Summer Challenge is a set of academic evening courses for Year 12 students. The courses give a realistic taste of university study, and allow you to explore a subject that interests you through the completion of a personal research project.

Summer Challenge develops independent research, academic writing and presentation skills that are essential for university. It also provides impressive material to discuss in UCAS personal statements.

Dates
Courses run for five weeks on Tuesday and/or Wednesday evenings in June and July (start date for each listed).

Eligibility
Entry into our summer schools is subject to students meeting our eligibility criteria.

Find out more at www.ucl.ac.uk/wp/summer-challenge
This course gives an introduction to international and domestic human rights law. The sessions provide an overview of the international protection of human rights, covering the international framework for the protection of human rights, looking at key treaties and institutions like the United Nations and the European Court of Human Rights. The course also looks at controversial issues such as the protection of minority and group rights, as well as whether human rights can be used to protect against terrorism and whether human rights are in crisis. We will also consider the incorporation of human rights standards into UK law and the workings of the Human Rights Act 1998 and you will assess its effectiveness in protecting human rights. The possibility of developing common law constitutional rights given the doctrine of Parliamentary Sovereignty will also be explored. One of the sessions will offer you an introduction to some more theoretical and philosophical debates about the nature of human rights.

Suitable for students interested in: Law, History, Politics

**History/Philosophy**

**What makes you happy? Jeremy Bentham's Ideas on Happiness**

**20 June**

If you take a stroll down the corridors of UCL, you will come across a strange sight. A huge wooden box fronted with glass. Inside this box is a human body sitting on a chair, dressed in a suit and hat. The body belongs to the philosopher Jeremy Bentham (1748–1832) and is known as his Auto-Icon. Bentham was a highly original thinker, whose influence continues to this day and this course examines his ideas. He wrote on a range of subjects including law, economics, politics, religion, poverty and more, however is most well-known as one of the founders of the theory of utilitarianism – the idea that it is always best to act in a way which promotes the greatest happiness of the greatest number of people. This course explains and explores Bentham’s theory of utilitarianism, concentrating on its strengths and weaknesses in three arenas: crime and punishment, religion and Bentham’s Auto-Icon. You’ll have the opportunity to debate Bentham’s ideas and think about the historical context in which he was writing.

Suitable for students interested in: English, History, Philosophy, Economics, Politics, Law
Topology: The Mathematics of Shape-Shifters
21 June

Topology is a field of mathematics concerned with properties of objects that remain unaltered even if the object is twisted or deformed, but not cut or torn. The number of holes in an object (think pretzel) is one such property. In this course we will investigate surfaces with weird properties, learn why a doughnut and a mug are really the same thing and how these curious objects led to a Nobel Prize in Physics in 2016. The course is packed full of hands-on activities mainly involving cutting and gluing of paper (be warned!) and will explore the power of mathematical representation to help you get your head around challenging concepts.

Suitable for students interested in:
Mathematics, Further Mathematics, Statistics, Computer Science, Economics, Physics

Navigating a New Sea: the Challenges of Arctic Shipping
21 June

The Arctic has mostly been seen as isolated from the rest of the planet. But the increase in ice-free ocean, as Arctic sea ice retreats, means that it will soon be a quicker and cheaper way for ships to navigate between Russia and Canada, a long-sought route known as the North West Passage. This course examines Arctic shipping, with the aim of identifying priorities for the industry and the governments that regulate it. This is a broad topic area, providing an introduction to: the physical oceanography of the Arctic, the ships designed to navigate in this environment, the possible problems they can cause, and the way that regulations influence the environmental consequences. These are pressing global issues, and course participants will use a combination of research, independent thinking and creativity to explore the growth of interest in the Arctic.

Suitable for students interested in:
Geography, Geology, Physics, Mathematics
Statistics and the World – Can We Predict the Future?
20 June

Can you find patterns among chaos? Can you predict the future? A world without statistics is a world that cannot progress – in medicine through to astronomy through to social science. In this summer school, you will learn practical data skills – including using software to do hard calculations, make predictions, and produce interesting graphics. You will work in a small group to analyse a dataset with the aim of predicting future events. It’s even possible that you’ll come across something that the world did not know before! The challenge will be to produce a poster of your findings: can you piece together the evidence from the data to prise out an important message to try and predict the future?

Suitable for students interested in:
Mathematics, Further Mathematics, Statistics, Economics, Computer Science, Business Studies
Neuroscience: Dissecting the Brain
21 June

Neuroscience is the scientific field which aims to understand the most complex object we know: the brain. How we behave, think and feel depends on the structure and chemistry of our brains but it is also the root of crippling disorders such as Parkinson's, depression and schizophrenia. This course covers a variety of topics in neuroscience and aims to synthesise the most up-to-date research from anatomy, pharmacology, cell biology, and brain imaging to produce a rounded overview of our current understanding of the brain and its disorders. A practical session will allow students to get up close and personal with real human brains.

Suitable for students interested in:
Biology, Chemistry, Physics, Psychology, Mathematics

Life and Medical Sciences
Cell and Developmental Biology
Explaining Epidemics
21 June

The 20th century saw a revolution in the development of antibiotics, vaccines and global health programmes. These massively reduced the death toll from infection and led to the eradication of diseases such as small pox and polio, suggesting that modern medicine would conquer the dangers posed by bacterial and viral pathogens. The world now faces new potential health crises - for example, from antibiotic-resistant bacteria, and rapidly-spreading outbreaks of mutated viral diseases. In this course you will be introduced to the methods for building computer models of disease dynamics, and look at the different ways researchers can collect data that can be used to test and calibrate models. You'll then apply the techniques you have learned and collate your findings into a scientific report.

Suitable for students interested in:
Biochemistry, Biotechnology, Biomedical Sciences, Pharmacology, Neuroscience, Biological Sciences, Microbiology, Genetics, Biology, Chemistry

Medical Sciences
Doctors' Dilemma
20 & 21 June

Imagine... a critically ill 14 year old girl refuses to have a life-saving operation... a woman with a painful, disabling and debilitating chronic condition asks the doctor to help end her life. What should the doctor do? What are the underlying ethical challenges? These are examples of ethical dilemmas doctors face. They often seek the help of their colleagues and other doctors, as well as lawyers, ethicists and scholars. Perhaps, one day, you might be one of these people. This course introduces you to a range of relevant ethical challenges and controversies in the medical world such as organ donation, treating children and young people, and euthanasia. Drawing on real-life cases reported in the media, this course will help you develop your critical thinking skills and your ability to reflect on personal and professional values through discussion and debate. The course also offers essay writing and interview technique to help you prepare for your application to university.

Suitable for students interested in:
Biology, Chemistry, Mathematics, Psychology, Philosophy

Population Health
What Influences Your Health?
20 June

Health is not only the absence of disease or morbidity but also a state of complete physical, mental and social wellbeing. There are many factors that, combined together, can have an impact on your health and the health of the world. Some of these factors include the environment you live in, your genes, your diet and the amount of physical activity you undertake. This course will focus on different determinants that can lead to health and aims to synthesise the most up-to-date research of how these determinants affect your health and how they can be studied in order to prevent diseases. A practical session will allow students to create maps to explore the effect of the food environment over health.

Suitable for students interested in:
Biology, Economics, Geography, History, Human Biology, Sociology, Statistics
Contact

If you have any questions please contact:

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