** Team Tim

MP03  
**10.45-11.45am** Team Tim  
**12noon-12.30pm** Discover Zone

MP04  
**11.30am-12noon** Discover Zone  
**12.15-1.15pm** Team Tim

MP05  
**12.15-1.15pm** Team Tim  
**1.30-2pm** Discover Zone

MP06  
**12.15-1.15pm** Team Tim  
**2-2.30pm** Discover Zone



**KS1**  
**Team Tim Astronauts In Training**

**Helix Theatre**  
 YRS 1-2

*This event is only available as part of a Mini Package.*

Help British ESA astronaut Tim Peake complete his daily space schedule! You'll learn how to keep fit, do quick calculations, conduct science experiments, grow plants, launch small satellites and perform a thrilling space-walk to fix the International Space Station. Look out for a "live" satellite interview with Tim and lots of fun, learning and visual effects.

[spacefund.co.uk](http://spacefund.co.uk)  
[@SpacefundJo](https://twitter.com/SpacefundJo)

## Free Activities

For each paid activity you can book one of our dedicated zones or ExperiTent workshops. Please note that these are only available with a paid activity.



### Space Experience

Years 5-6

*One-hour slots are available on Friday 10 June.*

Meet top space scientists and researchers in this interactive space experience. Bring all your burning questions about our galaxy and the universe beyond, and explore the mysteries of space!

### The Power Of Wind – Siemens Curiosity Zone

Years 5-6

*One-hour slots available every day.*

Can you create a renewable, reliable and environmentally friendly way of generating energy? See who can raise the heaviest weight in a minute using a wind turbine. Use your engineering skills to experiment with pulleys, bands, axles and turbine blades, and get up close with this renewable energy source that currently powers one in four UK households.

[siemens.co.uk/curiosity-project](http://siemens.co.uk/curiosity-project)

**SIEMENS**

### Other things to do to fill your day:

#### Science Trail

*Take part at a time which suits your group.*

Collect your quiz sheet and follow the Science Trail around Imperial Gardens. It's the perfect activity to engage pupils in the world of science whilst exploring all that the site has to offer.

Limited bookable lunch spaces available: enquire when booking

### Discover Zone

All ages

*One-hour slots available every day.*

The Discover Zone is a real sight to behold! Packed with interactive exhibits for all ages, and enthusiastic presenters ready to answer your most tricky questions, it's the perfect place to explore the future of technology.



### GE Pavilion

KS2

*One-hour slots available every day.*

5...4...3...2...1... Blast off this year at the Festival with GE: discover how airplanes fly safely, experience how robots repair pipelines deep beneath the sea, and explore how GE work to improve health in developing countries. With hands-on activities available throughout the week, you can get involved and talk to the engineers who develop exciting new technologies. See you how you too can become a GE engineer of the future!



## Free Workshops

KS2

### Criminal Chromatography

ExperiTent

Tuesday 7 June

FS01 10-11am

FS02 11.15am-12.15pm

FS03 12.30pm-1.30pm

FS04 1.45pm-2.45pm

YRS 3-6

A ransom note has been left at the scene of a bank robbery. Can you find the suspect? Analyse the ink with chromatography; gather fingerprints and fibres; and use CCTV to build the evidence against them. With experienced former detective **Jenny Williams** from The Detective Project, you'll use real-life techniques to catch the criminal.

[thedetectiveproject.co.uk](http://thedetectiveproject.co.uk)

@detectivehq

KS2

### K'nex Creatures

ExperiTent

Wednesday 8 June

FS13 10-11am

FS14 11.15am-12.15pm

FS15 12.30pm-1.30pm

FS16 1.45pm-2.45pm

YRS 5-6

Why are our bones so important? Why do we need a skeleton, and what does it do? Join the **Science Oxford** team to design and build a skeleton for your own creature using K'nex, and then test whether it can protect its vital organs. Bone-shaking fun!

[scienceoxford.com](http://scienceoxford.com)

@scienceoxford

KS2

### Expressive Forces

ExperiTent

Thursday 9 June

FS25 10-11am

FS26 11.15am-12.15pm

FS27 12.30-1.30pm

FS28 1.45-2.45pm

YRS 3-6

What has friction got to do with doing the 'moonwalk'? Explore the names, properties and functions of all sorts of different forces that affect us. Through kinaesthetic learning, this workshop with **FLUX Dance** gets bodies moving, minds thinking and thoughts whirring.

[fluxdancetheatre.com](http://fluxdancetheatre.com)

@FluxDance

KS2

### The Hip Bone's Connected To...

ExperiTent

Friday 10 June

FS37 10-11am

FS38 11.15am-12.15pm

FS39 12.30-1.30pm

FS40 1.45-2.45pm

YRS 3-6

Without your joints you'd hardly be able to move at all. But do you know where they all are? Through movement, creativity and lots of games, **FLUX Moving Science** help you discover more about pivot joints, gliding joints, and the functions of different body systems.

[fluxdancetheatre.com](http://fluxdancetheatre.com)

@FluxDance



**KS2** SS01  
**Powering The Planet**

10-11am  
 EDF Energy Arena  
 YRS 3-6  
**£5.50** per pupil

How can you make a pig fly? With chemistry, just about anything is possible! **Paul Wilson** and **David Reed** from the University of Southampton will show you how reversible and irreversible changes make things hot and cold, with bright lights, flashes and bangs along the way. You'll even learn how the Bombardier beetle can squirt a jet of steam out of its rear end!



**KS1** SS05  
**Mega Mechanics**

10-11am  
 The Crucible  
 YRS 1-2  
**£5.50** per pupil

Could you design the best theme park ride ever? Become a Mega-Mechanic and help the **TimeZones** team build their 'Super Ride'. Get to grips with what makes things move, and harness the power of electricity to add light, sound and more!

[timezones-education.co.uk](http://timezones-education.co.uk)  
 @TimezonesEd



**KS2** SS06  
**Chocolatology: The Spectacular Science Of Chocolate**

12noon-1pm  
 EDF Energy Arena  
 YRS 3-6  
**£5.50** per pupil

The BBC's Gastronomer **Stefan Gates** and UCL's **Andrea Sella** present the most delicious show on earth, full of meltably edible science of all kinds. There'll be sensory perception, crystallisation and flowing fluids, and quite possibly an Eiffel Tower made from chocolate.

[thegastronaut.com](http://thegastronaut.com)  
 @stefangates  
 @SellaTheChemist



**KS2** SS13  
**The Science Of Everyday Life**

10-11am  
**EDF Energy Arena**  
 YRS 3-6  
**£5.50** per pupil

What really makes cakes rise? Why do soap bubbles burst? And how do you get the quartz out of a clock using a hammer? *The One Show's* resident scientist **Marty Jopson** exposes the incredible science behind everyday life. Answers will be provided, electrical devices dismantled, and messes created – all in the name of science.

[martyjopson.co.uk](http://martyjopson.co.uk)  
 @martyjopson



**KS2**  
**Workshop:  
 The Science  
 Behind Beauty**

**Venue TBC**  
 SS17 10-11am  
 SS18 11.15am-12.15pm  
 SS19 12.30pm-1.30pm  
 SS20 1.45pm-2.45pm  
 YRS 5-6  
**£6.50** per pupil

Join the team from the L'Oréal Young Scientist Centre at the Royal Institution for an interactive chemistry workshop. Learn about the science behind the products millions of us use every day to keep our skin and hair healthy, and make some of your own.

[loreal.co.uk](http://loreal.co.uk)  
 @LOreal\_UKI



**KS2** SS16  
**Shapes And Smoke  
 Rings**

12noon-1pm  
**The Crucible**  
 YRS 3-6  
**£5.50** per pupil

Learn how maths isn't just about numbers and calculations, as mathematician **Katie Steckles** reveals some of her favourite shapes. See how strangely some of these shapes behave with the aid of smoke rings and other visual props – and you can even try making some yourself.

[katiesteckles.co.uk](http://katiesteckles.co.uk)  
 @stecks



KS2

SS25

## Evolution Revolution

10-11am  
 EDF Energy Arena  
 YRS 5-6  
**£5.50** per pupil

Observe the incredible journey of how humans and other animals came to be! Zoologist and BBC Wildlife expert **Jules Howard** explores natural selection, Darwin's big idea to explain life on Earth. With hundreds of fossils, mammal bones and skulls, Jules brings modern-day wonder and wit to a theory that changed our view of the world forever.

[juleshoward.co.uk](http://juleshoward.co.uk)  
[@juleslhoward](https://twitter.com/juleslhoward)



KS1

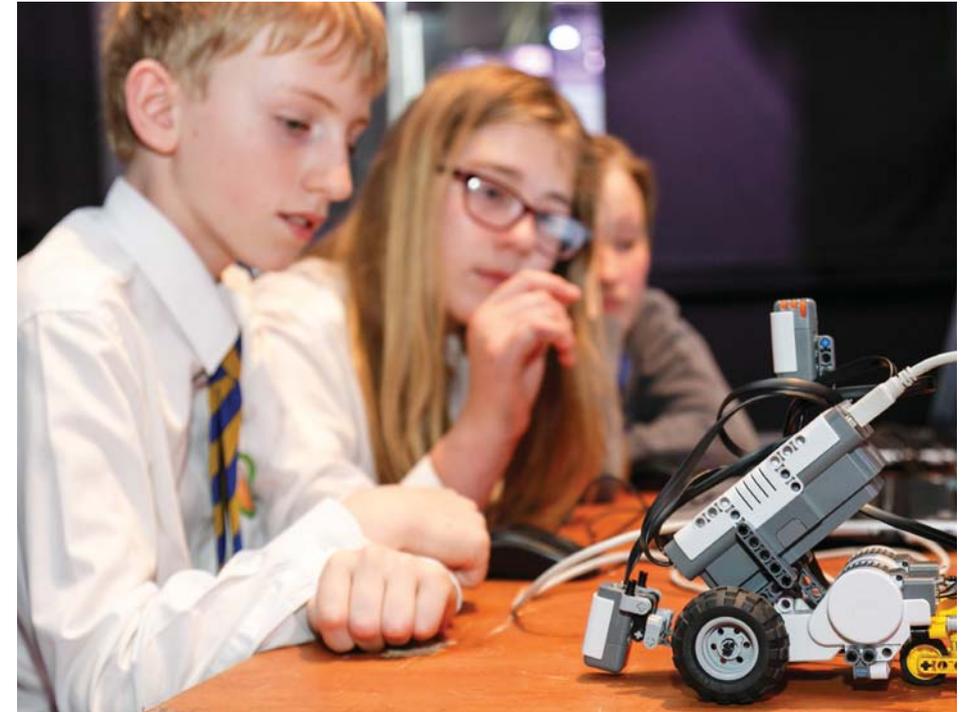
SS26

## Planet On Your Plate

10-11am  
 The Crucible  
 YRS 1-2  
**£5.50** per pupil

How does what you choose to eat change the planet? With considerable mess, chocolate, sizeable flames, flatulence and extensive burping, *The One Show's* resident scientist **Marty Jopson** shows where our food comes from, what goes into making it, and how science can help us feed the world.

[martyjopson.co.uk](http://martyjopson.co.uk)  
[@martyjopson](https://twitter.com/martyjopson)



KS2

## Workshop: Lego® Mindstorms Robotics

**St Andrew's Church**  
 SS34 10-11am  
 SS35 11.15am-12.15pm  
 SS36 12.30pm-1.30pm  
 SS37 1.45pm-2.45pm  
 SS32 3-4pm (Home educators only)  
 YRS 5-6  
**£6.50** per pupil

Robots can be used for so many incredible tasks – from search and rescue here on earth, to exploring distant environments in space; but how do they know what to do? Find out with programming expert **Dave Cohen** from Royal Holloway, University of London, and programme a LEGO® Mindstorms robot, enabling it to follow a path and respond to sounds.





**KS2**  
**Workshop:**  
**Underwater World**  
**Detectives**

**The Helix**  
 SS28 10-11am  
 SS29 11.15am-12.15pm  
 SS30 12.30pm-1.30pm  
 SS31 1.45pm-2.45pm  
 YRS 3-6  
**£6.50** per pupil

What can you uncover in our underwater world? Biologist and TV presenter **Ben Garrod** guides you as you search for mini beasts in our very own pond, then head inside to study them. Draw your discoveries, and learn all about the animals you find.

<http://t.co/ogABqNB4lz>  
 @ben\_garrod



**KS2** SS27

**Sensational**  
**Senses**

12noon-1pm  
**EDF Energy Arena**  
 YRS 3-6  
**£5.50** per pupil

How do we know when it's cold without looking at a thermometer? It might surprise you to know that sound, sight, touch, smell, and taste aren't the only senses your body can experience. **Mark Lorch** and **Phil Bell-Young** from the University of Hull host this fun-filled science show exploring ALL your senses.

[hull.ac.uk/scienceoutreach](http://hull.ac.uk/scienceoutreach)  
 @Sci\_ents  
 @Philby91



**Tuesday 7 June, 4-6.30pm**  
**Teacher Twilight**  
**Reception**

**FREE** What's The Big Idea? People-focussed engineering education

The UK requires an additional 150 engineers a day for the next ten years. Teachers have a key role to play in enthusing the next generation to meet the shortfall.

Join the **Institution of Mechanical Engineers** for a drinks reception, a panel discussion on the role of STEM education in engineering, and a compelling vision for the future of engineering education in primary and secondary schools. The **Big Ideas** project offers a vision of how the UK engineering and education communities can work together to achieve a step-change. These ideas are not a short-term fix, but are the beginning of a long term joint effort to shift perceptions and behaviours.

During the evening there will also be time to explore the The Times Cheltenham Science Festival *Discover Zone* and collect useful resources for your classroom.

Book your **FREE** ticket via the usual booking form and watch out for further information in the spring about the speakers at this event.



**Thursday 9 June, 4-6pm**  
**Teachers As**  
**Engineers CPD**

**£25** including refreshments and resource book

Are you looking for new ideas linking Science and DT for your pupils? Would you like to design, make and test your own working models using cheap and recycled materials? Join IMechE Fellow **Caroline Alliston** in this informal and interactive workshop. Take away your models and carry out the activities in class, helping to inspire the scientists and engineers of the future.

Caroline is a professional award-winning engineer with a degree from Cambridge and 24 years of industry experience. Whilst on a career break to spend more time with her two boys, she started a club at their school to enthuse children about science and engineering. Before long there were more children on the waiting list than in the actual club! As a result, she wrote her first *Technology for Fun* book, incorporating 30 of their favourite projects, to give other children the opportunity to have fun making things that really work. You will get a copy of this to take back into school.

[technologyforfun.co.uk](http://technologyforfun.co.uk)

## FAQs

### How do I book tickets?

It's simple! Once you've decided which activities you want to book just go to [cheltenhamfestivals.com/scienceforschools](http://cheltenhamfestivals.com/scienceforschools) and fill in and submit the booking form. **Booking opens 8am on Tuesday 2 February 2016. Please be aware there will be a £5 administrative booking fee applied to each booking.**

### What happens next?

1. You will receive a booking confirmation via email. If any of your choices are not available, we will be in touch to discuss alternative options.
2. **Monday 9th May** is the deadline for notifying us of changes to your numbers as a result of fluctuations in class size. We will do our best to accommodate such changes, but please understand that we may be unable to do so.
3. After this date an invoice will be sent to your school finance office.
4. You will receive the following documents – please bring them with you:
  - A ticket document
  - A site map
  - An information letter with important details about your visit

It is helpful for every accompanying adult in your party to have a copy of these documents with them.

### Getting to the Festival

For full details about arriving, parking, getting to venues and more, please refer to the FAQs at [cheltenhamfestivals.com/education/planning-your-visit](http://cheltenhamfestivals.com/education/planning-your-visit) where you will also find our cancellation policy and advice for preparing a risk assessment.

**Don't miss our  
Teachers CPD  
Opportunities**  
See page 15 for  
details