Y12 Virtual Study Day Taster Sessions 2023

Timetable:

15:00-15:50	Admissions talk + Q&A with Tutor for Admissions
16:00-17:00	Academic Taster Session Subject(s)
17:00-17:30	Subject(s) Q&A with Academic and Student Ambassadors

Tuesday 14th February

MATHS: Equations and Symmetries

The general solution to a quadratic equation ax2+bx +c = 0 is given by a simple formula involving square roots. But is it possible to give a general formula for the solution of a cubic equation (degree three) in terms of radicals? What about higher degrees? This was a prominent question in Mathematics for hundreds of years until the beginning of the 1800's when the Norwegian mathematician Niels Abel proved that this was impossible for a general equation of degree five (quintic equations). But the real breakthrough came about the same time when the French mathematician Evariste Galois created a general theory that explains this phenomenon. Galois' ideas led to the development of two beautiful branches of mathematics in algebra (group theory) and number theory (Galois theory, algebraic number theory) which are fundamental parts of modern Mathematics.

This session is suitable for anyone currently studying Mathematics and/or Further Maths who is interested in studying it at university.

Professor Dan Ciubotaru, Diana Brown Fellow and Tutor in Pure Maths

Wednesday 15th February

LANGUAGES: Harry Potter and the Translator's Headache

Translating the Harry Potter books presents all kinds of linguistic challenges, not only due to the different stylistic preferences of the two languages, but also the cultural references, the jokes, made-up words and comedy names. This session, run by the convenor of Oxford's Advanced French Translation course, uses the series to explore some of the knottier problems involved in translation, and to offer some help to explore the cultural and linguistic differences between French and English.

The session is open to all Year 12 students currently studying French, and should be of interest to anyone considering a degree involving modern languages of any kind.

Professor Simon Kemp, Associate Professor of French and Fellow of Somerville College

ENGINEERING: Artificial Intelligence and Machine Learning for the Next Generation of Health Informatics

Ever-increasing qualities and quantities of data are routinely collected across a wide range of applications that offer a rich source of information. The developments in wearable sensors, smart home technologies, and the Internet of Things provide industries with opportunities to monitor patients' health and machines' health with the power of AI without significant disruption to their everyday activities. Analysing the large dataset, sometimes real-time collected data poses emerging challenges in data science as the data can have substantial artefacts; the dataset might be highly imbalanced and incomplete, and might contain high levels of variability. Moreover, data labelling can be expensive and time-consuming if there is an insufficient number of high-quality labels. In this talk, we will introduce several machine learning techniques to tackle these issues and provide robust solutions. Innovations arising from clinical science will be used to demonstrate how deep learning and probabilistic can facilitate rapid clinical intervention, transform a hospital-only treatment pathway into a cost-effective, home-based, combined alternative, and thus improve the overall quality of patient healthcare.

This session is for anyone interested in studying Engineering or Data Science or a related subject at university.

Dr Yvonne Lu, Fulford Junior Research Fellow and Daphne Jackson Research Fellow and Tutor in Engineering

Thursday 16th February

HISTORY: Global Travellers In The Premodern World

This session will look at the experience of travellers in the premodern period, and the dangers and opportunities they faced. Despite modern-day assumptions, people in the medieval period could be very mobile. Many journeyed far from their homes - on pilgrimage, for trade and study, or simply out of a desire to learn more about the world. They have left a rich travel literature, including accounts of calamitous shipwrecks, disagreements with expensive translators and untrustworthy guides, and reports of their amazement at unbelievable sight. Students will have the chance to read and examine accounts from some of these travellers, analyse medieval maps, and discuss what the surviving sources might reveal about how premodern people understood the globe.

This session is for anyone interested in studying History or a related subject at university.

Dr Pippa Byrne, Departmental Lecturer in History

COMPUTER SCIENCE: There's More to Programming Than Programs

The computer programs we write — even simple ones — don't always work exactly as expected the first time we run them. So we debug them. Debugging code is an important part of software development, but it's dangerous to rely on it as the only way of convincing ourselves (and perhaps our clients) that our programs work.

Robust, well-engineered software has already undergone a lot of testing and debugging at the design stage before anyone starts writing it up as runnable code.

In this session I'll look at how we can use mathematics and logic in developing programs, to help us ensure that the code we end up with really does what we expect it to do.

This session is suitable for anyone currently studying Mathematics and/or Computer Science who is interested in studying Computer Science or a related subject at university.

Quentin Miller, Lecturer in Computer Science

Friday 17th February

LAW: How to argue (successfully) as a law student.

During any law degree, you will spend an awful lot of time arguing about the law. Most commonly, you will be making written arguments in essays. You may also be required to argue orally, perhaps during a mock trial. Learning how to argue successfully in a legal context is essential for any law student. This is the focus of this session. We will explore what makes any argument 'good' and consider what common mistakes to avoid. We will also discuss what, if anything, is special about legal arguments. Do we need to adapt our approach when arguing about law and, if so, how?

This session is suitable for anyone interesting in studying law at university. You do not need any previous experience in law.

Sam Warburton, Retaining Fee Lecturer in Law

ENGLISH: 'Tell me what I am!' Some Old English Riddles and their Solutions

In this taster session, I will introduce you to some of the oldest writings in English. We will think about some of the differences – and similarities – between poetry written in the past and poetry written today, and we will investigate what these ancient texts can tell us about the people who wrote and read them.

This will be of particular interest to anyone thinking about studying English at university, but anyone is welcome

Professor Annie Sutherland, Professor of Medieval Literature and Tutor in Old and Middle English