The North West Science Centre
Scientific research - which can be defined as the process of experimentation, observation, rational deduction and prediction - has been central to the development of human civilisation. Today, developments in science and technology are driving progress in a diverse range of human activities including medicine, communications, information processing and transport in addition to being a key activity to solve many of the challenges facing society such as climate change, restrictions on energy supply and providing adequate food and water for a growing population.

The study of STEMM subjects to degree level, especially at research intensive universities, equips young people with a wide variety of skills that are hugely in demand in the job market. Despite this, employers are finding it difficult to recruit staff with sufficient training. Furthermore, in the modern workplace it is crucial that all new recruits have the STEMM knowledge and skills they need to interact in an increasingly scientific and technological society. By pursuing existing scientific interests beyond school, students can equip themselves for this modern world.

Introduction

The North West Science Centre was launched in September 2013 by Pembroke College Oxford, Corpus Christi College Oxford and South Cheshire College.

The Science Centre aims to:
• Enhance the subject knowledge of Science, Technology, Engineering, Mathematics and Medicine (STEMM) students and teachers
• Raise students' academic aspiration regarding the range of opportunities available to them in higher education and to promote the study of STEMM subjects at university
• Provide students with experiences that broaden their knowledge of the current scientific landscape, raising their ability and confidence to explore and communicate their interest in science, and enhance their ability to transition to STEMM subjects at leading research universities
• Raise the profile of STEMM subjects that are not usually taught as specific subjects at A-level (such as Materials Science, Earth Sciences etc) so that students can think beyond the traditional disciplines such as Physics or Chemistry.
• To engage with both schools and communities to promote the study of science and the benefits of STEMM subjects and research intensive universities

We work closely with partners in the North West region to provide a programme of events for STEMM students and teachers, including lectures and seminars, visits to research facilities, a Mathematics School and a Summer School held in Oxford.

Underpinning this model is the belief that intensive academic engagement is one of the best ways to raise pupils' aspirations; to foster enthusiasm for their subject and a love of learning; and to broaden their academic horizons. These are precisely the qualities that the most selective universities are looking for in their prospective applicants, whichever subjects they wish to study. The Science Centre aims to engage teachers as well as students, to achieve long-term improvements in rates of success on university applications and subsequent attainment once at university, as well as supporting informed decisions with regards to university and careers choices.
Centre Events

Twilight Lectures
The lecture series aims to introduce students and teachers to current research across a broad range of scientific disciplines. Leading researchers convey the excitement associated with their area, and explain where the current forefront of their research is and what the challenges are for future developments in their field. The lectures are designed to be as interactive as possible to effectively communicate the excitement of the latest scientific research.

“Specialist colleagues were highly impressed with how far we have come on the use of materials in these highly sensitive and precise applications where special materials often have to withstand very high temperatures and pressures”. Lecturer at South Cheshire College.

Visits to universities and research facilities
Through visits to leading laboratories, students get to see for themselves cutting-edge research activities. They will see, and often operate, some of the latest scientific instruments, and see some of the latest technologies currently being developed. The visits all give the chance to interact with a wide range of researchers and to discuss the nature of their work.

Mathematics School
An annual Mathematics School encourages students to apply their mathematical knowledge to a diverse range of problems across the sciences. The aim is to show how mathematical methods underpin almost all scientific endeavours. Students are expected to think flexibly about Mathematics in preparation for studying STemma subjects at university. The School is led by university staff, and participants will be working alongside current undergraduate students in workshops as well as researching a project to be presented on the final day.

Places for the Mathematics School are limited, if you would like to apply for a place, please contact the North West Science Centre Coordinator (see ‘Contacts’).

Student & Teacher Science Conference
The conference for teachers and students will take place later in the academic year at South Cheshire College. Teachers will have the opportunity to develop their knowledge and discuss their subject with university academics and one another, through lectures and group seminars. Students will be attending the lectures as well as having a choice of other activities, including laboratory workshops, seminars and careers information workshops; the day aims to address a broad cross-section of research.

Study Schools
A five-day residential Summer School at Corpus Christi Oxford will allow Year 12 students from state schools in the North West develop their scientific understanding. Through a programme of lectures, tutorials, group research projects and laboratory exercises students will be challenged to think beyond their previous range of experiences and to explore and to discuss their ideas with leading scientists. Current undergraduates act as mentors to support this process. The aim is to equip them with the confidence and experience to apply for STemma courses at leading research universities.

The first such Summer School took place in July 2014, and was attended by a group of 17 students from across the North West. Feedback on the event was outstanding, with many students commenting that it had not only changed their perceptions of Oxford and other top universities but also opened their eyes to new and exciting areas of scientific research. There was a genuine enthusiasm and excitement amongst the group throughout the week.

“I enjoyed the general atmosphere of the Summer School, be it in the lectures and tutorials or in openly discussing questions with the mentors; it has opened my eyes to new areas of scientific research.” – 2014 Summer School attendee.

Places for the Summer School are limited, if you would like to apply for a place, please contact the North West Science Centre Coordinator (see ‘Contacts’).
2014 – 2015 Programme

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<thead>
<tr>
<th>DATE</th>
<th>INTERESTED IN:</th>
<th>EVENT:</th>
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<tbody>
<tr>
<td>17 November, 5 – 6.30pm &amp; Reception 6.30 – 8pm</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>Launch event: Dr Jeremy Taylor, Pembroke College Oxford. ‘Will we ever be able to repair someone’s brain?’</td>
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<td>19 January, 5 – 6.30pm</td>
<td>Biology, Chemistry, Geology, Physics</td>
<td>Evening Lecture: Dr Ian Stimpson, University of Keele. ‘Imaging the Earth’s Interior using Earthquakes’.</td>
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<td>2 February</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>Evening Lecture: Prof Steven Eichhorn, University of Exeter. ‘Nanocellulose Fibres: From Bacteria, to Sea-Creatures to Nanopaper’.</td>
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<td>17 – 18 February, 10am – 4.30pm</td>
<td>Any Science</td>
<td>Mathematics School</td>
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<tr>
<td>25 February, 10am – 1pm</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>Visit: Graphene Clean Rooms and Materials Workshop at University of Manchester.</td>
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<tr>
<td>2 March</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>Evening Lecture: Dr Peter Sloat, University of Bath.</td>
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<td>11 March</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>Visit: Chemical Engineering at University of Manchester.</td>
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<td>16 March</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>Evening Lecture: Jennifer Daffron, University of Cambridge. ‘Are you being brainwashed? The impact of the unconscious mind on your reality’.</td>
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<td>18 March</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>Evening Lecture: Dr Clare Burgess, University of Nottingham, ‘Searching for Dark Energy’.</td>
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<td>2.15 – 3.15pm, 3.30 – 4.30pm</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>James McKay, Consultant Clinical Genetic Oncologist for Myriad Genetics and Senior Lecturer at UCL</td>
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<td>22 – 26 June</td>
<td>Biology, Chemistry, Environmental Science</td>
<td>North West Science Centre Summer School: BY APPLICATION ONLY Suitable for Year 12 students studying any Science Level, IB with some HL Science or L3 Applied Science who are aspiring to apply to university</td>
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KEY: Biology, Chemistry, Environmental Science, Mathematics, Psychology, For more information on these events, contact: sciencecentre@scc.ac.uk

Contact details

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Raising Aspirations Coordinator  
South Cheshire College  
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Partners

The North West Science Centre is led and coordinated by Pembroke and Corpus Christi Colleges, Oxford, and South Cheshire College. Further to this, the local and collaborative nature of the scheme fosters engagement with other universities, including, but not limited to, the Universities of Manchester and Keele.

South Cheshire College

The North West Science Centre is based in a ‘hub’ college, South Cheshire College in Crewe, out of which the Centre’s activities are coordinated. South Cheshire College is an FE college with a substantial history of providing excellent teaching and learning in STEMM subjects including Vocational routes. The college has been selected as trailblazers for the Technical Baccalaureate and Core Mathematics, which will help students gain innovative skills through a high level vocational qualification.

Pembroke College, Oxford

The North West Science Centre forms part of Pembroke College’s ongoing access programme, led by Dr Peter Claus, Access Fellow. The North West Science Centre is the only subject centre to focus on the sciences, the others being the Theology Centre in Greater Manchester, the Classics Centre in East London (a collaborative project with Wadham College, Oxford), and the London Centre for Languages and Cultures based in West London (a collaborative project with the Open University).

Corpus Christi College, Oxford

The North West Science Centre forms an important component of the outreach activities of Corpus Christi College. At Corpus, the activity is led by Professor Pete Nellist, Fellow and Tutor for Materials Science and a world-leading expert in the use of electron microscopes to observe atoms in materials. A major component of Professor Nellist’s research activities is based at the Daresbury Laboratory near Warrington, so he is well-placed to be aware of resources available in the North West, and to make them accessible to the wider community.