Discover and explore

Science & Engineering Day 2016

Welcome to Science and Engineering Day 2016

Dear Guest,

This is the 14th year that the University of Southampton has hosted a free event celebrating our Science and Engineering research and expertise. Each year we aim to have an inspiring and educational mix of old favourites and new activities for our many visitors of all ages. This year we've expanded to include both Highfield Campus and the nearby Boldrewood Innovation Campus. This has allowed us to offer more than 100 activities in total, to incorporate research from our Ocean and Earth scientists and to open up our unique towing tank.

We share Boldrewood with the Lloyd's Register Global Technology Centre and we're very pleased that they are both running marine-related activities and hosting talks in their building.

Please do join in the conversation on social media #**sotsef** on Twitter and **www.facebook.com/sotsef**

If you have a smartphone with you, we are piloting an interactive map at **sciengmap.soton.ac.uk**

Enjoy the day and please take a moment to give us your feedback with the tear-off form at the back of this booklet.

Ellie Cawthera and Steve Dorney
Directors, Southampton Science and Engineering Day

The team: Ellie Cawthera, Steve Dorney, Zena Hilton, Kristen Heasley, Jo James, Natt Day, Alan Wong, Reena Pau, Kate Collett

Public Engagement with Research unit **www.soton.ac.uk/per**

This sort of large-scale public engagement event doesn't happen without a lot of hard work behind the scenes, and we would like to take this opportunity to thank some key people that have made this extraordinary event possible, including: William Powrie (Chair of the Southampton Science and Engineering Festival Steering Group), everyone on the Steering Group, Adam Tewkesbury from Transport, Gina Celestine at Boldrewood, Tim Pougher and Jo Rich from Lloyd's Register, Charlotte (Charlie) Wood from Hospitality, Sue Dear from Safety & Occupational Health, Chris Gutteridge from Open Data Service, Chris Newland from Security, Gela Jenssen and Stu Hunt from The Print Centre, and Natasha Webb from Faculty of Physical Sciences and Engineering.

Our event is part of British Science Week **www.britishscienceweek.org**

Best Engineering Event 2009 | Best STEM Institution Event 2014

Special thanks to Gill Smith and AECOM for competition prizes

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Highfield - Timetable of Talks

Start time	End time	Title	Booking	Room	Building
10:45	11:45	Accelerate!	*	Lecture Theatre B	46
10:45	11:30	Astrodome	*	Seminar Room 5081	46
11:00	12:00	Science Magic...Magic Science	*	Lecture Theatre 1015	32
11:15	12:00	Bubble Acoustics - from whales to other worlds	Just turn up	Lecture Theatre C	46
11:30	11:45	Cilia Flashmob	Just turn up	Plaza	32/85
11:30	12:15	Light Express	Just turn up	Lecture Theatre A	46
11:45	12:45	Astrodome	*	Seminar Room 5081	46
11:45	12:45	Accelerate!	*	Lecture Theatre B	46
12:00	13:00	Speakezee+	Just turn up!	Lecture Theatre 1027	67
12:15	13:15	Science Magic...Magic Science	*	Lecture Theatre 1015	32
12:30	13:15	Astrodome	*	Seminar Room 5081	46
13:00	14:00	Einstein's Secret Universe	Just turn up	Lecture Room 4A	54
13:15	14:00	Light Express	Just turn up	Lecture Theatre A	46
13:15	14:00	Spaceship Earth	Just turn up	Lecture Theatre 1027	67
13:30	14:15	Astrodome	*	Seminar Room 5081	46
13:45	14:45	Accelerate!	*	Lecture Theatre B	46
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14:30	15:15	Bubble Acoustics - from whales to other worlds	Just turn up!	Lecture Theatre C	46
14:45	15:30	Light Express	Just turn up!	Lecture Theatre A	46
15:00	16:00	People Like Me	Just turn up!	Observatory	85
15:00	16:00	Accelerate!	*	Lecture Theatre B	46
15:30	16:30	Astrodome	*	Seminar Room 5081	46
15:30	16:30	Science Magic...Magic Science	*	Lecture Theatre 1015	32
15:30	16:15	Spaceship Earth	Just turn up	Lecture Theatre 1027	67

*This year most tickets will have been booked in advance, but there will be limited entry on the door - first come first served

Spaceship earth

We fly through space at thousands of miles an hour on the surface of a planetary spaceship. We may not be able to steer this spaceship (which is just as well because we don't want to crash into the Sun!) but we are able to change some important properties that we, and all life, on Earth depend on. Find out how by coming to this talk that will feature rocket videos, experiments, and the opportunity to try on SCUBA diving kit. Great for everyone.

The Light Express Roadshow -Photonics and the Science of Light!

Explore the laser technology and science behind the internet. Learn how our Light Scientists are helping to solve the world's problems. This is a fun interactive talk with loud music and flashing lasers. Great for everyone.

Accelerate!

Accelerate is a fun, interactive lecture that brings the audience to the heart of the physics and technology that goes into the Large Hadron Collider. Great for everyone.

Astrodome

Explore the astrophysics of our universe in the Soton Astrodome mobile planetarium. These 40min shows are presented by Physics and Astronomy PhD students and Undergraduates. The students will give you a taster of their world leading research and will also introduce you to the astronomy highlights in the night sky on the day of the event. Great for everyone.

Science Magic...Magic Science

Science is not magic and magic is most definitely not science but this is a show that is about science and works like magic to get the audiences attention, make them gasp, wonder and laugh. All demonstrations, no pictures or video, from funny noises and smells to making solid objects float in the air and many others too. Performed by the experienced science presenter, Ian B Dunne, this extremely amusing and diverting show has been honed over the years but is continually updated as new material is found. This show has mystery, suspense and laughs. Great for everyone.

Bubble Acoustics - from whales to other worlds

Gas bubbles in liquids have an extraordinary ability to interact with sound fields. This has been used at Southampton to produce award-winning research and inventions in engineering, biomedicine, oceanography, physics and acoustics. The story starts with the discovery that the sound of a babbling brook comes from bubbles. It moves on to show how the sounds produced by bubbles in the ocean help us understand the global carbon budget. Whales and dolphins adapt their acoustic calls to enhance their ability to catch prey in 'bubble nets'. Bubbles activated by ultrasound can assist industrial processing, or aid medical diagnosis and therapy, or the design of probes for other worlds This talk will cover these phenomena and the inventions produced at Southampton as a result.

Cilia Flashmob

Cilia are slender hairlike structures found on almost every cell in our bodies. Help us make a giant model of cilia in action by joining our flashmob at 11.30 outside Bldg 85.

Speakezee+

Three fantastic researchers will engage you in their fascinating work and give you an insight into the ups and downs of their personal journeys as scientists.

Einstein's Secret Universe

Einstein was a clever chap, and predicted all sorts of weird and wonderful things. In this popular talk, I will describe the last of his great predictions to be tested, involving gravity, lasers, and even black holes!

People Like Me

Explore how your daughter can be happy and successful at work: A workshop for Parents and Daughters.

Boldrewood - Timetable of Talks

Start time	End time	Title	Booking	Room	Building
10:45	11:15	The Oceanography and Geology of a Smartphone	Just turn up	Auditorium	175
11:25	11:55	Headfirst to Success	Just turn up	Auditorium	175
12:05	12:35	So you want to be a marine biologist	Just turn up	Auditorium	175
12:45	13:15	Volcanoes, robots and submarines	Just turn up	Auditorium	175
13:25	13:55	Oceans and wild, weird weather	Just turn up	Auditorium	175
14:05	14:35	Waves across the Ocean	Just turn up	Auditorium	175
14:45	15:15	Headfirst to Success	Just turn up	Auditorium	175
15:25	15:55	So you want to be a marine biologist	Just turn up	Auditorium	175
16:05	16:35	Waves across the Ocean	Just turn up!	Auditorium	175

The Oceanography of a Smart Phone

Most of the metals we need to manufacture smartphones have their origin in the ocean. In this presentation, I will explain the constituents of a useful item of daily life such as a smartphone, and where these ingredients come from.

Headfirst to Success!

Understanding how an athlete interacts with their equipment and how to achieve their best performance. A focus will be on the winter sport skeleton where 'sliders' descend headfirst down a bob sleigh track achieving speeds up to 140km per hour. The University's Performance Sports Engineering Laboratory has been supporting British Skeleton since 2006. With Professor Stephen Turnock, Director of the Lab.

So you want to be a Marine Biologist?

Marine Biology is a popular subject and there are lots of ways of getting involved; we explore the various options open to everyone from beach surveys to degree programmes, there is something to suit everyone's interest.

Volcanoes, Robots and Submarines

Learn how geologists investigate the fiery birth and death of the ocean floor.

Oceans and wild, weird weather

UK weather is strongly linked to conditions across the Atlantic Ocean. Big changes out in the Atlantic may explain the wild and weird weather that we have experienced in recent years.

Waves across the Ocean

How do waves work, how do we study them and what turns a wave into a rogue wave? The audience will become the waves that help answer these and other questions on the force of nature that batters our coastline.

Activities on Highfield Campus

Most activities are suitable for everyone. Where indicated, some activities are particularly well-suited to primary or secondary age groups.

Building 7

Custard rolling	Get your hands into cold custard and find out its surprising properties. Watch it dancing on top of a loudspeaker!	Great for everyone
Railway model	OO gauge railway model showing the range of engineering skills that go into building, maintaining and operating a modern railway.	Great for everyone
1/5 scale railway competition locomotive	This 1/5 scale locomotive weighing nearly half a tonne is being built for a national competition in July. Last year Southampton was the top university entry. The judges will be looking for energy storage, traction, ride comfort, noise and maintainability.	Great for secondary age group
Joule Bar - Energy for Development: Modelling energy access in rural communities	Interact with our solar power simulator, charge your phone and learn about the appropriateness of solar photovoltaics (PV), and the challenges for the supply of electricity to rural communities in Africa.	
EDMC Workshops - Manufacturing	Manufacturing and machinery demonstrations utilising cutting edge machine tools and equipment.	Great for everyone

Building 15, 17, 19 and 20

Sounds Good To Me!	Experience the strange environments of an anechoic and a reverberation chamber. Have a play with some acoustic toys and see if you can understand how each produces sound.	Great for everyone
Tour of 6-axis shaker	Visitors can tour the vibration chamber in Building 19 to see the facilities used to study vibration and transport comfort.	Great for everyone
RJ Mitchell Wind Tunnel Tour Mitchell Wind Tunnel	Explore the wonderful RJ MItchell Wind Tunnel in action and get to learn how to be a wind tunnel engineer with the university's Road Cycling club.	Great for primary age group
Human Flight - wingsuit challenge Mitchell Wind Tunnel and Foyer	Join our world record breaking Icarus Wingsuit Team in building and flight-testing your own ironman like wingsuit to soar through the stratosphere. Learn from our team how they plan to break numerous world records in human flight.	Great for everyone
High Voltage Lab	Will it conduct? Small groups will be taken inside the University's High Voltage Laboratory and shown a range of experiments that show electricity passing through different materials.	

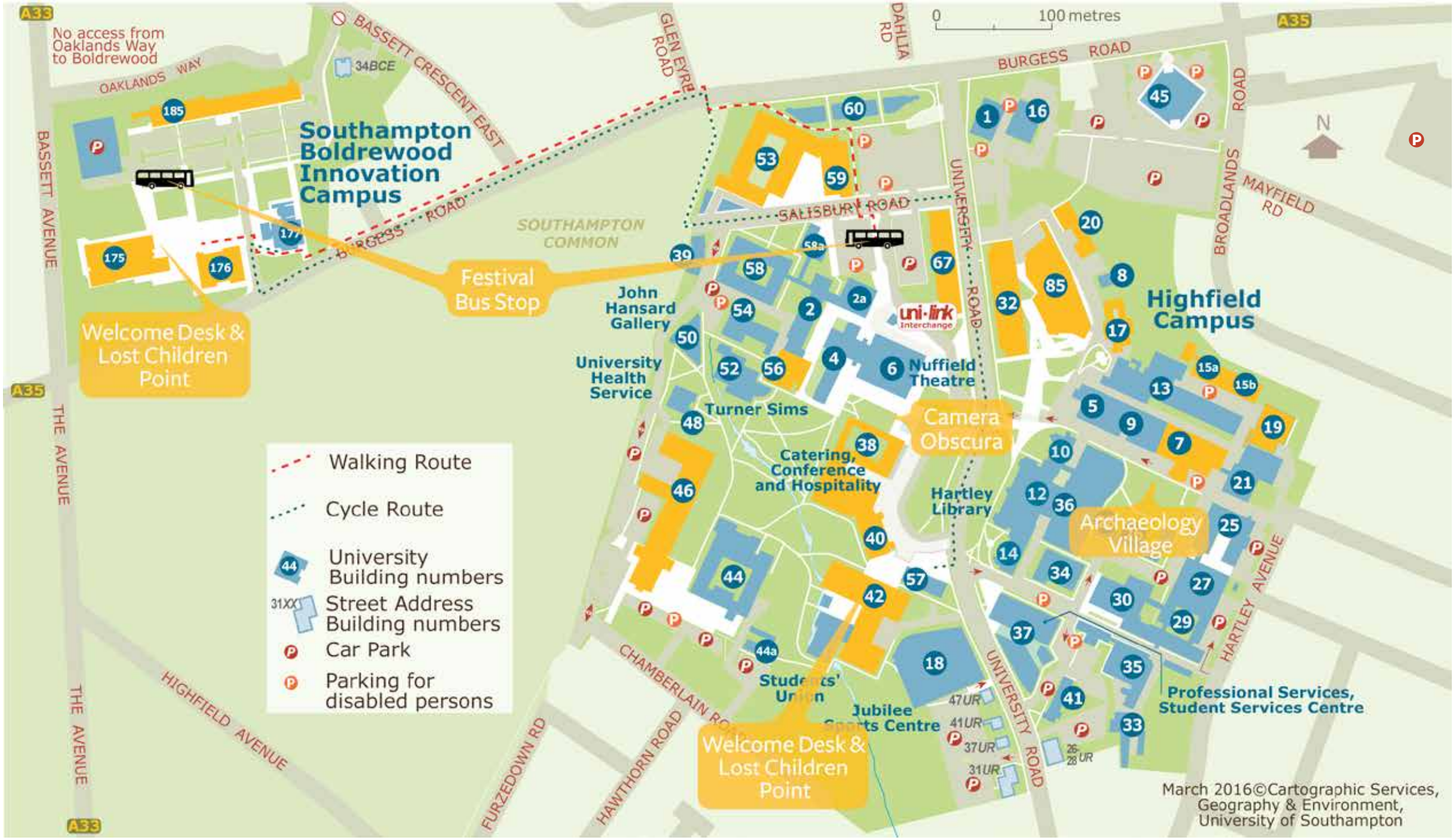
Archaeology Village (outside Bldg 7)

Keeping caveman warm: turning animal furs into clothing	For thousands of years, humans kept warm by dressing in the furs and hides of animals they had hunted. Come and learn how prehistoric people used science to solve this most basic of survival challenges during the last ice age.	Great for everyone
Prehistoric metallurgy: smelting bronze age weapons	This smelting demonstration will use a simple charcoal-fuelled firing pit and valveless skin-bag bellows to melt oxidised copper and tin minerals. Come and watch the molten metal being poured into stone casts for the manufacture of Bronze artefacts.	Great for secondary age group
Tools through time: 2 million years of technological innovation	This event traces the origins of the axe through time from flint axes to Bronze age, Iron age, Viking and medieval examples. Come and handle the replicas and watch our flint knapping demonstrators as they manufacture a handaxe while you watch!	Great for everyone
How to Cross a River with a Cow: Floats, Rafts & Boats from Prehistory to Now	It is 10,000 years ago and our Neolithic ancestors want to trade cows across a river. Do they use a float, a raft or a boat to move the cows? Come build one of each & find out!	Great for everyone
Meet the Ancestors: Life and Death in Medieval Southampton	Come and investigate a real 14th century skeleton, and try to decipher how he lived and died. Using osteological skills, learn how archaeologists investigate skeletal remains to create biographies of people from the past.	Great for secondary age group
Build A Burial	Understand how archaeologists unravel the puzzle of ancient graves by having a go at building your own burial! 'Bury' a skeleton, choose its grave goods, and learn how archaeologists record burials and their finds.	Great for everyone
Seeing beneath the ground with archaeological survey	Remote sensing techniques reveal archaeological remains without digging big holes. Come meet the team that surveyed Old Sarum Iron Age hillfort and have a go using ground penetrating radar, magnetics, and electrical resistivity kit to see what's under your feet.	Great for secondary age group
Distinguishing treasure from tatt. Can you spot the real archaeological artefacts among the replicas?	This hands-on activity will demonstrate how archaeologists assess the things they discover to tell how old they are, what the objects were used for, and distinguish the genuinely old from the new.	Great for everyone
Making and Dating Prehistoric Cave Art	While your children mix their very own prehistoric paint from ochre and make paintings in our reconstructed Palaeolithic Cave, adults will learn how archaeologists date prehistoric cave art to discover some of the earliest drawings made by humans.	Great for everyone

Building 38

Forensics in Action	Chemistry is at the heart of the work of the forensic scientist. In TV shows such as CSI, the forensic scientist is depicted using instruments such as infrared spectrometers to find evidence about crimes. This activity gives you the chance to try your hand as a forensic scientist and to help us to solve a mystery!	Great for everyone
Atoms, Crystals and Diffraction – Probing the Structures of New Materials and Proteins	Crystallography is about growing and examining molecules in crystal form. This allows us to look at details we could never hope to see even with the most powerful microscopes! We show how chemical compounds, materials and biomolecules such as proteins and DNA form crystals. We will show you how to grow your own crystals and how research scientists investigate structure in crystalline materials.	Great for everyone
Making Sense of Chemistry	This activity will focus on the chemistry behind the sense of smell – how do we sense smells and fragrances? How are fragrant compounds synthesised, how isolated from natural products? There will be exhibits and hands-on activities for the public to explore, and staff and students to discuss the underlying concepts.	Great for everyone
Science of Slime	Make the gooiest, slimiest slime in any colour. Make your own potty putty or latex rubber for stretching or bouncing.	Great for everyone
Catalysing the Future	The activity focuses on catalysis, its principles and its applications towards a sustainable future. We explain, using a range of demonstrations and hands-on experiments, how catalysts can affect the properties and the environmental impact of everyday life products: plastics, cars etc.	Great for secondary age group
Electrochemistry for Energy and Art	The activity will illustrate electrochemical energy storage in principle and practice, with hands-on demonstrations of water electrolysis, "electrochemical painting" (electrodeposition) and redox flow batteries.	Great for everyone
Taking Technology Smaller	A fun introduction to 'transistors', the key component in computer chips, and an exciting new way to make these even smaller so that technology such as computers, tablets and mobile phones can do even more.	Great for everyone

Campus maps



This year we are trying out an online interactive map **sciengmap.soton.ac.uk**

Building 38 (cont'd)

Biofilms: When slime gets serious	Bacteria don't always live alone, in fact often they form communities. From brushing our teeth to the medical care that we receive, find out how these communities form, have huge impacts on our lives, and even grow your own.	Great for everyone
Microbes under the microscope	Insects, worms, bugs and more: what lives in your garden? Our gardens and ponds are teeming with life - microscopic plants and animals are everywhere. Get up close and personal and see for yourself using our research microscopes. Have a go at our quiz "Everyday objects under the microscope" for your chance to win your own microscope.	Great for everyone
Bacteria and viruses – small, mighty and sometimes deadly!	Latest news headlines "bacteria and viruses attack". If you're wondering what can be done to manage one of the biggest challenges we face, come along and see how your immune system defends us against nature's (almost) invisible army!	Great for everyone
From Head to Toe: Exploring the Human Body	Discover the human body from head to toe – build the human skeleton, look at x-rays and see how a broken bone is repaired. Learn how the heart works and how we use life-saving technology. Meet our life size, patient simulator and put your healthcare skills to the test!	Great for everyone
Exploring cells with Cancer Research UK	Join the team from the Cancer Research UK Southampton Centre, and have a go at being a cancer scientist. Look at your cells under the microscope, try out tissue culture, and make a cell of your own to take home.	Great for everyone
Science in a Pint	Meet the Southampton Pint of Science team, and try our pint-sized experiments. Find out if you are a supertaster, see if you have what it takes to be an immune cell, and make an antibody to take away.	Great for everyone
Eat, drink and be healthy	There is hidden sugar in many everyday foods. Come and learn about the sugar content of different breakfast and snack foods and drinks through our interactive activities, and add your pledge to eat more healthy foods to create a rainbow.	Great for everyone
The brain in action	The brain controls the body, as well as how we interact with the environment and everything in it. By measuring the brain it allows us to understand which parts are involved in doing what. Where abnormalities in the brain develop it can be experienced as mental health difficulties. The activity will involve measuring brain activity as well as demonstrations of imaging from other modalities.	Great for secondary age group
Journey through your beautiful brain	Take a look down the microscope at the exquisite organisation of the miniscule cells that make up the brain; Make your own model brain cell; Find out more about how your nervous system works and hear electrical pulses in muscles as they respond to brain activity; Discover what fashion has to do with mental health. This exhibit will take you on a journey from a single brain cell through to how your brain works and the importance of a healthy brain. Neuroscientists will be on hand to talk about the different diseases that affect the brain and the research that is being carried out at Southampton to help improve treatments.	Great for everyone
Human vision: More than a camera on legs	Perceiving the world around you is challenging for your brain. Often, the 'best guess' that our brain makes is different from the true physical world: illusions occur. We'll demonstrate illusions that are fun and provide insight into how we see.	Great for everyone
DNA to diets	This display will show how understanding plant's DNA can help us produce better crops for a changing climate. Interested parents/children will be given a kit to take home containing the supplies needed to run a very simple experiment.	Great for everyone
Evolution: A simple idea, often made difficult, made simple.	Evolution by means of Natural Selection is one of the most important scientific discoveries ever explained. Unfortunately it is also one of the most misunderstood ideas, which leads to confusion. This display will show you the wonderful simplicity of Darwin's theory making it easy for everyone to understand.	Great for everyone
BioBlitz: making species count	Discover an array of insects and minibeasts and learn about the way insect biodiversity supports ecosystem services such as pollination and soil nutrient cycling. Find out how you can take part in this year's Southampton BioBlitz events this summer, at our Zany Zebra sculpture **http://zanyzebras.org.uk/**	Great for everyone

Building 38 (cont'd)

BioBlitz: making species count	Discover an array of insects and minibeasts and learn about the way insect biodiversity supports ecosystem services such as pollination and soil nutrient cycling. Find out how you can take part in this year's Southampton BioBlitz events this summer, at our Zany Zebra sculpture **http://zanyzebras.org.uk/**	Great for everyone
Hampshire & Isle of Wight Wildlife Trust	As a conservation charity with nearly 50 nature reserves across Hampshire & the Isle of Wight, we provide information/displays about our Nature Reserves, local wildlife, wildlife gardening, marine projects, and information on how to get involved us and support us.	Great for everyone
Wildern School STEM fair Winner	This will be the winners of the STEM fair presenting what they have designed to the general public, explaining its link to STEM.	Great for everyone
Stem cell mountain	Combining the fun of a pin ball machine with a profound metaphor for a key biological concept, the stem cell mountain brings to life the complex idea of stem cell potential. This visually impressive and irresistible hands-on exhibit has engaged festival goers at Glastonbury and Bestival, science aficionados at the UK's top Science Festivals, as well as the 100000+ visitors per year that visit the Winchester Science Centre where it is resident when not on the road.	Great for everyone
Light, Colour & Luminescence	You've all seen 'Finding Nemo' and the fish that glows in the dark but have you wondered how he does this? Here we will look at things that 'glow in the dark' and explain how the materials do this. We look at how the temperature can affect the intensity of the brightness and why this can be useful. From glowing rocks to TV phosphors and light sticks, and even glow in the dark bacteria – we'll help you see the light!	Great for everyone
The Wellbeing Sanctuary	The wellbeing sanctuary will provide visitors with a set of interactive activities focused on positive lifestyle and behaviour change to promote physical and emotional wellbeing. The accompanying research from our group will also be showcased alongside the activities.	Great for everyone
Cybersecurity	The student cybersecurity society will use personal computers and paper decoding exercises to demonstrate aspects of cybersecurity. Mohit Gupta will take a leading role in this activity.	Great for everyone
MadLab	The visitors will build simple (Madlab) electronic kits by soldering.	Great for everyone
Rockets, space & sensors!	321 blast off! Ever wondered about how rockets work? This activity demos the insides of model rockets. Rockets also have sensors in side them - come and learn all about it from our fabulous team.	Great for primary age group

Building 46

Physoc: Magnetism and Nanotechnology	Discover the amazing properties of ferrofluid, a colloidal liquid composed of nanoscale particles that becomes strongly magnetised in the presence of a magnetic field, with these hands-on activities suitable for all ages!	Great for everyone

Building 53

Tours around the Mountbatten cleanroom complex.	See one of the world's leading research cleanrooms. Talk and tour with the researchers and see the work going on. Includes the optical fibre drawing towers, the integrated photonics cleanroom and the nanofabrication centre.	Great for secondary age group

Building 56

Helicopters, Jelly Beans, and experiments with numbers	Can we use the power of numbers to find out more about the world? We're experimenting with Jelly Beans, Circles, and paper Helicopters, to show how statistics and mathematics make science possible.	Great for everyone
Catching the wave	On the 11 February it was announced that scientists had managed to catch gravitational waves from colliding black holes. In this exhibit you will find out more about this exciting discovery and learn how Einstein's flexible space and time help us understand the dark side of the universe.	Great for everyone
Packing a Ferry	How should you pack a ferry to fit in as many vehicles as possible? If they each cost different amounts, how do you then choose which to let on? In this paper-based activity you get a chance to pack a ferry and see how close you can get to the best solution. This kind of problem is one that the Operational Research group looks at all of the time. Come and talk to us and find out what else we're working on at the moment.	Primary age group upwards

Building 59

Come and Make your own Jelly Microchip!	Have a go at making your very own microchip out of Jelly! Discover the fun behind micro-fluidics. Other exciting activities include 3D microscope images, live microscope interactions and colouring-in of real micro-electronics.	Great for everyone
Lightwave	We will be demonstrating a number of fun, stimulating and intriguing experiments and activities to showcase the history and state of the art technology of photonics.	Great for everyone

Building 67

Breathing Pattern Matters: a demonstration of new technology for measuring breathing	We will be providing a demonstration of a new contactless breathing pattern measurement technology called 'Structured Light Plethysmography' (SLP), which measures breathing patterns by shining a light on the front of the chest. We plan to provide a demonstration of the technology and project a recording of the data onto a large screen to demonstrate some of the differences between normal and abnormal breathing patterns.	Great for secondary age group
Mars bar bridge building challenge	Build a bridge to span a 40cm gap using 4 sheets of A4 paper and 1m of Sellotape. Then test it to destruction by loading mars bars into a bag suspended from it. How much weight can it take and can you beat the record?	Great for everyone
Wearable e-textile for stroke rehabilitation	Activities for children: brain colouring, brain anatomy Activities for the adults: quiz, live demo for muscle stimulation. Activities for all: sample display (traditional hydrogel electrode vs. wearable fabric electrode), animation.	Great for everyone
Programming Robots	Come along and have fun programming a robot to complete a set of exciting challenges!	Great for everyone
Maths on the move	Driving by numbers! This activity will get you hands on with how safety systems work in cars. Have a go at making decisions to enable a safe journey when you travel by car. This activity is for anyone interested in numbers, programming, transport, safety and decision-making.	Great for everyone
Healthy Computer Games!	Come and play a computer game about healthy living! What can you learn from playing this computer game about how to be healthy? This activity is great for everyone who likes computer games but also wants to learn about living a healthy lifestyle.	Great for everyone
Erica the Rhino	The famous electronic rhino! Newly updated! Come and see what she can do with Raspberry Pi's and see if you can make her fart! You might even learn a bit of programming as well!	Great for everyone
Computing at Schools: give programming a go!	Computing at Schools is a great initiative to get schools to teach coding. It has access to resources and demos. They will be showcasing demos such as Microbits!	Great for everyone

Building 67 (cont'd)

Futureworlds: technology of the future!	The Futureworlds stand will give you an insight of the type of technology that is produced from research. This literally is the technology of the future. This stand will be demoing a motion capture device called SharkStream & will give you an insight into how it works.	Great for everyone
Wearable Technology: Smart Fabric musical instruments.	Come and what smart fabric can do - we have printed musical instruments on to fabric so you can have a go. This is the future of fashion! Come and see how fabric will change the way you view fashion and style.	Great for everyone
3D Printing	We will present the 3D Printing and 3D scanning activities in UoS.	Great for everyone
How can we make fuels from rubbish?	Discover how everyday waste materials can be used to make bioenergy	Great for everyone
Robogals Southampton	Robogals is a student-run organization that aims to increase female participation in STEM through fun and educational initiatives. We will have a demosationalion of our robots in action and one-to-one sessions for kids to have a go programming the robot.	

Building 85

Feel the Noise	Feedback is important in musical performance – through hearing the sound, but also through sight and touch. Here you will be able to play virtual musical instruments on computer with different types of tactile feedback and can experience the instruments in different ways.	Great for everyone
Hands on Sound	AHRC funded "Hands on Sound" is a collaborative project with the London Sinfonietta and Sound Intermedia, exploring optical motion capture systems for sound processing in live music performance. Here you will be able try one of these systems for yourself.	Great for everyone
How our ear works	This demo will show what happens inside our ear when we hear sounds at different frequencies. 1) listen to pure-tone excitation at low, middle and high frequencies, 2) listen to music and 3) motion patterns inside at micrometre level.	Great for everyone
Stepping Across Sound Zones	Sound Field Control Through Hemi-Cylindrical Loudspeaker Arrays With Multiple Listening Zones For Public or Personal Audio Applications	Great for everyone
Visualising Vibrations	Wave propagation along a cord is shown. People tune the stiffness of one end of the cord to observe characteristic modes of the vibration.	Great for everyone
Interactive Music Box	A simple helmholtz resonator where the user has to tune the frequency of a speaker to meet the resonant frequency of the cavity and observe an outgoing flow.	Great for everyone
Ultrasonic Particle Levitation	What seems like magic is actually the manipulation of the position of particles using sound.	Great for everyone
Starstream Ultrasonic Cleaning	With water, bubbles, and a dose of sound you can clean like magic. We trap bubbles with sound, force them into cracks, and make them shimmer and scrub.	Great for everyone
Binaural Dummy Head	Experience a surreal switch of your aural senses and learn how we locate sounds.	Great for everyone
Bloodflow Measurement with Doppler Ultrasound	A a portable Doppler ultrasound system will be used to demonstrate bloodflow measurement, and images used to illustrate how ultrasound is used to see inside the body.	Great for everyone
How to help people with hearing loss	An insight in how the ear transmits sounds to the brain and interactive tutorials on hearing loss and how current hearing aids or cochlear implants improve hearing. Hearing tests using video-otoscopy might be available.	Great for everyone
Getting a Grip	Interactive Tribology demonstration equipment will allow visitors to perform simple scientific experimentation to examine the everyday: grip, slip and wear. The audience will increase their understanding of how materials behave, and how friction, wear and lubrication affect our everyday lives.	Great for everyone

Building 85 (cont'd)

Railway Noise & Vibration	Lego trainset and buildings demonstrating transmission of vibration into buildings. Including other demos of environmental and transport noise.	Great for everyone
The Human-Powered Submarine	Design a submarine. See what it's like to be a submarine pilot. Test your engineering skills by building a transmission system using 3D-printed components. Winners of our competition will get to choose the name for a future submarine!	Great for everyone
Engine Mount Demonstrator	An easy to understand model for the demonstration of engine vibration isolation in cars.	Great for everyone

Outside

Transportation Research Group showcase	Find out about the work of one of the UK's leading centres for transport-related teaching and research.	Great for everyone
Science Buskers	Our science buskers will entertain and inform you at the bus stop, or around and about on campus.	Great for everyone
Rocket Launch!	Come and see real (well not real) rocket launches - every hour.	Great for everyone

Activities on Boldrewood Campus

Building 175

Our planet, your future	Why study Ocean and Earth Science? Make a global impact on the most pressing scientific questions of our age, using interdisciplinary science, and experience unique facilities and fieldwork opportunities.	Great for secondary age group
UoS Ultimate Autonomous Sailing Robot	UoS Sailing Robot team is currently building the ultimate autonomous sailing robot for the World Robotic Sailing Championship 2016. The goal of the team is to stimulate the development of autonomous marine robotics. The team will have a stand presenting its work and answering questions from visitors.	Great for everyone
Sour seas: how does carbon dioxide affect our oceans?	A huge portion of the carbon dioxide produced from burning fossil fuels has been absorbed by the oceans - but there's a price to pay. See for yourself how the changing chemistry of the oceans may affect marine life worldwide.	Great for everyone
Sediment Dynamics : from the beach to MARS	A range of interactive displays focused on sediment dynamics: wave tank and miniflume demonstrate changes in a sandy beach profile under different wave conditions, and in bedforms under currents, meandering stream table and x-box game to land Rover on Mars.	Great for everyone
Lloyd's Register's World of Ships	The stuff we use has been shipped all over the world. Without ships half the world would starve to death and the other half would freeze to death. Find out more about the amazing world of shipping with Lloyd's Register.	Great for everyone
How do you find an earthquake?	Come and see if you can locate earthquakes in East Africa using seismograms.	Great for everyone
Panning for gold	Ever wanted to join the gold rush? Can you find a fortune? Come and try your hand at panning for gold. How much does nugget weigh?	Great for everyone
Fossil Frenzy	Come along and investigate the past! Explore ancient animal fossils, see how giant marine reptiles moved, finger paint a dinosaur and create your very own pterosaur.	Great for everyone

Building 176

Minecraft Engineering	If you love Minecraft... want to learn more, want to learn about redstone and maps then this is the activity for you. Come and work through some activities with our Minecraft experts and see some things in Minecraft only done here at the University of Southampton.	Great for everyone

Building 185

The Hydrodynamics of Plesiosaurs	A small version of an experiment that is investigating how plesiosaurs, which are extinct marine reptiles, used to swim.	Great for everyone
The Science of Ships	Activities include: practical demonstrations of ship motions in waves in the brand new 140m towing tank; hands on activities demonstrating ship hydrostatics and stability; examples of Autonomous marine vehicles.	Great for everyone
Fluid demonstration 1	What happens when we drop a raw egg from a large height onto a non-Newtonian fluid: Will the egg break?	Great for everyone
Fluid demonstration 2	See some fascinating fluid structures using a flow visualisation technique.	Grat for everyone

Outside

Meet a Dalek!	A full-size replica of the gold Dalek from the recent BBC television series of Doctor Who.	Great for everyone
Unmanned aerial vehicles (UAVs) - mobile command, control,and communications vehicles	Try to (virtually) control a UAV with our flight simulator.	Great for everyone
Transportation Research Group showcase	Find out about the work of one of the UK's leading centres for transport-related teaching and research.	Great for everyone
Science Buskers	Our science buskers will entertain and inform at the bus stop, or around and about on campus.	Great for everyone

Important information

- Smoking and the use of electronic cigarettes are not permitted anywhere within the buildings.
- No eating or drinking is permitted in the demonstration areas or lecture theatres.
- Please supervise your children at all times.
- Children under 14 should be accompanied by an adult
- Please ensure that you wash your hands after handling materials in the practical areas.
- Lost children and lost property will be taken to security at the Welcome Desk in the Students' Union Building, Building 42 on Highfield Campus or to the registration desk outside Building 175 on Boldrewood.

Emergency Procedures

If the fire alarm sounds please leave the building promptly via the nearest emergency exit (follow green and white signs) and assemble well away from the building. Please ensure that everyone in your party leaves with you and do not re-enter the building until authorised to do so. If you think someone is missing notify a member of event staff in a white t-shirt.

First Aid

A first aider is available in most buildings. Please contact a member of event staff in a white t-shirt. Alternatively, report to the main Welcome Desk in the Students' Union Building, Building 42 or outside Building 175 on Boldrewood.

Toilets

Toilets are available in all buildings and are signposted. If you need assistance please contact a member of event staff in a white t-shirt. There are disabled toilets in all the main activity buildings.

Wheelchairs Access

All activities, talks and demonstrations are generally accessible for wheelchairs, but access to Building 185 is limited. If you require any assistance please ask at the main Welcome Desk in the Students' Union Building, Building 42, reception at Boldrewood outside Building 175 or approach a member of event staff in a white t-shirt.

Feeling hungry?

Highfield

Student union

Café (level 3)	11am – 3pm
Bridge Bar (concourse)	11.30am – 11pm
Shop	10am – 4pm
Stags (Pub)	11.30am – Midnight

University outlets

Lattes Café (Building 38)	8:30am – 4pm
Arlott Room (Building 38)	8:30am – 4:30pm
Lattes Café (Interchange)	9am – 3pm
Piazza (Building 42)	9am – 4pm
Lattes Café (Building 85)	10am – 4pm
Lattes Café(Hartley Library)	10am – 6pm

Boldrewood

Lloyd's Register

Café	10.30am – 3:30pm

University outlets

Lattes Café (Building 176)	10am – 4pm

UNIVERSITY OF Southampton

How did we do?

Please rate the following aspects of the event on a scale from 1 (poor) – 5 (excellent):

	N/A	1	2	3	4	5
Hands-on activities	☐	☐	☐	☐	☐	☐
Open labs/tours/demos	☐	☐	☐	☐	☐	☐
Shows/talks	☐	☐	☐	☐	☐	☐
Range of things to see and do	☐	☐	☐	☐	☐	☐
Programme/map	☐	☐	☐	☐	☐	☐
Venue/facilities	☐	☐	☐	☐	☐	☐

Please list up to three memorable moments from your visit today:

1. _____
2. _____
3. _____

Any other comments:

What was your favourite activity? (Excluding shows/talks/tours)

Please hand this form into anyone in a white event t-shirt or post in the feedback boxes.

Information provided will only be used for future planning of this event. Thank you for your feedback.

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