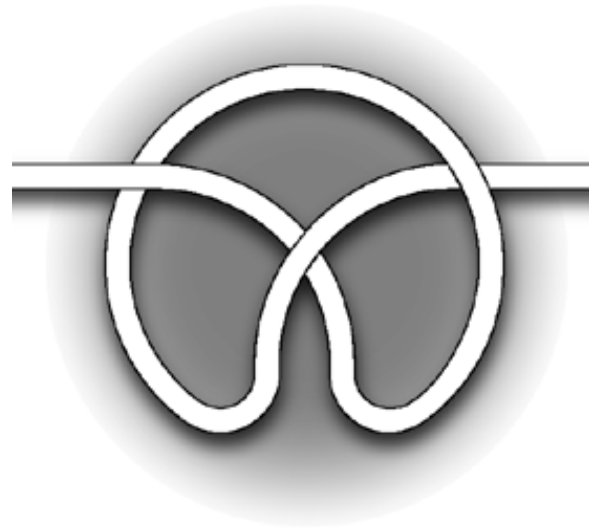


Denbigh School

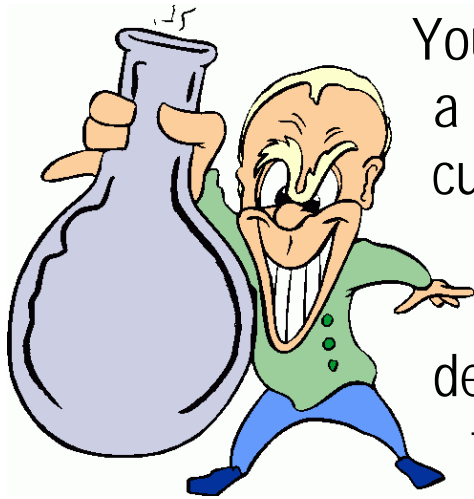


Science
Engineering &
Mathematics

Lecture Programme

2008-2009

Dear Student,



You have been invited to attend a series of lectures based on current Science, Engineering and Mathematics "Hot Topics". These will be delivered by Top Academics from around the country, including Oxford, Cambridge, Warwick, Leicester, Birmingham, Imperial College London, UCL, De Montfort, The Open University, and Reading Universities. They will be explaining how current research issues affect all our lives and what the current trends in research are.

All the lecture topics have been chosen carefully so that they build on, and extend elements of the GCSE and A Level programmes of study.



Don't miss out on this fabulous opportunity to hear about developments at the cutting edge.

Lectures take place in the Meeting Hall on Thursdays at 3:15pm. They will last approximately 45 minutes with some time for questions at the end.

All those attending will receive a certificate and a prize

	Date	Speaker	Topic
1	6 th November 2008	Prof. Paul Hart University of Leicester Biology	<i>"Has God had its Chips?"</i> <ul style="list-style-type: none"> <i>Cod catches in the North Sea have declined precipitously over the past 20 years. Has this been caused by over fishing or by more subtle changes in the marine environment?</i>
2	13 th November 2008	Dr. Ruth baker Oxford University Mathematics	<i>"What can mathematics tell us about biology?"</i> <ul style="list-style-type: none"> <i>Mathematics can be used to go from the "word" rules or hypotheses we have for how a biological system works, to a concrete framework that can be explored using simple techniques. We will look at some of the ways one can use mathematics to describe biological phenomena and what we can learn from doing so.</i>
3	20 th November 2008	Dr. Michael Sargent National Institute for Medical Research Biology	<i>"Refurbishing the human body"</i> <ul style="list-style-type: none"> <i>We now have innumerable ways of helping people live with difficult biological problems and of delaying the effects of ageing and much more can be done.</i>
4	27 th November 2008	Dr. Robin Catchpole Cambridge University Physics	<i>"The Universe Unveiled"</i> <ul style="list-style-type: none"> <i>From the Solar System to the edge of the observable Universe; what's in it and how it works.</i>
5	18 th December 2008	Matt Parker Mathematics Communicator Mathematics	<i>"Card tricks and Counting: The Mathematics behind Magic"</i> <ul style="list-style-type: none"> <i>Many seemingly impossible feats of magic rely on basic Mathematics principles. Through a series of interactive demonstrations, various Mathematics topics will be covered and a few magic tricks will be explained.</i>
CHRISTMAS HOLIDAYS			
6	8 th January 2009	Dr. John Young Oxford University Biology	<i>"How your nervous system influences your body and its functions"</i> <ul style="list-style-type: none"> <i>Our body exhibits a wide range of different - and occasionally opposing - actions. Find out how bodily functions are orchestrated at the organ, tissue and cellular level.</i>
7	15 th January 2009	Prof. John Fothergill University of Leicester Engineering	<i>"Optical Fibres and Lasers"</i> <ul style="list-style-type: none"> <i>The internet - the network connecting most computers throughout the world. All the information in the British Library could be transmitted down a single optical fibre in one second! The talk will explain how optical fibre and lasers work to form the Internet Superhighways.</i>
8	29 th January 2009	Dr. Mary Morrell Imperial College London Biology	<i>"Sleep - we all do it, but what is it?"</i> <ul style="list-style-type: none"> <i>We will spend up to one third of our lives asleep. Each time we go to sleep we assume we will wake up in the morning. What is sleep? Why do we do it? What happens if something goes wrong? These are some of the questions that will be addressed in this talk. You will be invited to assess your own sleep and ask questions.</i>
9	5 th February 2009	Prof. Donald Singer University of Warwick Biology	<i>"Old and new risk factors for heart disease"</i> <ul style="list-style-type: none"> <i>This lecture will explore some of the risk factors associated with one of the biggest killers on the planet and whether modern science and technology holds the key to treatment and cure!</i>
10	12 th February 2009	Dr. Uwe Grimm The Open University Mathematics	<i>"To Repeat or Not to Repeat: The Mathematics of Quasicrystals"</i> <ul style="list-style-type: none"> <i>25 years ago, an unexpected discovery of new materials, called quasicrystals, changed the world of crystals. This talk will explain some of the fascinating mathematics that is behind the structure of these materials - and it does so without using complicated formulas! Instead, the mathematical concepts are introduced and illustrated in terms of pictures, which include applications in arts and architecture.</i>
½ TERM HOLIDAYS			
11	5 th March 2009	Prof. Fred Pearce University College London Biology	<i>"Allergies: Wheezes and Sneezes, Itches and Rashes"</i> <ul style="list-style-type: none"> <i>Allergies affect up to twenty percent of the population and the most common manifestations are hay fever, asthma and reactions in the skin or to common foodstuffs. This talk will describe the causes of allergies and the development of drugs for their treatment.</i>
12	12 th March 2009	Dr. David Sharp The Open University Engineering	<i>"The Physics of Woodwind Instruments"</i> <ul style="list-style-type: none"> <i>The woodwind family of musical instruments includes, amongst others, the flute, oboe, clarinet, bassoon and saxophone. Through a series of demonstrations and multimedia examples, this talk discusses the physics of the woodwind instruments. In particular, the mechanisms by which the different instruments produce sound are described and the reasons why each woodwind instrument has its own characteristic tone are explained.</i>

13	26 th March 2009	Prof. Philip Strange Reading University Biology	<p><i>"Drugs: magic bullets or poison darts?"</i></p> <ul style="list-style-type: none"> <i>"Drugs were originally derived from plants and used for medicinal or recreational purposes. The isolation and synthesis of pure active drugs has led to wider use and abuse of the substances. Following on from this has been the rise of the Pharmaceutical Industry and the availability of drugs to treat many diseases. I shall trace the history of drug use and discovery from plants through to the present day"</i>
14	2 nd April 2009	Prof. Nigel Mason OBE The Open University Physics	<p><i>"Are we alone? Understanding the origins of life"</i></p> <ul style="list-style-type: none"> <i>"Our ability to detect (exo) planets around other stars has highlighted the need to understand the physical and chemical conditions under which life may develop. How did life begin on Earth? Can it be sustained elsewhere e.g. on Mars? Are such exoplanets likely to support life and if so how might we detect it? In this talk I will seek to explore (if not answer) these questions."</i>
EASTER HOLIDAYS			
15	23 rd April 2009	Dr. Audrey Matthews De Montfort University Chemistry	<p><i>"The Science of Chocolate"</i></p> <ul style="list-style-type: none"> <i>"Chocolate cravings may be a symptom of addiction. Research suggests chocolate may have health benefits. Chocolate contains the same 'happy' chemicals found in some recreational drugs."</i>
16	30 th April 2009	Dr. David Robinson The Open University Biology	<p><i>"Darwin's Islands"</i></p> <ul style="list-style-type: none"> <i>"In Darwin's footsteps to the Galápagos: the extraordinary wildlife and the problems of conservation of this World Heritage Site."</i>
17	7 th May 2009	Dr. Hilary MacQueen The Open University Biology	<p><i>"Fat – too much of a good thing?"</i></p> <ul style="list-style-type: none"> <i>"The useful roles of fat and recent research confirming its importance for health and well-being."</i>
18	14 th May 2009	Dr. John Wilson University of Birmingham Physics	<p><i>"Detecting elementary particles: from the spark chamber to the Large Hadron Collider"</i></p> <ul style="list-style-type: none"> <i>"We shall demonstrate the detection of cosmic rays from outer space in a spark chamber. Experiments at the Large Hadron Collider at CERN will probe for a deeper understanding beyond this model.... can we get a glimpse of the underlying theory?"</i>
19	21 st May 2009	Dr. Richard Lissaman University of Warwick Mathematics	<p><i>"The Maths of Video Games and Google"</i></p> <ul style="list-style-type: none"> <i>"Internet search engines and video games are both multi-billion pound global industries. Did you know that making video games fun, means doing thousands of calculations involving triangles, angles and vectors? Did you know that the original idea for Google was based on simultaneous equations? You'll find that you know enough maths right now to have had the idea yourself! Anyone ready to discover the next Google....?"</i>

Thursdays



3:15pm



Meeting Hall