



Immersive Research With **Oxbridge** **Academics***

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



Medicine



Law



Mathematics



Economics



Psychology



Medicine | Biomedical Sciences

How does the brain get its energy?

The brain is a highly active organ with outstanding energy needs to support its work to regulate bodily functions and to underlie everything that make us human, including emotions, thoughts, and memories. Why does the brain have high energy expenditure? Where does this energy come from? How can the brain turn a simple sugar molecule to mighty chemical energy? What happens if something goes wrong with this energy production? These are the questions we are going to investigate closely based on recent discoveries in brain science.



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.



Law | Politics

Exploring Contemporary Challenges in International Human Rights Law

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.



Mathematics | Computer Science | Engineering

Mathematical Modelling as a Decision-making Tool

Where is the best place to aim a penalty kick to maximise your chance of scoring? What is the best approach to catch a rare Pokémon? How quickly will an infectious disease spread through a small town or city? And where does pollution go when it enters the ocean? The tool of Mathematical Modelling is key to answering these - and many more - important questions.

In this course, we will introduce the fundamental aspects of a Mathematical Model. We begin with estimation techniques and broad assumptions, before introducing further complexity through differential equations and scaling analysis. The problems encountered will be taken from a range of areas across science, computing and engineering.



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.



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)

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 a graduate student in political science and economics at UC Berkeley. His PhD 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.



Psychology

How to Treat Major Depressive Disorder

Affecting millions worldwide, depression is a state of existence that strips individuals of their joy, potential, and quality of life. By promoting understanding of and compassion around the disorder, we can bring a stop to stigmatisation and nurture a society more alert to mental health needs. Healthcare provision of more immediate relief to depressed patients therefore centres upon a comprehensive understanding of the biological and psychological causes of the disorder alongside ongoing pursuit of technological advances and treatments.

This course is designed with the aim to enlighten students to concepts of normality and abnormality before an in-depth exploration of major depressive disorder (MDD), from its typical signs and symptoms through to causes of and treatments for the disorder.



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 and Psychology students. She is a Neuroscientist and her areas of interest include the visual system, connectivity and development of the brain, publishing high qualified Medical Journals.

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!

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.

Program Details

Date & Time:	Medicine Series (Online):	Jul 15 - 19	11:00am - 1:00pm HKT
	Law Series (Online):	Jul 22 - 26	4:00pm - 6:00pm HKT
	Mathematics Series (Online):	Aug 19 - 23	6:00pm - 8:00pm HKT
	Economics Series (In-person):	Jul 22 - 26	3:00pm - 5:00pm HKT
	Psychology Series (Online):	Aug 12 - 16	4:00pm - 6:00pm HKT
Target Student:	Current Secondary 4-5/ Year 11-12/ Grade 10-11 Students		
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:



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