

## University of Manchester STEM Activity Update December 2017

*Please find below details of University of Manchester STEM activities for 2018. Each activity specifies the target age group, stated in the left-hand column. There a section for pre-16 events, one for post-16 events and another outlining additional events/resources available to you. For more information – please contact [schoolsandcolleges@manchester.ac.uk](mailto:schoolsandcolleges@manchester.ac.uk)*

### Pre 16 Activities:

Target Year Group(s)	Event Date(s)	Event Title	Detail	Booking information
Year 10 Pupils	18 <sup>th</sup> January 2018	<b>Explore STEM Day</b>	This day has been specially designed to give Year 10 students an introduction to the different types STEM, with, and to bust some myths about what Scientists really do. With workshops from PhD students together with a campus tour, the day is designed to show the breadth of courses and careers available.	<b><i>Final space available for one school group of 15 Year 10 Pupils.</i></b> To reserve a space for year 10 pupils from your school, please email <a href="mailto:emma.britain@manchester.ac.uk">emma.britain@manchester.ac.uk</a> quoting “ <b>Explore STEM 18<sup>th</sup> Jan</b> ” in the subject line.
Year 10 Pupils	24 <sup>th</sup> OR 25 <sup>th</sup> January 2018	<b>Explore Engineering Days</b>	These days have been specially designed to give Year 10 students an introduction to the different types STEM, with a focus on engineering, and to bust some myths about what Engineers really do. With workshops from PhD students together with a campus tour, the day is designed to show the breadth of courses and careers available.	<b><i>One space available on each event day for one school group of 15 Year 10 Pupils.</i></b> To reserve a space for year 10 pupils from your school, please email <a href="mailto:emma.britain@manchester.ac.uk">emma.britain@manchester.ac.uk</a> quoting “ <b>Explore Engineering</b> ” in the subject line, <b><i>specifying your preference for date.</i></b>
Year 11 and under	Begins on Monday, 15 January 2018	<b>2018 Alan Turing Cryptography Competition</b>	Now in its 7 <sup>th</sup> year, the Alan Turing Cryptography Competition is It’s an online competition run by the School of Mathematics. New chapter of the story are released online, with six chapters in total. Each with a new cryptographic puzzle to solve. The team that solves the chapter’s puzzle the fastest wins a prize, with five 'spot prizes' chosen at random from teams who submit the correct answers! The Alan Turing Cryptography Day will run on Wednesday, 25 April 2018 with a live cryptography challenge to a prize ceremony for the competition winners.	<a href="http://www.maths.manchester.ac.uk/crypto-graphy-competition/">http://www.maths.manchester.ac.uk/crypto-graphy-competition/</a>  Begins on Monday, 15 January 2018, the Alan Turing Competition is sponsored by Skyscanner.

Open to all year groups 9-13, but will be most suited to Y11-13 or pupils with a specific interest in the subject area.	<b>Friday 9<sup>th</sup> March – 9:45-11:30</b> (including arrival, a brief introduction, 45 minute lecture and student ambassador Q&A)  <i>Location: University of Manchester</i>	<b>Academic Lecture: Building human kidneys</b>	<p>Severe kidney failure affects around two million people, Worldwide. Of these, around 80,000 are children and many of them were born with abnormal kidneys and carry mutations of genes normally active during kidney development. Kidney transplants are in short supply and life expectancy on dialysis is less than that for many cancer patients. By combining human pluripotent stem cell technology with knowledge of developmental biology and genetics, it is envisaged that regenerative medicine strategies will revolutionise our understanding of kidney disease and provide novel therapies for kidney failure.</p> <p><b>Learning Objectives.</b></p> <ol style="list-style-type: none"> <li>1. To show how stem cell technology can make functional kidney cells which in future might be used in regenerative medicine therapies.</li> <li>2. To show how stem cell technology can be used to create 'kidneys diseases in a dish' to understand biological mechanisms of disease.</li> </ol> <p><b>Subject area:</b> STEM, biological science, healthcare</p>	<p>Both sessions can be booked via the online booking form:  <a href="http://bit.ly/GMH_subject_specific_Pre16">http://bit.ly/GMH_subject_specific_Pre16</a></p> <p>These events are being offered as part of the <a href="#">National Collaborative Outreach programme</a>. We are required to provide our funders with evidence of the young people we have worked with and the positive impact of our activities in order to receive continued funding which allows us to offer these activities to schools for free, therefore, <b>schools will be asked to provide postcodes for all pupils who attend the visit.</b></p>
Year 7, 8 and 9	13 <sup>th</sup> , 14 <sup>th</sup> , 15 <sup>th</sup> and 16 <sup>th</sup> March 2018	<b>British Science Week: Science Extravaganza</b>	<p>From Tuesday 14<sup>th</sup> – Friday 17<sup>th</sup> March 2017 we once again running our popular Science Extravaganza days packed with interactive workshops, demonstrations and lectures aimed at pupils in Years 7 to 9. Each school can bring up to 25 pupils. There is no charge for this event which runs from 10am to 2.30pm. Pupils will need to bring a packed lunch. <b>We have space left for a school group of 22 on Tuesday 13<sup>th</sup> March OR up to 51 pupils on Friday 16<sup>th</sup> March.</b></p>	<p>To reserve a space for your pupils from your school, please email <a href="mailto:schoolsandcolleges@manchester.ac.uk">schoolsandcolleges@manchester.ac.uk</a> quoting <b>"BSW 2018"</b> in the subject line.</p>
All year groups	Negotiable	<b>Education visits to Jodrell Bank Discovery Centre</b>	<p>Book a trip to the Jodrell Bank Discovery Centre! Our term-time education programme offers unique learning experiences for learners, at a site of current and world-leading science research.</p>	<p>More information at <a href="http://www.jodrellbank.net/learn/schools">www.jodrellbank.net/learn/schools</a></p>

Year 10 and 11	2 <sup>nd</sup> – 5 <sup>th</sup> July 2018	<b>Henry Royce Materials Science Summer School</b>	<p>Come and find out more about the exciting world of materials science this summer at the University of Manchester!</p> <p>Are you currently in Year 10 or 11 at School? Do you want to find out what life is like for an engineering student at the University of Manchester? Would you like to take part in lectures, practical lab based activities and team challenges, and work with current engineering students and world-class scientists? Do you want to discover more about the fascinating field of materials science, and see how we design materials for aerospace and create biomedical implants for the human body? Then this residential Summer School could be for you!</p>	<p>Further information contact <a href="mailto:Claire.huyton@manchester.ac.uk">Claire.huyton@manchester.ac.uk</a></p> <p>WP Bursaries are available.</p>
Year 11 (triple science)	<i>In your school, date negotiable</i>	<b>Spectroscopy in a Suitcase</b>	<p>A Royal Society of Chemistry fully funded scheme that allows schools in NW to have access to Fourier Transform Infrared Spectrometer (ATR-FTIR) free of charge. We can visit your school or you can borrow the IR spectrometer after training. 1 visit per school per year with a min 10 students and maximum of 30 per session (2 sessions max. per day). The workshop we deliver is:</p> <ul style="list-style-type: none"> <li>Paracetamol synthesis: This is suited to triple science year 11 and higher. This activity combines a short synthesis task with characterisation using infrared spectroscopy and TLC of the product to fit within a double lesson (approx. 1.5-2h)</li> </ul>	<p>If you have any further queries about this activity please email <a href="mailto:katayune.presland@manchester.ac.uk">katayune.presland@manchester.ac.uk</a> and To book please visit <a href="http://www.rsc.org/sias">www.rsc.org/sias</a></p>
Year 8 – 13	<i>In your school, date negotiable</i>	<b>Flash-Bang Show</b>	<p>Inject some excitement into the curriculum via classic chemical demonstrations with a commentary tailored to fit the year groups in the audience. (Year 9 is ideal, but any age can enjoy the spectacle &amp; commentary can be varied to suit). These lectures have been going on for some time and we know that they have a positive effect on attitudes to science. We do need a large audience with blackout available to show off the flashes, and we need to isolate any smoke alarms present.</p>	<p>Enquire via <a href="mailto:outreach.chemistry@manchester.ac.uk">outreach.chemistry@manchester.ac.uk</a> for further info on the requirements to host a show, Cost: £250. <b>Geographic range:</b> Schools and colleges must be based within approximately one hour's travelling distance of The University of Manchester. <b>Group size:</b> Minimum 200 students.</p>

Year 5 – Year 7	<i>In your school, date negotiable</i>	<b>Solids Liquids and Gases Show</b>	<p>The Solids, Liquids Gases show has been entertaining and educating senior primary children around Manchester for the last few years and highlighting challenging areas of the syllabus at the same time.</p> <p>Topics we tackle include forces, gases around us, solids and liquids, and changing materials (melting, freezing, boiling &amp; condensing) along with a series of demonstrations involving dry ice or carbon dioxide, oxygen, and liquid nitrogen.</p> <p>As well as turning solids and liquids into gases, we also turn gases into liquids, and have lots of fun with balloons, bangs and bottle-rockets, all of which grabs the attention of learners.</p>	<p>Please email <a href="mailto:outreach.chemistry@manchester.ac.uk">outreach.chemistry@manchester.ac.uk</a> for further info on the requirements to host a show quoting “Solids, Liquids and Gases Show” in the subject line.</p> <p>Cost : £150</p>
Year 10 and 11	<i>In your school; date negotiable.</i>	<b>Guest Academic Lecture Series</b>	<p>The University of Manchester is home to experts in a wide range of academic fields. In order to share this expertise and enrich the curriculum, <b>we offer subject-specific lectures to schools and colleges in a range of academic disciplines.</b> A list of lectures is available online, see the link to the right. Lectures will take place in your school or college. You can arrange a date and time that are mutually convenient for you and the academic. Lectures last for approximately 60 minutes, and are free of charge.</p>	<p>Book online at <a href="http://www.manchester.ac.uk/sixth-form-lectures">www.manchester.ac.uk/sixth-form-lectures</a></p> <p><b>Geographic range:</b> venue must be within one hour’s travelling distance of The University of Manchester.</p> <p><b>Group size:</b> Minimum 20 students.</p>
Date by arrangement.	<i>In your school, date negotiable.</i>	<b>“Why study...” presentations and optional workshops</b>	<p>The <b>'Why Study?'</b> series provides up-to-date IAG to young people so that they are able to make informed decisions about their future. Delivered in your school, these talks raise awareness of, and aspiration to, some of the most competitive and demanding subject areas. The presentations are flexible and can last from 30 to 45 minutes.</p> <p>Presentations can be combined with an interactive workshop should your timetable allow. Workshops have been designed by postgraduate students at the University. They aim to give learners a hands-on, interactive taster of the subject area. Subjects currently on offer include Chemistry, Engineering, Environmental Sciences, Mathematics and Physics – and others are in development.</p>	<p>If you are interested in making an enquiry about a Why Study?' talk, please complete the <a href="#">Why Study? booking form</a>.</p> <p><i>Please note that as the “Why Study...?” activities takes place at the host school or college, they is only available to institutions based within approximately one hour's travelling distance of The University of Manchester.</i></p>

## Post 16 Activities:

Target Year Group	Event Date(s)	Event Title	Detail	Booking information
Year 12 and 13	29 <sup>th</sup> January 2018	<b>Healthcare Science (Audiology) Careers Event</b>	<p>Audiology is the healthcare science of hearing and balance disorders. There are over 9 million hearing impaired people in the UK and our ageing population means an ever increasing demand for audiologists. This event is a great opportunity to explore your options in this growing field. Join our Audiology students, staff and employers, including the NHS and high street companies to find out about the BSc Healthcare Science (Audiology) course and about the range of rewarding careers in Audiology.</p> <p>Find out more and book:  <a href="http://events.manchester.ac.uk/event/event:d1aj-i9pn9ish-1r9ka2/careers-in-audiology">http://events.manchester.ac.uk/event/event:d1aj-i9pn9ish-1r9ka2/careers-in-audiology</a></p>	<p>Students can book individually or attend in a group:</p> <ul style="list-style-type: none"> <li>▪ <a href="#">Schools and Colleges Registration Form</a></li> </ul> <p>There are 20 places available</p>
Years 12 and 13	<i>In your school; date negotiable.</i>	<b>Healthcare Professions Careers Talks</b>	<p>Inspire the future Pharmacist, Optometrist or Speech and Language Therapist in your class.</p> <p>University of Manchester graduates working in these fields would like to share their experiences with your pupils.</p> <p>They will be joined by a member of University of Manchester staff who can discuss the course details and entry requirements for these courses.</p>	<p><a href="#">Booking form</a></p> <p><b>Geographic range:</b>  <i>Pharmacy talks: South Manchester, Cheshire, North Manchester</i></p> <p><i>Optometry talks: Shropshire</i></p> <p><i>Speech and Language Therapy talks: West Cheshire</i></p> <p><b>NB</b> New talks are being added on a regular basis so if your area is not listed please still get in touch and we'll let you know when talks become available</p>

Open to all <b>year groups 9-13</b> , but will be most suited to <b>Y11-13</b> or pupils with a specific interest in the subject area.	<b>Thursday 18<sup>th</sup> January – 9:45-11:30</b> (including arrival, a brief introduction, 45 minute lecture and student ambassador Q&A)  <i>Location: University of Manchester</i>	<b>Academic Lecture: Alloys: Probably the Most Important Materials in the World</b>	<b>Academic lecture visits offer a genuine taste of university life!</b> Participants will experience an undergraduate level academic lecture from one of our world-class experts in their field in a traditional lecture theatre environment.  Alloys are incredible materials. We use them everywhere for many important tasks, but they're often taken for granted. This talk explores the world of alloys: We will discuss what alloys are, what gives them special properties, and why they're so important for modern life. There will be a bit of fire, some interesting facts about coins, and some magic metal too  <b>Subject area:</b> STEM	Both sessions can be booked via the online booking form: <a href="http://bit.ly/GMH_subject_specific_Pre16">http://bit.ly/GMH_subject_specific_Pre16</a>  These events are being offered as part of the <a href="#">National Collaborative Outreach programme</a> . We are required to provide our funders with evidence of the young people we have worked with and the positive impact of our activities in order to receive continued funding which allows us to offer these activities to schools for free, therefore, <b>schools will be asked to provide postcodes for all pupils who attend the visit.</b>
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Year 12 & 13	Starts on Wednesday, 10 January 2018	<b>MathsBombe – Registration Opens on 1 December!</b>	For older sixth form pupils, there is the 2018 MathsBombe! This is an online competition, with two mathematical puzzles being released every fortnight. With four sets of puzzles in total, participants will be competing against other students from across the UK. The puzzles will be quirky, fun and cover the full spectrum of Mathematics; they will not be directly related to the A-Level syllabus and will be unlike problems in, say, the UKMT. Instead, students will need to use their problem-solving skills and be able to 'think outside the box' – valuable skills for students going on to study STEM subjects at university.	with MathsBombe  <a href="http://www.maths.manchester.ac.uk/mathsbombe/">http://www.maths.manchester.ac.uk/mathsbombe/</a>  Starts on Wednesday, 10 January 2018.  MathsBombe is supported by the Dame Kathleen Ollerenshaw Trust.
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## And finally...

Science/Biology Teachers	Thursday 25 January 2018, 9am-4pm  <u>Location:</u> Manchester Fly Facility, Michael Smith Building, The University of Manchester	<b>CPD science/biology teacher training event - bringing life back into your classrooms</b>	<p>Would you like to bring memorable, <b>curriculum-relevant</b> micro <b>experiments</b> with <b>real animals</b> back into your lessons? This is feasible with the fruit fly <i>Drosophila</i> on a <b>wide range of topics</b> including genetics, enzymes, nervous system, life cycle and even data analysis and statistics - all developed and made readily available as sample lessons by the <a href="#">droso4schools</a> initiative of the <a href="#">Manchester Fly Facility</a>.</p> <p>If you would like to explore these lessons hands-on, please register with our CPD workshop at Manchester University, in partnership with SUPI (<a href="#">School-University Partnership Initiative</a>). As is explained in our School Sciences Review article (<a href="http://www.flyfacility.ls.manchester.ac.uk">http://www.flyfacility.ls.manchester.ac.uk</a>), all our resources have been developed in close collaborations with schools and are in active use, they are accompanied by support documents (teacher notes, health and safety considerations, activity sheets etc.) and supported by a website ideal for preparation, revision and homework tasks.</p> <p>On the CPD event, you will experience our lessons from the students' perspective with plenty of opportunity to discuss and give your input. Topics will cover 'Principles of the nervous system', 'The rules of inheritance: from chromosomes to genes to disease', 'Our vision: understanding light and light perception', and brief experimental and conceptual insights into the other</p>	<p><u>Registration:</u> Please send an informal statement of interest to <a href="mailto:Sanjai.Patel@manchester.ac.uk">Sanjai.Patel@manchester.ac.uk</a>;</p> <p><u>Course Fee:</u> Free</p> <p><u>Alimentation:</u> Lunch and refreshments will be provided.</p> <p>Please, don't hesitate to <a href="#">contact us</a> for further information.</p>
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