ARCH
EDUCATION

Immersive Research With Oxbridge Academics*

For Current Secondary 4-5 / Year 11-12 / Grade 10-11 Students

Medicine

Law

Mathematics

Economics

Psychology

All Academics have research experience at or/ and have graduated from the University of Oxford or/ and University of Cambridge.
You may view their bio/ work by clicking on their bio.

Medicine | Biomedical Sciences

The Neurology Behind Being "Stressed Out"

"I am so stressed out"—we've all heard this phrase being casually thrown around, not uncommonly overheard in a school or workplace. Many of us are familiar with the restless anxiety that plagues us before an important test, or the sweaty palms and dry tongue that come with the nervousness of having to speak in front of a crowd. But have you stopped to consider why your body reacts the way it does in stressful scenarios? How does the brain and the body communicate with each other in their joint response to stress? What is the difference between 'good stress', which is motivational, and 'bad stress', which can be debilitating? Why does the same thing that stresses you out seem to have no influence at all on your friend? Can stress lead to mental illness? And last but not least - how can we build our resilience to stress?

Using the workings of stress as a gateway to discuss neurocognitive processes, the course is suitable for any student who has a strong interest in the workings of the brain. In particular, those with an interest in the biology of mental illness may find this material particularly stimulating. We will lay the biological foundation of stress and mental health in an integrative manner, taking into account new discoveries in up-to-date scientific literature that emphasise mental illness as multisystem disorders. Students will tackle the foundations of neurobiology and neuropharmacology as it relates to stress, trauma and mental illness. Most importantly, this course will introduce students to the exciting debate of whether genetic or environmental factors shape our mental health and contribute to mental illness.

Professor Zoltán Sarnyai MD PhD MA (Cantab)

Former Fellow of Pembroke College, University of Cambridge;
Former University Lecturer in the Department of Pharmacology, University of Cambridge

Professor Sarnyai, currently Head of the Laboratory of Psychiatric Neuroscience at James Cook University, Australia, is a medically trained PhD neuroscientist researching on the neurobiological mechanisms of stress and psychiatric disorders. Professor Sarnyai was previously University Lecturer in the Department of Pharmacology, University of Cambridge and a Fellow of Pembroke College, Cambridge. He has close to a hundred publications and was awarded the Curt Richter Prize by the International Society of Psychoneuroendocrinology; the DuPont-Warren Award by the Department of Psychiatry, Harvard Medical School; and the Brain Research Foundation (formerly NARSAD) Young Investigator Award.

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Law | Politics

Exploring Contemporary Challenges in International Human Rights Law

International human rights law is undeniably at the front and centre of current affairs, offering a critical framework for addressing pressing global challenges. From armed conflicts, refugee crises, and climate change to social justice movements and technological advancements, human rights principles guide efforts to protect individuals, promote equality, and hold perpetrators accountable. Moreover, events such as health emergencies or terrorist attacks underscore the need to strike a delicate balance between individual rights and the protection of public health and safety.

In this course we will delve into the foundations and evolution of human rights and examine key international conventions and mechanisms that underpin the global human rights framework.

We will analyse a wide range of substantive human rights issues, including civil and political rights, economic, social, and cultural rights, women's rights, and the rights of refugees and migrants. We will examine the obligations of States in protecting and upholding human rights and the interaction of international law with the national legal order.

The research assignments and tutorials will offer practical insights into the application of international human rights law and its intricacies. You will have the opportunity to select a subject for further study from a list of topics relating to substantive rights such as freedom of religion, freedom of speech, and freedom of assembly, and explore the right of governments to restrict such rights for the protection of public health, safety, and order, in view of situations of crisis.

Dr Anna Ventouratou, DPhil, MPhil (Oxon)

Lecturer in International Trade Law at the University of Sheffield
DPhil, MPhil and MJur from University of Oxford

Anna is a Lecturer in International Trade Law at the University of Sheffield. She has studied law at the University of Oxford (DPhil; MPhil; MJur), the University of Athens (LLM in Public International Law; LLB) and Columbia Law School (Fulbright Schuman Visiting Scholar). Prior to joining Sheffield, she has taught Public International Law at Oxford and worked as a researcher in several international law research projects. She completed her legal traineeship at a leading criminal law firm in Athens, Greece (2014-2016) and is admitted to practice law in Greece (Athens Bar). In 2020-2021, she also worked as a trainee lawyer at the Legal Service of the European Commission (CFSP and external relations team) advising on issues of public international and European law, including disputes relating to the EU sanctions regime and investment arbitral proceedings.

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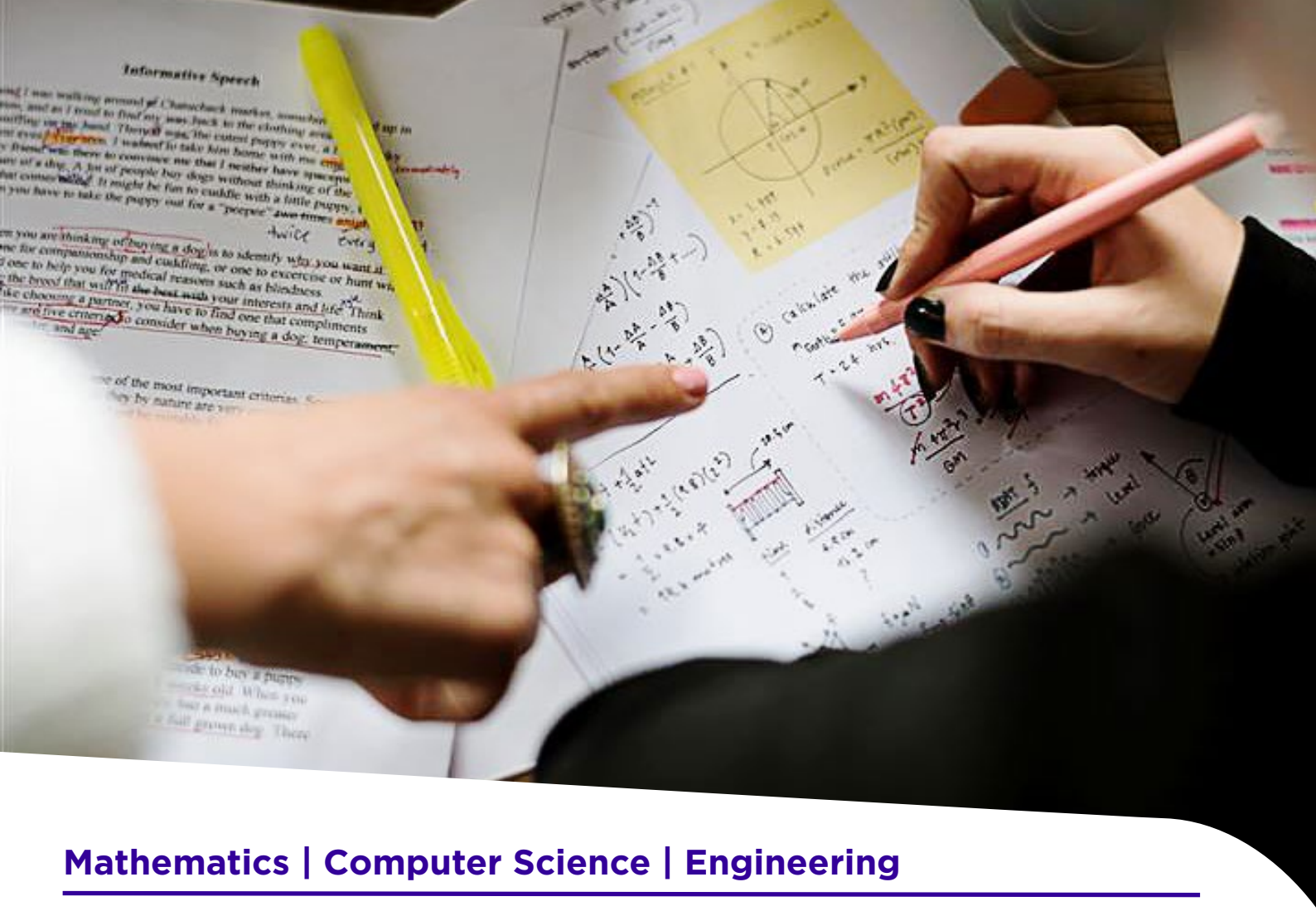

Mathematics | Computer Science | Engineering

The Maths Behind Machine Learning and Quantum Physics

Have you ever wondered how data can be accurately and instantly encoded and decoded during encryption or decryption? How do search engines like Google organise, sort, and rank what would otherwise be an overwhelming amount of data for billions of users worldwide?

From matrices, to vector spaces to groups, this course will introduce students to some of the basic concepts of advanced algebra. Designed to give students a taste of what it is like to study the first year undergraduate Algebra course at Oxford, students will learn the concept of mathematical proof using axioms and be exposed to some high-level abstract concepts.

Dr. Tom Crawford MMath (Oxon) PhD (Cantab)
Current Tutor in Mathematics at St Edmund Hall, University of Oxford

Dr. Tom Crawford is a Mathematics tutor at St. Edmund Hall at the University of Oxford, as well as the person behind the award-winning Tom Rocks Maths. He obtained his degree in Mathematics at Oxford before completing his PhD in Applied Mathematics at the University of Cambridge. He can regularly be found discussing all things Maths on his YouTube channel and on the BBC, where he previously worked for a year as a science journalist.

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Economics

“Playing Chicken”: Applications of Game Theory in Political Economics

Two players. Two cars. Each heading toward the other on a collision course. Would you take the risk of colliding into the opposing car if it meant that you would be rewarded hugely—on the condition that your opponent chickens out and chooses to swerve out of the way? Such is the premise of the game of chicken. While it seems absurd that this game could be made applicable to any real-life situation, the concept of “Playing Chicken” can be applied on a multitude of levels: whether it’s a everyday quarrel with your next-door neighbour over your chihuahua barking in the middle of the night, or the Cuban Missile Crisis between the United States and the Soviet Union during the Cold War.

The game of chicken stands tall as one of the most popular models to exploit in the world of political economics, international relations, and comparative politics, as researchers apply game-theoretic insights to figure out ways to understand and resolve conflicts. This course will provide a robust non-technical introduction to the fundamental concepts of game theory, such as strategies, rationalizability, Nash equilibrium, and subgame perfection. Then, we will explore their various applications in the realm of political economics. Throughout the duration of the course, we'll discuss and analyse diverse themes ranging from war and conflict to climate change, and to voting, identity, and culture.

Tak Huen Chau BA (Oxon)

Incoming Assistant Professor at the London School of Economics and Political Science
Graduate student in Political Science and Economics at UC Berkeley
BA in Philosophy, Politics and Economics from University of Oxford

Mr. Tak-Huen Chau is finishing his PhD at UC Berkeley. He will be Assistant Professor in Political Science and Political Economy at the London School of Economics and Political Science starting September 2025. His research applies game-theoretic methods in studying social identities, protests and nationalism. He has taught undergraduate and PhD students at Berkeley in game theory, public policy and research methodology. Prior to Berkeley, he obtained a BA (First Class) in Philosophy, Politics and Economics from Merton College, University of Oxford, where he wrote a prize-winning thesis on candidate identities in UK elections.

The views and opinions expressed in his role as an instructor at Immersive Research with Oxbridge Academics does not represent the positions, policies, or endorsements of the London School of Economics and Political Science (LSE) or the University of California, Berkeley. He is acting exclusively in a personal capacity for this external activity, and neither institution assumes responsibility for the content, advice, or liabilities associated with this engagement. His participation is independent of his academic affiliations.

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Psychology

The Cognitive Psychology of Memory: Real or Not Real?

The introduction of psychological terminology in pop culture have brought conditions like the "Mandela effect" and "gaslighting" into public view. The discourse prompts us to ask; how reliable are our memories? How easy is it to manipulate perception, or distort one's recognition of events?

As memories are a reconstruction of our experiences in the environment, not all our memories are true. They can contain information that were not present or missing certain information we indeed experienced. It is no surprise that complaints about memory failure are among the most common in clinical and hospital settings. Until we develop a more precise and comprehensive understanding of how memory works, however, effective rehabilitation for memory-impaired patients will be limited. As one of the most fundamental cognitive processes, memory makes us who we are.

It is indispensable in many domains of our everyday life; without it, independent living can become very difficult if not impossible. Loss of memory thus not only means being robbed of our past, but it is also associated with one's inability to perceive the world, navigate the environment and contemplate the future.

This course will look at the fundamental types of memory and the neurobiology of memory, analysing the extent to which memory is localised in our brain. We will conduct an empirical assessment of some real-life case studies to consider whether our memories are always true. This course targets to equip students with the ability to critically engage with scientific readings, summarise and grasp key insights and empirical evidence. Students will also have the opportunity to apply their newly acquired knowledge in real-life settings through debates and presentations, developing their articulacy and argumentation.

Dr. Carmen Pinon PhD

Current Lecturer in Neuroscience and Physiology, University of Oxford

Dr. Carmen Pinon is a lecturer at Oxford and has occupied similar positions at different universities in the UK. She has 20 years of experience lecturing and tutoring Neuroscience and Physiology for Medics, Biomedics ad Psychology students. She is a Neuroscientist and her areas of interest includes the visual system, connectivity and development of the brain, publishing high qualified Medical Journals.

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Program Structure

Sessions	No. of Hours	Scope of Coverage
Session 1	2 hours	**Mass Lecture** Academic will deliver an insightful lecture on the captioned topic, inspiring students to consider the many aspects of academic perspectives related to the topic. A research assignment will be introduced towards the end of the session and will be completed by the end of the program.
Sessions 2-4	6 hours	**Small Group Tutorials to Address Research Assignment** Academic will lead students through the exploration of the topic by dissecting the analysis into different strands. Supporting materials will be provided and students will be encouraged to engage in small group discussions.
Session 5	2 hours	**Small Group Tutorials to Evaluate Assignment** Finale! Experience an Oxbridge-style tutorial! Students will share their work with Academic for feedback and exchange of ideas!

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Program Details

Date & Time:	**Medicine Series** *(Online)*:	Jul 21 - 25	6:30pm - 8:30pm HKT
	Law Series *(Online)*:	Jul 28 – Aug 1	7:30pm - 9:30pm HKT
	Mathematics Series *(Online)*:	Jul 28 – Aug 1	7:30pm - 9:30pm HKT
	Economics Series *(Online)*:	Jul 21 - 25	7:30pm - 9:30pm HKT
	Psychology Series *(Online)*:	Aug 4 - 8	7:30pm - 9:30pm HKT
Target Student:	Current Secondary 4-5/ Year 11-12/ Grade 10-11Students		
Group Size:	Maximum of 6 Students		
Fee:	5% Early Bird Offer: HK$10,450 on or before Jun 15 (original fee: HK$11,000)		
Certification:	To be acknowledged, authenticated and granted by instructor in charge		
Evaluation:	Students' performance and written works will be evaluated by instructors at the end of the program		

Sign up:

Phone: (+852) 3568 0406
Website: www.arch-education.com
Address: 3/F, Phase II, China Taiping Tower,
8 Sunning Road, Causeway Bay, Hong Kong

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