



# BRITISH SCIENCE FESTIVAL: BIRMINGHAM 8-11 SEPT 2014

[britishsciencefestival.org](http://britishsciencefestival.org)

08456 807 207

Young People's Programme (Ages 13-19)

**WHERE CAN SCIENCE TAKE ME?**



UNIVERSITY OF  
BIRMINGHAM



# FESTIVAL SUPPORTERS

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## KEY PARTNERS



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UNIVERSITY OF BIRMINGHAM

THE TIMES  
THE SUNDAY TIMES  
University of the Year  
2013-14

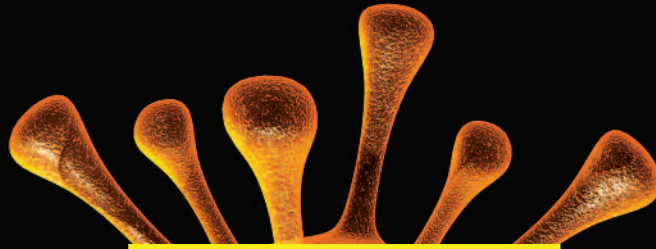
**Learn more with the University of the Year!**

The University of Birmingham, *The Times* and *The Sunday Times* University of the Year, is proud to be associated with the British Science Festival.

We have a great tradition of inspiring young people to achieve their potential and have a wide range of opportunities for your school to get involved in.

Learn more  
[www.birmingham.ac.uk/undergraduate/advice/services/index.aspx](http://www.birmingham.ac.uk/undergraduate/advice/services/index.aspx)

# WELCOME TO THE BRITISH SCIENCE FESTIVAL



The British Science Festival is one of Europe's largest celebrations of science, technology, engineering and maths (STEM). Each year it takes place in a different area of the UK.

This year we are delighted to bring the Festival to Birmingham in association with our hosts the University of Birmingham with the support of Birmingham City Council.

Taking place at the very start of term, the Festival is ideally placed to offer an induction for your incoming Year 10 or Year 12 students which will inspire and motivate them for the start of their GCSE or A-Level curricula.

Workshops, talks and shows, delivered by the best the UK has to offer, focus on the practical applications of science learnt in the classroom, offer students novel and fun ways to explore the world around them and open up a world of possibilities for careers in science, technology and engineering.

Hands-on activities offer the opportunity to get up close and personal with some amazing applications of real science –

from spotting people who are lying to discovering future energy sources.

Throughout the Festival there will be an emphasis on 'Where can science take me?' Workshops will also showcase how the science links to jobs in the outside world; there will be opportunities to meet people from a wide variety of organisations talking about their careers in STEM, and there will be a range of materials to help support both students and staff in learning about STEM careers. Advisers will also be available from the National Careers Service for those who have specific questions about careers in STEM and how to access them (see p5).

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### BOOKING YOUR VISIT TO THE BRITISH SCIENCE FESTIVAL (YEARS 9-11)

Places are limited and will book up quickly. Bookings will be accepted on a first come, first served basis. To avoid disappointment please book early.

a) Decide which day(s) you would like to visit the Festival and how many students you will bring. Try to have 2nd and 3rd choices of day in case your first choice is not available.

b) Make your booking by emailing [m.ansar@bham.ac.uk](mailto:m.ansar@bham.ac.uk). Please include the number of students and what year they are in.

c) The organisers will then contact you to confirm your places and activity choices. We recommend that you don't book travel or make other arrangements until your places are confirmed.

### BOOKING YOUR VISIT TO THE BRITISH SCIENCE FESTIVAL (POST-16)

Some of the sessions in the programme for post-16 will be of general interest and useful to all students, while some are more suitable to students studying the subject, or apprentices working in a relevant industry.

a) Decide which day/s you would like to visit the Festival and which students you will be bringing.

b) Look at the event descriptions and decide which you would like to book. Note the maximum number of places available and split your group into the appropriate numbers. Please have second and third choices available in case the ones you want are already booked up.

c) Consult the appropriate timetable. Students should be booked into up to 4 activities.

d) All students will attend a keynote talk at 10.00am and one of the sessions should be in the hands-on and careers area.

e) Book by visiting <http://www.britishsienceassociation.org/britishsience-festival/YP>

f) The organisers will then contact you to confirm your places and activity choices. We recommend that you don't book travel or make other arrangements until your places are confirmed.

For more information call: 08456 807207

## NUMBERS

There is no formal minimum or maximum group size. However, bookings for particularly large groups will be subject to availability of activities.

## COST

All activities are FREE to attend. However, schools which cancel or significantly reduce numbers at short notice will be subject to a cancellation charge of up to £25 per head. See the conditions of booking (P15) for more information.



#bsf14



/BritishScienceFestival



@BritishSciFest

# USEFUL INFORMATION

## SPECIAL ACCESS NEEDS

All venues for events, workshops and exhibitions in this programme are fully accessible. However if any member of your party has special access needs please let us know at the time of booking.

## VENUES AND FACILITIES

Events will take place at the University of Birmingham campus at Edgbaston

## TIMING

The main activity programme at each venue runs from 10am to 3.30pm. You should aim to arrive by 9.45am. If necessary you can leave at 2.30pm. Any variations will be advised when your booking is confirmed.

## GETTING THERE

You will be sent detailed travel information once your booking is confirmed. Please note that there will be no coach parking and limited parking for minibuses on site. The University of Birmingham has its own train station which is easily accessible from a variety of locations around the West Midlands; and is just 7 minutes by train from Birmingham New Street. London Midland trains offer a discount of 26% for groups of 10 people or more.

## SAFETY AND SECURITY

We recommend a ratio of at least 1 adult per 20 pupils. The British Science Festival is open to all, so children should be accompanied by an adult at all times. A risk assessment for the event will be sent to schools with confirmed bookings.

**However, responsibility for the health, safety and welfare of pupils lies with the accompanying adults and not with workshop providers, British Science Festival staff or Festival assistants.**

## LUNCH

You and your students should bring a packed lunch. There are cafés where food and drinks can be purchased, but they are likely to be very busy at lunchtime. We will provide a suitable covered space for you and your students to eat lunch.

## PERSONAL BELONGINGS

Anything you or your students bring must be carried with you all day. Encourage students to bring minimal belongings and to keep valuables safe or leave them at home. All they need to bring is a packed lunch.

## PHOTOS AND MEDIA CONSENT

Students attending the event may be photographed, filmed or interviewed by event organisers or the local media. Photos may be used by the event organisers and their partners in press releases and promotional materials. When you register you will be asked to give media consent for your students. Please let us know if you are bringing any students whose parents do not wish them to be photographed, filmed or interviewed for such purposes.

## OTHER ACTIVITIES

The Young People's Programme is part of a wider celebration of science, engineering and technology. Events for adults and families will take place from 6 - 11 September. You can find more information about these events on our website [www.britisheciencefestival.org](http://www.britisheciencefestival.org)

In celebration of the British Science Festival, Birmingham Museums Trust are delighted to offer half price entry to Thinktank Birmingham Science Museum for all primary schools and KS3 students from 8 -11 September.

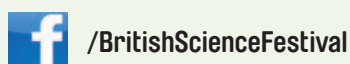
There will be a exciting range of workshops and shows available to supplement a visit to the galleries, for further details visit

[www.thinktank.ac/BSF](http://www.thinktank.ac/BSF)

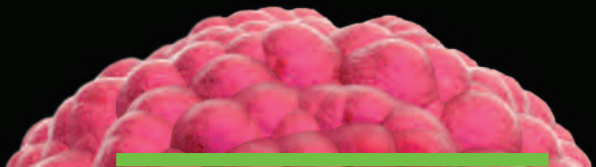
To book call **0121 348 8001** and quote **BSFoffer2014**



All details are correct at time of going to press, but we reserve the right to change the programme if necessary. All activities your students attend will be appropriate for the age and requirements of your group.



# USEFUL INFORMATION



## SCIENCE AND CAREERS IN ACTION

THE THEME FOR THE YOUNG PEOPLE'S PROGRAMME IS 'WHERE CAN SCIENCE TAKE ME?'

Students will enjoy a whole host of fun and informative hands-on activities in the Great Hall. These activities will make links to potential careers in science and technology. All students will have the opportunity to talk to scientists in industry and business, including our main sponsors EDF Energy, through Careers Speed Dating, networking and an interactive careers zone.

Qualified guidance staff with expertise in STEM from the National Careers Service will be on hand to give personalised advice and guidance to those who would like it.

Students will get to:

- experience what life is like for the hearing impaired, and how technology helps
- find out what is involved in becoming a healthcare professional...for plants and people!
- explore novel and innovative alternative fuels
- discover their heroic side in a disaster simulation
- step into the final frontier with moon buggies and meteorites
- lie with impunity, trying to trick a psychologist trained to detect lies

All students will be scheduled in for one session during their visit but please feel free to drop in at any time.

**NB not all the activities listed will take place on all days**



CREST Star is supported by:



A British Science Association programme



A British Science Association programme

CREST Awards are supported by:





### Give young children the opportunity to practise their investigative, research and design skills

[www.britishecienceassociation.org/creststar](http://www.britishecienceassociation.org/creststar)

CREST star is a **UK-wide award scheme** that enables children between the **ages of 5-11**, to solve science, technology, engineering and maths (STEM) problems through practical investigation.



The **activities focus on thinking about, talking about and doing science**, while **developing children's scientific enquiry skills** in an enjoyable context.

There are three levels: Star, SuperStar and MegaStar and all are suitable for use in clubs and the classroom.

 @crest\_star  /CrestStarUK

Registered charity no: 212479 and SC039236

### Recognising success in project work

Enrich your students' experience in STEM

[www.britishecienceassociation.org/crest](http://www.britishecienceassociation.org/crest)

CREST Awards is a **UK scheme for 11-19 yr olds**, that recognises success, builds skills and demonstrates personal achievement in **(STEM) project work**.



**Discovery Bronze Silver Gold**

CREST Awards are easy-to-run with four levels that cover between 5 and 70+ hours work.

CREST is endorsed for use in **UCAS personal statements** and can be used towards the skills section of the **Duke of Edinburghs' Award**



 @CRESTAwards  /CRESTAwardsUK

# EVENTS AND ACTIVITIES FOR YEARS 9 – 11



## MONDAY 8TH – WEDNESDAY 10TH SEPTEMBER, 10.00 – 3.30

Schools should choose which day they would like to attend. They will start the day with a fantastic demo-lecture presented by some of the UK's top science communicators; the main keynote lecture for each day is listed below.

Students will also attend two other workshops or shows and visit the interactive science and careers in action zone in the Great Hall as part of their day at the British Science Festival. There will be science buskers around the campus who will get students involved in experiments and demonstrations during the lunch period.

### MONDAY 8TH – KEYNOTE LECTURE THE TALE OF THE KIDNAPPED ROBOT

For robots to be able to carry out tasks in the world, it is essential that they are able to work out where they are, where they want to go, and how to get there. Solving these problems has required a range of developments in the fields of artificial intelligence, robotics and computer science, and has produced everything from robot security guards to self-driving cars. Students will explore this cutting edge research.

ACTIVITY TYPE: TALK

MAXIMUM NUMBERS: 200

ENG

### TUESDAY 9TH – KEYNOTE LECTURE DAREDEVIL LABS: EVEREST

Join us to explore the science of high-altitude survival and hear the story of a team of doctors and children on a scientific adventure to uncover cutting-edge medical treatments and save lives back home. The show explores the science of high altitude survival, uncovers the effect of altitude on your physiology, explores the genetics of fitness, and unpicks the ongoing cutting-edge research 'Xtreme Everest 2' started during their stay at Everest Base Camp last year.

ACTIVITY TYPE: SHOW

MAXIMUM NUMBERS: 200

HB SIS

### WEDNESDAY 10TH – KEYNOTE LECTURE CRACKING THE CODE: THE GENETICS OF SUPERHEROES

The comic books are filled with mutants; heroes and villains whose special abilities are genetic in their origin. But what are real mutants like, and could we one day use genetics to make us superhuman? This is an interactive lecture featuring games and videos that acts like an introduction to genetics and genetic engineering.

ACTIVITY TYPE: SHOW

MAXIMUM NUMBERS: 200

ENG BIOL HB

### THURSDAY 11TH – SUPER SCIENCE QUIZ YEAR 11 ONLY

All schools are invited to send three teams of four people to compete with other schools from across the region to be crowned the Super Science Quiz champions. The Super Science Quiz will focus on maths, chemistry, biology and physics with rounds in each of those subject areas. Each of the rounds will have 10 questions.

Following the super science quiz all students will visit the **science and careers in action zone** and enjoy **Superhero science**, a show which asks the question whether superpowers are fact or fiction? In most cases there is either a creature in nature or a material/technology that has that superpower like invisibility, super strength, mind reading or flying. The show is interactive and full of demos and magic tricks illustrating the superpowers. The students will be wowed and inspired by the demonstrations, tricks and stories.

They will also learn about the process of innovation and developing new technology - how one area of learning can inspire and impact another and how science fiction can be tomorrow's reality.

ACTIVITY TYPE: DISCUSSION AND WORKSHOP

MAXIMUM NUMBERS: 12 PER SCHOOL

CHEM BIOL PHYS MTH

# EVENTS AND ACTIVITIES FOR POST-16



Specially designed for students studying for A-levels, or taking a vocational course with a STEM element, you can tailor the post-16 programme to suit you. All the activities are listed in alphabetical order below. Use this information in conjunction with the timetable on p.12 to plan your visit.



## ALL SCIENCES LEAD TO FORENSICS

An explosion of TV programmes like CSI have brought forensic science into our living rooms like never before. **Andy Hart**, consultant on shows like *Waking the Dead* and *Silent Witness* talks about the broad range of skills and qualifications that can lead to a career in forensic science as he shares stories from his career.

ACTIVITY TYPE: TALK

DAY/S: MONDAY 8 SEPTEMBER

MAXIMUM NUMBERS: 200

CHEM BIOL PHYS

## ATMOSPHERIC CHEMISTRY AND GREENHOUSE GASES

The science of greenhouse gases has now become a mature subject. However, there are many more GH gases besides carbon dioxide that can cause an increase in carbon loading in the Earth's atmosphere, and this is not perhaps widely understood or accepted by the public. This talk and round-table discussion explores what can and should be done about the 'problem', if indeed it is accepted that there is a problem. Representatives from academic research, the nuclear business, an environmental agency, a green pressure group, and someone from the fossil fuel business will be on hand to put across their viewpoint.

ACTIVITY TYPE: DISCUSSION

DAY/S: MONDAY 8 SEPT

MAXIMUM NUMBERS: 200

CHEM ENV

## BLOOD SPATTER

Forensic consultant **Andy Hart** leads a workshop on telling the story of blood spatter. Find out just how much you can learn about a crime scene from the way the blood spatters.

ACTIVITY TYPE: WORKSHOP

DAY/S: MONDAY 8 SEPTEMBER

MAXIMUM NUMBERS: 30

APSI

## BUILDING BRIDGES - MATHS AND SCIENCE IN THE REAL WORLD

This activity will engage students in building a large scale suspension bridge by using the kits we will supply. Tutors and helpers will work together with participants during the process. Students will also be given explanations how real-world bridges work and how they are constructed in practice.

ACTIVITY TYPE: WORKSHOP

DAY/S: MONDAY 8 SEPTEMBER

MAXIMUM NUMBERS: 30

ENG

## CHEMICAL MAGIC SHOW

Join **Ray Plevy** for flashes and bangs demonstrating the many varied and wondrous reactions of chemicals in a variety of situations. Be warned... volunteers will be required.

ACTIVITY TYPE: SHOW

DAY/S: TUESDAY 9 SEPTEMBER

MAXIMUM NUMBERS: 200

CHEM

## CHEMISTRY AND ENERGY: FROM STEAM TO NUCLEAR POWER

This demonstration lecture will showcase the chemistry involved in the production and harnessing of energy. From Thomas Newcomen's first successful steam engine in the world, used to pump water from coal mines of Lord Dudley's estates in 1712, to modern day nuclear electricity generating power stations - and a lot more along the way! The important role of chemists in developing new materials that convert energy more efficiently and in a less polluting manner will be highlighted when considering energy materials for the future.

ACTIVITY TYPE: SHOW

DAY/S: TUESDAY 9 SEPT, THURSDAY 11 SEPT

MAXIMUM NUMBERS: 200

CHEM ENV

## KEY TO CURRICULUM LINKS

APPLIED SCIENCE

APSCI

ENGINEERING

ENG

PHYSICS

PHYS

BIOLOGY

BIOL

ENVIRONMENTAL STUDIES

ENV

PSYCHOLOGY

PSYC

CHEMISTRY

CHEM

HUMAN BIOLOGY

HB

SCIENCE IN SOCIETY

SIS

ELECTRONICS

ELEC

MATHS

MTH

# EVENTS AND ACTIVITIES FOR POST-16

## CODES AND CODEBREAKING

During the war, the most important work was done in deciphering codes quickly and accurately, and, with the rise of computerised information on the internet, coders and codebreakers nowadays go head-to-head in the battle to keep our data safe.

**ACTIVITY TYPE: WORKSHOP**

**DAY/S: TUESDAY 9 SEPT**

**MAXIMUM NUMBERS: 30**

**MTH**

## DESIGNING AND MAKING A CALCULATOR

They say that there is more computing power in the calculators we use now than in the first mission to the moon. Through designing and making a calculator students will discover how maths goes into building and maintaining everything from a basic calculator to the International Space Station.

**ACTIVITY TYPE: WORKSHOP**

**DAY/S: WEDNESDAY 10 SEPT**

**MAXIMUM NUMBERS: 30**

**MTH**

## DIAGNOSIS DNA

An interactive, hands-on activity during which the participants will learn about a particular genetic disease, and test samples from (fictional) "patients", using DNA electrophoresis to diagnose whether they are carriers of the disease. The activity will also touch on the ethical issues surrounding genetic screening for disease.

**ACTIVITY TYPE: WORKSHOP**

**DAY/S: THURSDAY 11 SEPT**

**MAXIMUM NUMBERS: 20**

**BIDL HB**



## DRUG DEVELOPMENT, PUBLIC HEALTH EDUCATION AND IMMUNOLOGY

What do scientists really do? Using the example of Rheumatoid arthritis, we will explore how new medicines are developed and tested, and how public health work can support doctors, patients and their families in managing disease. Students will get to feel what it's like to be a patient or scientist through hands-on activities and interactive discussions, and will also come away knowing about the immune system that causes this disease, and the realities of how good ideas become helpful drugs.

**ACTIVITY TYPE: WORKSHOP**

**DAY/S: MONDAY 8 SEPTEMBER**

**MAXIMUM NUMBERS: 30**

**CHEM HB**

## DRUGS IN SPORT

Top level sport is an intensely competitive activity and competing athletes look for ways of getting that "edge" over fellow competitors, and some resort to performance enhancing substances. Using the stories of the rise and fall of some (in)famous sportsmen students will discover some of the molecules that they have used, what these molecules do and whether they have side effects, together with ways of detecting them.

**ACTIVITY TYPE: TALK**

**DAY/S: WEDNESDAY 10 SEPT**

**MAXIMUM NUMBERS: 200**

**CHEM**



## ENGINEERING ROBOTS FOR THE FUTURE

Robots will play a large part in the future of our society, ideally taking over some of the dull, dirty and dangerous jobs humans do currently. Before that can happen, some very difficult scientific problems must be solved in related fields, and it is likely that students studying today will be at the forefront of the efforts to solve them. Students will build and programme a simple intelligent robot to solve a problem inspired by one of the future applications of robotics technology. They will benefit from engagement with scientific ideas (robotics control, artificial intelligence) which are not part of their usual curriculum, exposure to demonstrations of exciting robots usually restricted to labs, and hands-on experience developing robots with experts in the field.

**ACTIVITY TYPE: DISCUSSION AND WORKSHOP**

**DAY/S: WEDNESDAY 10 SEPTEMBER**

**MAXIMUM NUMBERS: 30**

**ENG**

## ENGINEERING THE FUTURE

Students will design, build and test a prototype electric vehicle after a short introduction to engineering and how engineering applies science and maths to create things that help people. By participating in the activity students will develop teamwork and practical skills. They will be given the opportunity to apply their STEM knowledge to a hands-on project and in a short space of time they will work together to produce a prototype electric vehicle, which they will be able to take back to school or college. To complete the challenge the students will have to use their knowledge of electric circuits, friction and forces, gearing and vehicle dynamics. They will begin by designing their prototype, encouraging thinking skills, engineering, drawing and design.

**ACTIVITY TYPE: DISCUSSION AND WORKSHOP**

**DAY/S: TUESDAY 9 SEPTEMBER**

**MAXIMUM NUMBERS: 30 (IN TEAMS OF 5)**

**ENG**

See page 9 for the key to curriculum links



# EVENTS AND ACTIVITIES FOR POST-16



## FUTURE EXCITING TRENDS IN CHEMISTRY

In many of the global problems facing the world today, chemists are poised at the forefront to play a role in solving them. From climate change to feeding the billions, these are exciting times to be a chemist. Join **Stuart Cantrill**, Chief Editor of Nature Chemistry for his take on the role of chemists of the future.

ACTIVITY TYPE: TALK

DAY/S: THURSDAY 11 SEPTEMBER

MAXIMUM NUMBERS: 200

CHEM

## HUMAN TOUCH

Our sense of touch is vital to our survival. Without it we would freeze or burn. Students will discuss important facts about human touch and the implications of using our sense of touch in everyday activities.

ACTIVITY TYPE: TALK

DAY/S: TUESDAY 9 SEPT

MAXIMUM NUMBERS: 200

BIOL HB

## LEARNING TO CODE WITH MOBILE PHONES

In this workshop, participants will learn some of the basics of computer programming and apply them to build a simple face recognition application on a mobile phone. This engaging task uses some of the foundational concepts in computer science in an interesting task which uses the computing platform that most of us are now familiar with – a mobile phone. We will provide phones to work on, and a software framework (based on AppInventor) to guide the students, and as such we will provide the opportunity to work on advanced software and hardware with little or no prior knowledge required.

ACTIVITY TYPE: WORKSHOP

DAY/S: MONDAY 8 & WEDNESDAY 10 SEPTEMBER

MAXIMUM NUMBERS: 25

MTH ENG

## LIVING WITH DISEASE: HOW WE DEVELOP DRUGS AGAINST ARTHRITIS

From studying the smallest of molecules to aiding the largest of communities, there is a place for scientifically-aware individuals to make an impact on improving health throughout the whole process of biomedical drug discovery, development, and refinement. Researchers will give a broad overview of drug development and patient care, reinforced by several short activities allowing participants to empathise with the plight of patients; test a hypothesis of their own design using a common laboratory technique; interpret clinical trial 'data' and decide whether to approve it based on cost/benefit ratios. Students will also discuss public health initiatives to support patients and loved ones in preventing and living with disease.

ACTIVITY TYPE: WORKSHOP

DAY/S: TUESDAY 9 SEPTEMBER

MAXIMUM NUMBERS: 21

CHEM HB BIOL

## LIVING IN A WORLD OF STRANGERS

Up to 2% of the population are born with a developmental form of prosopagnosia or 'face blindness'. This includes 300,000 children in the UK alone, who are unable to recognise their family, friends, or even themselves. This talk looks at the causes and treatments and how sufferers deal with everyday life. Students will have the opportunity to test themselves to discover how good they are at recognising faces. Could they be a 'super-recogniser'? We will also share hints and tips on how to be better at recognising faces.

ACTIVITY TYPE: TALK

DAY/S: THURSDAY 11 SEPTEMBER

MAXIMUM NUMBERS: 200

BIOL PSYC

## MATHS SAVES LIVES

Florence Nightingale will demonstrate through examples from her life and various interactive activities how mathematics and statistics were used to significantly reduce the mortality rate during the Crimea war and afterwards in British military hospitals. She will demonstrate how the statistical diagrams and early forecasting methods that she helped to pioneer have now become common place in assessing and evaluating all sorts of data. This demonstration talk will be followed by a hands on activity where the students will learn about epidemiology modelling and meet an operational researcher working for the NHS in the careers activity. The students will find out how maths is used nowadays to help save lives and find out about a career in Operational Research.

ACTIVITY TYPE: WORKSHOP

DAY/S: THURSDAY 11 SEPTEMBER

MAXIMUM NUMBERS: 25

MTH HB

## NEW BITE-SIZED CHEMISTRY RESOURCES THAT USE REAL 3D CRYSTAL STRUCTURES

Students will discover how to use exciting new online resources to enhance their chemistry learning. The resources have been written by students for students and will revolutionise the way they approach their chemistry learning.

ACTIVITY TYPE: WORKSHOP

DAY/S: WEDNESDAY 10 SEPTEMBER

MAXIMUM NUMBERS: 30

CHEM

## KEY TO CURRICULUM LINKS

APPLIED SCIENCE

APSCI

ENGINEERING

ENG

PHYSICS

PHYS

BIOLOGY

BIOL

ENVIRONMENTAL STUDIES

ENV

PSYCHOLOGY

PSYC

CHEMISTRY

CHEM

HUMAN BIOLOGY

HB

SCIENCE IN SOCIETY

SIS

ELECTRONICS

ELEC

MATHS

MTH

# EVENTS AND ACTIVITIES FOR POST-16

## NOT ALL SCIENTISTS WEAR LAB COATS: TAKING SCIENCE INTO THE FIELD

This workshop offers students a chance to experience what it's like to work in the 'field' as an animal biologist. Students will have the chance to pack a kit bag and plan a working day for different field biology scenarios from the African savannah to a tropical forest. Students will learn some of the techniques used; the types of questions we can ask and the problems we face.

ACTIVITY TYPE: WORKSHOP

DAY/S: MONDAY 8 SEPTEMBER, TUESDAY 9 SEPTEMBER

MAXIMUM NUMBERS: 25

BIOL

## NOT ENOUGH EXERCISE, TOO MUCH STRESS: THE CURSE OF MODERN LIVING

It's not new news that exercise is good for us, but why don't we do it? Physical inactivity has now become a top 10 killer in our society, with a lack of exercise in our lives linked to many preventable diseases like diabetes and obesity. What do we know about exercise and how can we better use it in our lives to improve our health and reduce our stress levels? These questions will be addressed by experts in the field working across the spectrum of physical activity, health and well-being.

ACTIVITY TYPE: TALK

DAY/S: WEDNESDAY 10 SEPTEMBER

MAXIMUM NUMBERS: 200

HB APSCI PHYS SIS

## PLANTS AND PRESSURE

Plants are often seen as boring in comparison to 'exciting' animals so this presentation presents plants as dynamic, high pressure hydraulic machines (did you know that plant pressure can be 250 times as high as arterial blood pressure?). We will explore a range of pressure driven processes in plants as well as the underlying osmotic mechanisms. With the help of the audience we see what pressures human lungs can generate and compare these to pressurised systems in everyday life and in plants.

ACTIVITY TYPE: TALK

DAY/S: THURSDAY 11 SEPTEMBER

MAXIMUM NUMBERS: 200

BIOL

## PARTICLE PHYSICS AND GRAVITATIONAL WAVES

### A FULL DAY WORKSHOP ABOUT THE VERY LATEST IN PHYSICS

ACTIVITY TYPE: MIX - TALK/ACTIVITIES

MAXIMUM NUMBERS: 30

DAY/S: TUESDAY 9 SEPT, THURSDAY 11 SEPT

PHYS

### PARTICLE PHYSICS AND THE MYSTERIES OF THE EARLY UNIVERSE

Hear how experiments at the world's highest-energy particle accelerator, Geneva's Large Hadron Collider, are trying to answer fundamental questions about the Universe and our existence. See the key concepts illustrated using familiar household objects, explore the latest results, and hear what's planned for the future. Ask questions about anything that's ever intrigued or puzzled you about particle physics, and experiments at the Large Hadron Collider.

### PARTICLE PHYSICS ACTIVITIES

Learn about the Higgs boson, the particle associated with the origin of mass, from Birmingham researchers involved in its discovery. Take part in activities that include: mass generation using magnets; a table-top accelerator; fully functional particle detectors; and dice games that simulate particle physics experiments. Take charge of a particle physics laboratory in a new computer game.

### GRAVITATIONAL WAVES: HOW TO FIND BLACK HOLES WITH LASERS?

Learn about the next big thing in experimental physics and how students can change the shape of a big science project! Albert Einstein predicted the existence of gravitational radiation — ripples in the fabric of space-time that propagate at the speed of light — in 1916 as a consequence of his new theory of gravity. Observing gravitational waves could dramatically change our understanding of the cosmos: we shall be able to "see" some of the most violent events in cosmic history, such as black holes colliding in the centre of galaxies and the Universe in the very first fraction of a second after the Big Bang. The hunt for such gravitational waves (yet to be directly detected) has sparked a new field of fundamental and instrumental science. This talk will take you on a journey from the early detectors to most advanced laser interferometers operating today, highlighting the influence and career paths of students and researchers within these large research projects.

### BLACK HOLES AND GRAVITATIONAL WAVES ACTIVITIES

Albert Einstein predicted the existence of gravitational radiation — ripples in the fabric of space-time that propagate at the speed of light — in 1916 as a consequence of his new theory of gravity. Observing gravitational waves could dramatically change our understanding of the cosmos: we shall be able to "see" some of the most violent events in cosmic history, such as black holes colliding in the centre of galaxies and the Universe in the very first fraction of a second after the Big Bang.

### RECREATING THE BIG BANG WITH THE WORLD'S LARGEST MACHINE - THE LHC AT CERN

In detectors around the LHC, protons (hydrogen nuclei) are smashed together at 99.9999991% of the speed of light recreating, for a tiny instant, the violent particle collisions which would have existed less than a billionth of a second after the Big Bang. Lead nuclei are also accelerated and collided in the LHC producing the highest temperatures and densities ever made in an experiment and recreating the exotic primordial soup which existed at the birth of our Universe. Professor **David Evans**, from the University of Birmingham, will explain the physics behind the LHC, what we expect to learn and summarise the latest results.

ACTIVITY TYPE: TALK

DAY/S: MONDAY 8 SEPT, WEDNESDAY 10 SEPT

MAXIMUM NUMBERS: 200

PHYS



# EVENTS AND ACTIVITIES FOR POST-16



## RISE OF THE ANTI-MATTER MACHINES - THE PAST, PRESENT AND FUTURE OF POSITRON EMISSION TOMOGRAPHY

Medical Physicist **Dr Heather Williams** introduces her favourite imaging technique, Positron Emission Tomography, from its fundamental principles and initial development to current applications in clinical care and research, before looking ahead to imminent advances and blue-skies dreams of the future.

ACTIVITY TYPE: TALK

DAY/S: WEDNESDAY 10 SEPTEMBER

MAXIMUM NUMBERS: 200

PHYS BIOL

## SEX, LIES AND NANOTECHNOLOGY

What is all the fuss about nanotechnology? Students will find out how nanoscience and nanotechnology can be confused in the media, leading to misconceptions and anxieties within society about the applications of nanotechnology. They will look at what all the excitement is behind nanotechnology and how we are all being exposed, even if we did not know it. They will gain a real perspective on what a nanometer is, as we demystify the term, and reveal that the master of nanotechnology is nature, who uses it in all biological processes including fertilisation of an egg by a sperm. They will then find out how scientists have learnt lessons from nature to do some remarkable nanoscience, and applied it to meeting human needs.

ACTIVITY TYPE: TALK

DAY/S: TUESDAY 9 SEPT

MAXIMUM NUMBERS: 200

APSCI BIOL

## DAREDEVIL LABS: EVEREST

Join us to explore the science of high-altitude survival and hear the story of a team of doctors and children on a scientific adventure to uncover cutting-edge medical treatments and save lives back home. The show explores the science of high altitude survival, uncovers the effect of altitude on your physiology, explores the genetics of fitness, and unpicks the ongoing cutting-edge research 'Xtreme Everest 2' started during their stay at Everest Base Camp last year.

ACTIVITY TYPE: SHOW

DAY/S: TUESDAY 9 SEPTEMBER

MAXIMUM NUMBERS: 200

HB SIS

## THE IMPORTANCE OF MATERIALS SCIENCE IN MODERN DAY SOCIETY

**ACTIVITY 1** - "CSI Birmingham" using microscopy to solve a car-crash case. This demonstrates how materials science can be used for forensic examination of parts. Also demonstrates a state of the art electronic microscope.

**ACTIVITY 2** - Short presentation on permanent magnetic materials and their application in high tech and clean energy technologies. Followed by a design and build activity where the students will build their own loud speakers. Prize offered for the loudest and clearest sound produced.

ACTIVITY TYPE: WORKSHOP

DAY/S: WEDNESDAY 10 SEPTEMBER

MAXIMUM NUMBERS: 20

CHEM PHYS

## USING MATHS TO SURVIVE THE ZOMBIE APOCALYPSE

Understanding how an infection such as swine flu spreads through a population, or how different populations interact with each other, is essential to maintain healthy and diverse populations. By describing these situations with maths, we can make predictions about what will happen when a particular treatment/containment strategy is employed and therefore which strategy will be most effective. We will show participants how to develop these mathematical models and look at ways to ensure the human race survives if (and when) the zombies attack.

ACTIVITY TYPE: TALK

DAY/S: THURSDAY 11 SEPTEMBER

MAXIMUM NUMBERS: 100

MTH

## WHERE CAN EARTH SCIENCES TAKE YOU?

This interactive lecture will explore what Earth Sciences is and will include content on the science of volcanoes, earthquakes, climate change, natural hazards, ice ages, reefs, deserts and the geology of Mars. Young people attending will learn how earth scientists work with our planet, how they understand the workings of it in the past and today for better predicting the future.

ACTIVITY TYPE: TALK

DAY/S: WEDNESDAY 10 SEPT

MAXIMUM NUMBERS: 200

ENV

## KEY TO CURRICULUM LINKS

APPLIED SCIENCE

APSCI

ENGINEERING

ENG

PHYSICS

PHYS

BIOLOGY

BIOL

ENVIRONMENTAL STUDIES

ENV

PSYCHOLOGY

PSYC

CHEMISTRY

CHEM

HUMAN BIOLOGY

HB

SCIENCE IN SOCIETY

SIS

ELECTRONICS

ELEC

MATHS

MTH



# POST-16 TIMETABLE

	10am	11am	12pm	1pm	2pm	3pm
<b>Monday 8<sup>th</sup> September</b>						
All sciences lead to forensics <b>Max No. 200</b>	Building bridges - maths and science in the real world (45 minute lunch break) <b>Max No. 30</b>	Drug development, public health education and immunology <b>Max No. 30</b>	Not all scientists wear lab coats <b>Max No. 25</b>	Recreating the Big Bang <b>Max No. 200</b>	Not all scientists wear lab coats <b>Max No. 25</b>	
	Recreating the Big Bang <b>Max No. 200</b>	Blood spatter <b>Max No. 30</b>	Blood spatter <b>Max No. 30</b>	Atmospheric chemistry and greenhouse gases <b>Max No. 200</b>	Atmospheric chemistry and greenhouse gases <b>Max No. 200</b>	
	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>
	Lunch	Lunch	Lunch	Lunch	Lunch	
				Learning to code with mobile phones <b>Max No. 27</b>	Learning to code with mobile phones <b>Max No. 27</b>	
<b>Tuesday 9<sup>th</sup> September</b>						
Chemical magic show <b>Max No. 200</b>	Chemistry and energy <b>Max No. 200</b>	Show - Daredevil Labs: Everest <b>Max No. 200</b>	Codes and codebreaking <b>Max No. 30</b>	Codes and codebreaking <b>Max No. 30</b>		
	Sex, lies & nanotechnology <b>Max No. 200</b>	Not all scientists wear lab coats <b>Max No. 25</b>	Lunch	Lunch	Not all scientists wear lab coats <b>Max No. 25</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>
	Particle physics and gravitational waves (to include 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (to include 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (to include 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (to include 45 minute lunch break) <b>Max No. 30</b>	Engineering the future! <b>Max No. 30</b>	Engineering the future! <b>Max No. 30</b>
	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>
	Lunch	Lunch	Lunch	Lunch	Lunch	
	Human touch <b>Max No. 200</b>	Human touch <b>Max No. 200</b>	Human touch <b>Max No. 200</b>	Living with disease <b>Max No. 21</b>	Living with disease <b>Max No. 21</b>	Chemistry and energy <b>Max No. 200</b>
						Living with disease <b>Max No. 21</b>
<b>Wednesday 10<sup>th</sup> September</b>						
Rise of the anti-matter machines <b>Max No. 200</b>	New bite-sized chemistry resources <b>Max No. 30</b>	Recreating the Big Bang <b>Max No. 200</b>	Where can Earth Sciences take you? <b>Max No. 200</b>	Where can Earth Sciences take you? <b>Max No. 200</b>	New bite-sized chemistry resources <b>Max No. 30</b>	Not enough exercise, too much stress <b>Max No. 30</b>
			Engineering robots for the future (include 45 minutes for lunch) <b>Max No. 30</b>	Engineering robots for the future (include 45 minutes for lunch) <b>Max No. 30</b>	Designing and making a calculator <b>Max No. 30</b>	Designing and making a calculator <b>Max No. 30</b>
			The importance of materials science (include 45 minutes for lunch) <b>Max No. 20</b>	The importance of materials science (include 45 minutes for lunch) <b>Max No. 20</b>	Drugs in sport <b>Max No. 200</b>	Drugs in sport <b>Max No. 200</b>
			Lunch	Lunch	Lunch	Lunch
			<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>
			Chemistry and energy <b>Max No. 200</b>	Chemistry and energy <b>Max No. 200</b>	Chemistry and energy <b>Max No. 200</b>	Chemistry and energy <b>Max No. 200</b>
			Plants and pressure <b>Max No. 200</b>	Plants and pressure <b>Max No. 200</b>	Plants and pressure <b>Max No. 200</b>	Plants and pressure <b>Max No. 200</b>
			Diagnosis DNA <b>Max No. 20</b>	Diagnosis DNA <b>Max No. 20</b>	Diagnosis DNA <b>Max No. 20</b>	Diagnosis DNA <b>Max No. 20</b>
			Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>
			Maths saves lives <b>Max No. 25</b>	Maths saves lives <b>Max No. 25</b>	Maths saves lives <b>Max No. 25</b>	Maths saves lives <b>Max No. 25</b>
			<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>
			Using maths to survive the zombie apocalypse <b>Max No. 100</b>	Using maths to survive the zombie apocalypse <b>Max No. 100</b>	Using maths to survive the zombie apocalypse <b>Max No. 100</b>	Using maths to survive the zombie apocalypse <b>Max No. 100</b>
						<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>
<b>Thursday 11<sup>th</sup> September</b>						
Living in a world of strangers <b>Max No. 200</b>	Chemistry and energy <b>Max No. 200</b>	Plants and pressure <b>Max No. 200</b>	Diagnosis DNA <b>Max No. 20</b>	Chemistry and energy <b>Max No. 200</b>	Chemistry and energy <b>Max No. 200</b>	Diagnosis DNA <b>Max No. 20</b>
			Future exciting trends in chemistry <b>Max No. 200</b>	Future exciting trends in chemistry <b>Max No. 200</b>	Future exciting trends in chemistry <b>Max No. 200</b>	Future exciting trends in chemistry <b>Max No. 200</b>
			Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>	Particle physics and gravitational waves (with 45 minute lunch break) <b>Max No. 30</b>
			<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>	<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>
						<b>SCIENCE AND CAREERS IN ACTION</b> <b>Max No. 100</b>

# AWARD LECTURES & EVENTS



The Award lectures are high quality talks aimed at a general audience. They form part of our programme for adults. You can find out more information on our website. The lectures will start at 12.00pm and you are welcome to book your students into them or any other event in the adult programme.

## BRITISH SCIENCE ASSOCIATION CHARLES LYELL AWARD LECTURE: SOOTY CITY IS HORRIFIC OUR AIR IS ATROCIOUS

PRESENTED BY: DR ROSSA BRUGHHA,  
QUEEN MARY, UNIVERSITY OF LONDON

Find out about latest findings in the science and health effects of air pollution – and how to avoid it. We have developed a new approach to measuring how much air pollution children and adults are exposed to as we move around big cities - using modern, portable air pollution monitors that suck in the air around you as you move and breathe – and we are using the information from these to inform people how best to avoid dirty air.

ACTIVITY TYPE: TALK

DAY/S: MONDAY 8 SEPTEMBER

MAXIMUM NUMBERS: 100

CHEM ENV

## BRITISH SCIENCE ASSOCIATION MARGARET MEAD AWARD LECTURE: CLIMATE HAZARDS IN A GLOBALISED WORLD: CHINESE DROUGHT, BREAD AND THE ARAB SPRING

PRESENTED BY: DR TROY STERNBERG, UNIVERSITY OF OXFORD

In 2011 winter drought in eastern China's wheat-growing region had significant implications internationally. Potential crop failure led China to buy wheat on the international market and contributed to a doubling of global wheat prices; the resultant price spikes affected the world's top wheat importing countries, all located in the Middle East/North African region. Rising wheat costs had a serious economic impact in Egypt, the world's largest wheat importer, where bread prices tripled and the waving of bread became a symbol of protest. Join Troy Sternberg to explore climate hazard implications for society through reflection on recent events. The talk covers drought in China, the role of drought in the Syrian civil war and an extreme cold crisis in Mongolia.

ACTIVITY TYPE: TALK

DAY/S: TUESDAY 9 SEPTEMBER

MAXIMUM NUMBERS: 100

ENV

## BRITISH SCIENCE ASSOCIATION ISAMBARO KINGDOM BRUNEL AWARD LECTURE: OF CRAFTY CROWS AND SPACE SHUTTLES: ANIMAL TOOL USE AS A WINDOW INTO HUMAN TECHNOLOGICAL EVOLUTION

PRESENTED BY: DR CHRISTIAN RUTZ,  
SCHOOL OF BIOLOGY, UNIVERSITY OF ST ANDREWS, UK

What, if anything, is it that differentiates humans from other animals? While for a long time our ability to make and use tools seemed to be a strong candidate ("Man the tool maker"), this view changed overnight when Jane Goodall published her landmark studies on wild chimpanzees in the 1960s. Fifty years later, we know of several other tool-using species, and tentative answers are emerging to the broad evolutionary questions it raises, not least because of recent work on NC crows. Since the topic lies at the heart of any attempt to understand what it means to be 'human', it continues to capture the imagination of both the scientific community and the general public.

ACTIVITY TYPE: TALK

DAY/S: WEDNESDAY 10 SEPTEMBER

MAXIMUM NUMBERS: 100

ENG BIOL

## BRITISH SCIENCE ASSOCIATION ROSALIND FRANKLIN AWARD LECTURE: OUR DYNAMICAL SUN: A 21ST CENTURY VIEW

PRESENTED BY: PROFESSOR INEKE DE MOORTELE,  
UNIVERSITY OF ST ANDREWS

Although the Sun might appear quite serene to you, our star is in fact, literally, bursting with activity. Frequent violent eruptions of hot matter send seismic waves across the entire Sun's surface like huge solar tsunamis. Highly-energetic particles stream continuously out from the Sun punctuated by massive blasts of hot plasma that are hurled out from the Sun. So what do these have to do with us? To discover how all this solar activity affects our daily lives, in this talk, we will journey from deep inside the Sun's nuclear core, through the solar surface, into its atmosphere, on towards Earth and finally out into space. A range of satellites is now observing the Sun in unprecedented detail, giving scientists an ever greater understanding of our local star. I will show some of these amazing current satellite images and movies and explain how scientists use these to create mathematical models of this solar activity.

ACTIVITY TYPE: TALK

DAY/S: THURSDAY 11 SEPTEMBER

MAXIMUM NUMBERS: 100

PHYS



For more information about main programme events your students can attend, visit the website [www.britishsociety.org](http://www.britishsociety.org)

# EVENTS AND ACTIVITIES FOR TEACHERS

The following events will be of interest to anyone involved in science education. To find out more and to book for these events visit [www.bsf-for-teachers.eventbrite.co.uk](http://www.bsf-for-teachers.eventbrite.co.uk)

## TUESDAY 9TH SEPTEMBER 17.30 - 19.00 STEM IN EDUCATION EVENING

Join the British Science Association and key science, technology, engineering and maths (STEM) partners with a host of other national and local STEM providers to meet, greet and explore the latest educational developments relating to enrichment and engagement in STEM. This session is a must for any teacher or STEM professional, bringing together resources and new ideas in a friendly informal session.



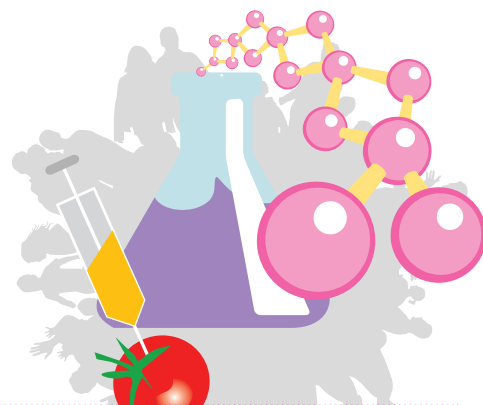
## THURSDAY 11TH SEPTEMBER 16.30 - 18.30 CPD FOR TEACHERS: SPANNING THE SECONDARY TERTIARY DIVIDE IN BIOLOGY, CHEMISTRY, MATHEMATICS AND PHYSICS

The aims of these sessions are three fold;

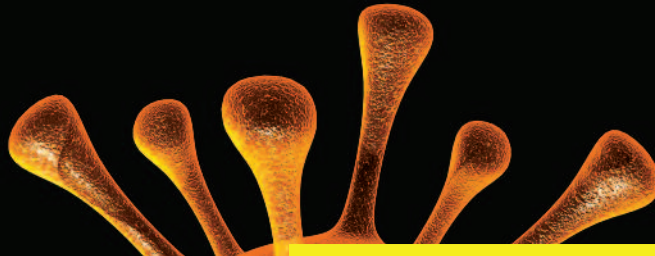
- 1) to highlight recent changes and advancements in the disciplines of biology, chemistry, physics and mathematics,
- 2) to provide practical resources, examples and applications for use in lessons and
- 3) to stimulate dialogue across the secondary tertiary boundary.

In STEM subjects, knowledge is increasing at a rapid rate and it is difficult to keep up. These changes can widen the important transition between A-level and university studies, both in terms of prior knowledge expected and the necessary study skills that underpin success.

In these twilight sessions a plenary talk will highlight some of the current advances in biology, chemistry, mathematics and physics as they relate to the A-level syllabus and outline some of the issues perceived by universities in delivering high quality teaching in the current environment. In a series of breakout sessions, university academics will present a number of short demonstrations of practical resources that represent some of what is currently delivered at first year university level. Teachers will be able to test and explore these, discuss how useful they might be in the school environment and consider what alterations would facilitate their uptake. Some materials and resources (but most importantly ideas) will be available for teachers to take away to use with their students to promote and enhance study of the STEM disciplines.



# CONDITIONS OF BOOKING



We want the British Science Festival to be a fun, exciting and safe experience. In order to make sure everyone is aware of their responsibilities, the organisers and all participating schools are bound by these conditions of booking. Conditions apply from the date that a booking is made up to and including the day of the event.



## LIABILITY

The event is covered by appropriate public liability insurance. However, all individuals must endeavour to keep themselves safe by behaving in a sensible manner, following instructions where given and not taking unnecessary risks.

The organisers undertake to deliver a quality event to the best of our ability. However, we will not be held liable for the substitution of all or part of an activity due to circumstances beyond our control.

In the unlikely event that the event is cancelled the organisers do not accept liability for any cancellation costs incurred by schools.

## PUPIL NUMBERS

The event has limited capacity to ensure a safe, comfortable, enjoyable and educational experience for everyone. The number of participants should be agreed at the time of booking and any significant changes (+/- more than 10% of the total) notified in advance. If, on the day, the number of participants exceed those agreed staff reserve the right to refuse entry to the event.

## CANCELLATION BY SCHOOLS

Last minute cancellations cause considerable inconvenience for organisers and activity providers (many of whom are volunteers) and deprive other schools of the opportunity to attend. Therefore, if a group cancels or significantly reduces visitor numbers, the organisers will apply a cancellation charge as follows:

**Before Friday 13 June**  
**No charge**

**Between Saturday 14 June and Friday 4 July**  
**£15 per head**

**Between Saturday 5 July and Friday 18 July**  
**£20 per head**

**After Friday 18 July**  
**£25 per head**

## BEHAVIOUR

The behaviour and discipline of children is the responsibility of supervising teachers and school staff. We expect pupils to be polite and respectful towards event and venue staff.

Destructive, abusive, dangerous or anti-social behaviour towards staff, volunteers or property will not be tolerated. Our staff reserve the right to evict individual children or entire groups if they consider their behaviour is unacceptable.


## SUPERVISION


Teachers and school-appointed carers are responsible for the supervision, safety and welfare of their children at all times. **Under no circumstances should the children be left in the sole care of event staff, venue staff or volunteers.** Many of the venues are open sites which means that we cannot prevent members of the public from entering the event areas.






# Turn off the T.V. Serious **family fun** alert!

 Robots & machines

 Animal handling

 Optical illusions

 Giant bubbles

**FREE**

## Family Day – Saturday 6 September

Library of Birmingham | [www.britishsciencefestival.org](http://www.britishsciencefestival.org)



Hosted by  
**UNIVERSITY OF  
BIRMINGHAM**

In partnership with  


Part of  


The British Science Association is a registered charity: 212479 and SC039236

### UNIVERSITY OF BIRMINGHAM

**COMMUNITY DAY**  
Sunday 7 September 2014  
at our Edgbaston campus

British Science  
Festival – **FREE fun**  
for all the family  
at the University  
of Birmingham

Come along to our Community Day on **Sunday 7 September 2014** where you can explore our beautiful, historic campus and enjoy events and activities throughout the day. We are throwing the doors open for you to see for yourselves the great things that the University is doing for people here in the Midlands and around the world. This year's event will also see guests from the British Science Festival 2014, hosted by the University of Birmingham. The festival brings science to life through games, workshops and shows, you may even recognise some of the famous faces visiting on the day!

Learn more

[www.birmingham.ac.uk/communityday](http://www.birmingham.ac.uk/communityday)

for more information email [community@contacts.bham.ac.uk](mailto:community@contacts.bham.ac.uk)



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