牛津展望计划

Oxford Prospects Online Programme

目录 · Contents
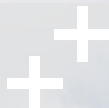
英国国家院士主持并**亲授**

助力申请**世界顶尖**大学

触及**最高学术成就**，探索专业领域**最前沿**

跨学科式教学，强化辩证思维及独立研究能力

牛津大学访问生及硕博**申请要点**

与**顶级学者**互动，明晰学界、业界的职业发展

项目背景简介

　　牛津大学是英语世界国家中最古老的大学，创建历史可追溯至十一世纪末。2017-2022 年连续六年蝉联全球排名第一。牛津大学拥有雄厚的师资力量，其教职队伍中有 83 位皇家学会会员和 125 位英国科学院院士。近 900 年的校史中，牛津于各个领域培养了许多杰出领袖，包括 6 位英国国王、28 位英国首相、多位外国政府首脑、50 余位诺贝尔奖获得者和一大批世界著名的文学家和科学家，在诸多领域引领着世界最前沿的科学研究。

　　牛津大学摄政学院全球发展与展望研究院（OPGDI）与学术界同仁团结一致。在这充满不确定的时期，全球共识和相互知识交流比以往任何时候都更为重要，OPGDI 的首要任务是给我们的海外合作伙伴和学生持续不断地提供高质量的学习资源和学术服务，巩固和稳定其与海外合作伙伴和学生之间建立的，长期稳定且卓有成绩的合作关系。为此，OPGDI 特别筹备在线课程，有幸组织数位英国学术院的国家院士为模块领衔教授，为来自精心挑选的一流中国合作高校的优秀学生而设计，以鼓励学生申请牛津大学注册访问学生课程（VSP），硕士课程及博士研究。

基本信息

申请条件：IELTS 6.0 或 TOEFL 80 以上

　　如尚未拥有以上成绩证明，可提供其他英语能力证明（如四级，六级，或高考成绩等），项目学术处将依据申请人资历进行审核，或将安排面试，学术处将对录取结果拥有最终决定权。

课程费用： 课程原费用为 1650 英镑，因新冠疫情，牛津展望计划办公室为国内长期紧密合作的伙伴高校申请学生减免此次部分费用。

（减免后）实缴费为：**1050 英镑（约 9000 元人民币）**

授课形式： 所有课程均为**直播授课，同步录制，便于回放复习**。

　　通过课程交互系统及课程交流群组，提供 Reading Materials，分享 Lecture Notes。

项目咨询： 此项目仅向合作高校开放，课程内容咨询联系

Wechat: **oppadmin**

Email: **admin@oxford-prospects.com**

课程结业： 顺利完成课程将获得 Programme Certificate 以及 Transcript。

　　此次课程总计约 40 小时 Contact Hours，以及 40 小时的自主研习时间，对应 8 个 CATS 学分，4 个 ECTS 学分，以及 3 个美国学制学分。

学术课程
Academic Lectures
15 课时

＋

小班研讨会
Interactive Seminars
10 课时

＋

拓展工作坊
Outreach Workshops
5 课时

＋

特邀嘉宾讲座
Guest Lectures
3 场次

学术课程 (二选一)
Academic Lectures

学术课程共计 **15 课时**, 分为两大类跨学科 Module, 各 Module 由对应的英国学术院国家院士领衔并亲自主持授课, 其余授课老师为牛津大学教授、学者以及部分特邀行业嘉宾, 无在读博士或博士后代课。

课程精选跨学科前沿热门议题, 通过对特定热门学术议题的 **纵深学习**, 激发对具体学科和未来学术规划的兴趣。通过跨学科式的 **广度学习**, 构建对相关专业领域更全面的理解和认知, 对于未来学术和职业规划有更清晰的认识, 更将利于突破单一学科思维模式限定, 对于国际化、多元文化交流, 团队合作, 系统性复杂问题的解决奠定良好基础。

医学 - 生命科学

人体老化后大脑会发生什么变化？干细胞是否可用于治疗任何疾病？生物多样性在医学领域为何如此重要？课程将展示解析医学及生命科学的技术发展, 探讨领域内最前沿议题, 引出医学中的伦理问题和与其他领域的复杂关系。

课程大纲及师资请参照 Page 8 ~9

Module A

STEM 交叉科学：
数学 - 物理 - 计算机 - 工程

大数据的使用将如何驱动"智慧城市"的创新？低碳未来更好的能量源是什么？人工智能将如何助力"智能制造"实现个性化产品生产？量子计算机可以实现自我复制吗？创新发生在各学科的交汇处, 课程聚焦数学、物理、计算机及工程技术的前沿交叉应用, 探讨科技成果转化的价值。

课程大纲及师资请参照 Page 10~11

Module B

小班研讨会
Interactive Seminars

共计 **10 课时**。每日学术课程之后将安排线上互动研讨课，学以致用，增强知识的理解和输出。学生们将作为课程核心，课前各小组（2-4 人）将在指导下进行充足的准备工作，课上作业展示，接受其他小组的提问，并在指导下就议题进行深度讨论，思考 - 质疑 - 辩论 - 捍卫，进而锻炼学术研究技能，提升团队合作能力。此部分师资为牛津大学教授、学者或研究员。

> 与 *Lecture* 授课模式不同，*Seminar* 小班过程中的收获完全超乎我的预期，非常 *Hardcore*，教授给我们分组并引领我们进行开放式的课程讨论，激励我们探索，知识输出，科研方法论实践，让我第一次觉得问题解决、做学术是可以如此有趣。
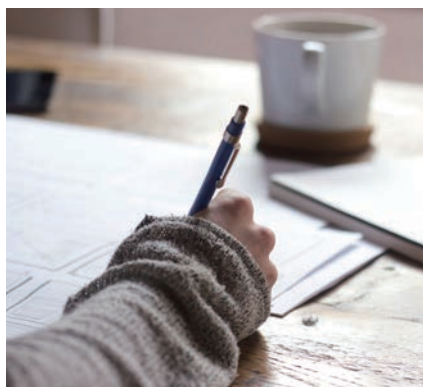>
> -- 李同学，浙江大学本科三年级

拓展工作坊
Outreach Workshops

共计 **5 课时**。拓展工作坊旨在激发学生的内驱力，锻炼批判性思维和研究技能，明晰学术和职业规划，同时还将提供与牛津大学成功申请者互动，建立新人际关系的机会，内容包括：

- 科学研究方法论
- 个人陈述撰写
- 学术科研论文撰写
- 申请过程解读

- 演讲陈述技能
- 心理健康及朋辈支持
- 牛津在读生及校友分享讨论会
- 职业规划

学生反馈
Student Testimonials

No silly questions

为期三周的线上课程，我最大的收获不仅是密度极高的学术知识，更是对于走出舒适圈的觉悟及高效的学术研究技巧。在课程初期，由于害怕犯错，我一直羞于提问，但教授的那句 'No silly questions' 无意中给了我走出"沉默"这个舒适区的勇气。

-- 赵同学，吉林大学本科二年级

教会了我以批判性的思维方式看待所有问题

在参加课程之前，我从未设想哲学这一门脱离现实生活的学科，竟可以与经济发展有着如此紧密的联系。在这三周内我们许多的固有认知都被牛津大学教授逐个推倒，同时也教会了我以批判性的思维方式看待所有问题。

-- 王同学，上海交通大学研究生二年级

课程中最大的收获，是对于知识获取及思考方式的转变

课程中最大的收获，是对于知识获取及思考方式的转变。以前我的学习是被动进行的，很少会提前预习或阅读相关资料。而现在我开始会在课下阅读文献，因为自我学习比单纯的靠老师归纳整理，更利于知识的吸收，也能获取更全面的信息。

-- 郑同学，山东大学本科二年级

为我打开了学术的新世界

课程的新鲜感是我从未体验过的，我很荣幸能有机会和牛津大学教授一起学习。整个课程的全英文教学环境，使我的英语口语更加流畅，再也不惧怕查阅任何英文文献。课程中涉及的许多前沿科学研究，为我打开了学术的新世界，教授们经常耐心的鼓励我们提问任何问题。

-- 曾同学，浙江大学本科一年级

科学的世界仍笼罩着迷雾，需要我们潜心钻研的问题还有很多

从牛津的网上课程中，我学到了很多知识。不仅对牛顿力学和热力学的一些概念有了更深入的理解，而且了解了一些让人叹为观止的知识。例如令人费解的量子效应，蝴蝶翅膀特殊结构的应用潜力，研讨课上讲到的鲨鱼不患癌症，长寿的未解之谜。这些仍待探究的科学告诉我：科学的天空仍然乌云密布，需要我们潜心钻研的问题还有很多。

-- 陈同学，重庆大学本科一年级

各学科的前瞻性开拓了我的眼界

很珍惜这次被选中参加牛津展望计划线上课程的机会，聆听许多优秀教授的讲课。在不同形式的学习过程中，我逐渐意识到沟通及自主学习的重要性。各学科的前瞻性开拓了我的眼界，教授的每次提问都发人深省。

-- 张同学，北京师范大学本科二年级

我真实的感受到了什么是跨学科学习

与国内单一思维授课不同的是，我真实的感受到了什么是跨学科学习！学科研究不再是单一方向的思考，而是多元化交叉学科的融合。研究的主题也可以从"云端"的高大上，发展到日常生活的所见。这些不一样的认知加深了我对学习的兴趣，从未想过学习可以如此的接地气，如此的有趣！

-- 李同学，北京理工大学本科二年级

结业典礼的云烟火感动而又惊喜

课程内容的丰富有趣让我感受到牛津教授的博学多才。专业负责的授课态度及项目老师的耐心支持是我学习的不二动力。每个 session 的互动交流让我收获颇多，不同校友之间的新友谊，结业典礼的云烟火感动而又惊喜。

-- 张同学，中国社会科学院大学本科三年级

特邀嘉宾讲座
Guest Lectures

三场次特邀嘉宾讲座将邀请来自于不同行业的重量级嘉宾为同学们带来行业内的洞见和思考，这也将是此次学术课程以外最值得期待的环节之一。

Film and TV Industry
影视戏剧行业

3 次金球奖，15 次艾美奖，69 次提名成为艾美奖，1 次英国电影电视艺术学院奖，荣誉加身的《唐顿庄园》风靡全球无需多介绍。第一场讲座将邀请《唐顿庄园》总制片人 Ms Liz Trubridge 及神秘参演嘉宾。

World Leading Enterprises
世界顶级企业组织

英国的世界顶级企业组织不胜枚举，阿斯利康，汇丰银行，联合利华，捷豹路虎，英格兰央行，葛兰素史克等等。第二场讲座将邀请资深企业高管。
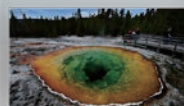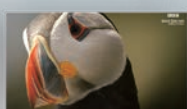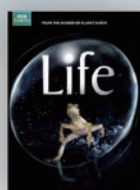
British Nature Documentaries
英国自然纪录片

英国自然纪录片以其广泛题材和精良制作闻名于世，尤其是英国国宝级主持人爱登堡爵士（David Attenborough）所参与的：《地球脉动》、《蓝色星球》、《冰冻星球》等。第三场将邀请英国知名摄影师，其与爱登堡爵士本人紧密合作，参与制作诸多知名自然纪录片。

领衔教授
Lead Professors

Professor Graham Richards

英国皇家学会院士，
牛津大学化学系主席，
大英帝国勋章获得者。

2018 elected a Fellow of the Royal Society (FRS)
2018 Richard J. Bolte Sr. Award, Science History Institute
2010 Co-Vice-President of the Royal Society of Chemistry
2004 Award of the American Chemical Society for Computers in Chemical and Pharmaceutical Research
2001 Commander of the Order of the British Empire, Queen's Birthday Honours
1996 The Lord Lloyd of Kilgerran Award, Foundation for Science and Technology
1998 Mullard Award, Royal Society
1972 Marlow Medal, Royal Society of Chemistry

Professor Sir Walter Bodmer
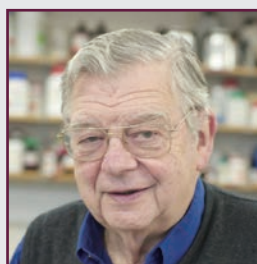
英国皇家学会院士，
爵士头衔。

2013 Royal Medal, Royal Society
1994 Michael Faraday Prize, Royal Society
1992 elected a Honorary Fellow of the Royal Society of Edinburgh (FRSE)
1987 Ellison-Cliffe Medal, Royal Society of Medicine
1974 elected a Fellow of the Royal Society (FRS)

Professor Sir Mike Brady

英国医学科学院院士，
英国皇家学会院士，
英国皇家工程院院士，
爵士头衔。

2008 elected a Fellow of the Academy of Medical Sciences (FMedSci)
2000 Faraday Medal, Institution of Electrical Engineers (IEE)
2000 Millennium Medal, Institute of Electrical and Electronics Engineers (IEEE)
1997 elected a Fellow of the Royal Society (FRS)
1992 elected a Fellow of the Royal Academy of Engineering (FREng)

Professor Dame Frances Ashcroft

英国皇家学会院士，
英国医学科学院院士，
大英帝国勋章获得者，
女爵头衔。

2017 Walter B. Cannon Award, American Physiological Society
2015 appointed a Dame Commander of the Order of the British Empire (DBE)
2013 Croonian Medal, Royal Society
1999 elected a Fellow of the Royal Society (FRS)
1999 elected a Fellow of the Academy of Medical Sciences (FMedSci)

Professor Brian Cantor

英国皇家工程院院士，
大英帝国勋章获得者。

2013 Commander of the Order of the British Empire, 2013 New Year Honours
1999 elected a Fellow of the Institute of Physics (FInstP)
1998 elected a Fellow of the Royal Academy of Engineering (FREng)
1993 Rosenhain Medal, The Institute of Materials (IOM3)
1993 elected a Fellow of the Royal Microscopical Society
1989 elected a Fellow of the Institute of Materials (FIMMM)

Module A

Medical and Life Sciences
医学与生命科学

Proposed Topics

- Social Determinants of Health

- NHS Systems in Various Countries: The United States and Germany

- Omics Tools and Techniques Used in Translational Research

- Development of Oncological Imaging

- Haematopoiesis: From Normal to the Disease State

- Macrophage & Anti-microbial Activity

- Computer-Aided Drug Design

- Drug Development and Clinical Trials

- Cell biology: Evolutionary Perspectives on Cancer and Ageing

- Neurodegenerative Diseases: The Coming Epidemic

- Biomedical Engineering: Tissue Reconstruction and Angiogenesis

- Deep Brain Simulation and testing Development in Parkinson's Disease

- Ethics in and for Healthcare Markets

This course is for students of:

Medicine, Biology, Chemistry, Life and Biosciences, Genetics, Psychology, Public Health, and other related fields.

Module Description

Why do people get cancer? What happens to the brain when we get older? What is checkpoint therapy? Can stem cells be used to cure any disease? Is biodiversity really so important?

This module provides in insight into the hottest topics in medicine, health related subjects as well as environment. The greatest brains in the field will guide the students through the intricacies of medical and biological research, paying particular attention to the latest technology developments in gene-editing and oncological imaging. Students will investigate the processes involved in neurodegenerative diseases and oncology as well as will analyse the steps necessary in clinical trials and drug development. The course offers a preview of how interdisciplinary teams are the only way to advance biosciences and offers a comprehensive framework in translational medicine. Students will also examine various models of healthcare systems, discuss ethical issues related to bio/medical research matters and will analyse the complex interrelationships between humans, resource use, and natural environment, including cause/effect relationships and placing the issues within wider debates on sustainability.

Learning Outcomes:

- Develop understanding of the state-of-the-art tools and techniques in bio/medical research.

- Appreciate the importance of interdisciplinary teams in cutting-edge developments.

- Explore the ethical and regulatory issues in research.

- Understand the complexities of cancer research and neurodegenerative diseases.

- Have insight into the role of nanotechnology in bio/medical applications such as vaccinations, drug delivery or cell cultures.

- Investigate latest changes in population ageing and its impact on societies.

Proposed List of Lecturers (Partial)

■ Prof. Graham Richards

Fellow of the Royal Society, First Chairman of Chemistry at the University of Oxford. He also founded Oxford Molecular, a scientific software company that at its peak was worth £450m and helped set up Oxford University Innovation, Oxford's technology transfer company that has brought approximately 60 spin-out companies into existence.

■ Prof. Sir Mike Brady

Fellow of the Royal Society, Fellow of the Royal Academy of Engineering, Fellow of the Academy of Medical Sciences, Professor in the Department of Oncology. Professor Brady was Deputy Chairman of Oxford Instruments plc from 1994 to 2014. He was awarded the Faraday Medal for the year 2000, and a Third Millennium medal of the IEEE.

■ Prof. Sir Walter Bodmer

Fellow of the Royal Society, Honorary Fellows of the Royal Society of Chemistry, Fellow of the Academy of Medical Sciences, Professor of Genetics in the Department of Oncology (Medical Sciences Division) at the University of Oxford, and Head of the Cancer and Immunogenetics Laboratory at the MRC Weatherall Institute of Molecular Medicine, Oxford.
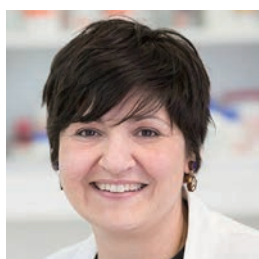
■ Prof. Sonia Antoranz Contera

Professorial Fellow of Green Templeton College, and a Professor of Biological Physics at the University of Oxford Physics Department. Her work lies at the interface of physics, biology, and nanotechnology. She was the founder, director and co-director of the Oxford Martin Institute of Nanoscience for Medicine at the Oxford Martin School.

■ Prof. Paul Fairchild

Fellow of Trinity College, Co-Director of the Oxford Stem Cell Institute. His current research draws on his background in immunology and interest in stem cells to develop new approaches to the treatment of a broad range of diseases with an immunological basis: indeed, his recent work has led to several patents and on-going clinical trials for the treatment of lung cancer.
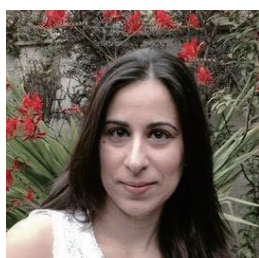
■ Prof. Chrystalina Antoniades

Official Fellow of Reuben College, Associate Professor of Neuroscience in the Nuffield Department of Clinical Neurosciences at the University of Oxford, the Chair of the Clinical Neurosciences Society. Professor Chrystalina Antoniades' interest lies in examining the neurobiological relationship between visual perception and art.
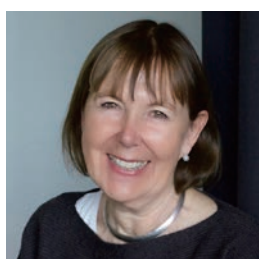
■ Prof. Dame Frances Ashcroft

Dame Commander of the Order of the British Empire, Fellow of the Royal Society, Fellow of the Academy of Medical Sciences, Research Professor in the Department of Physiology, Anatomy and Genetics at the University of Oxford, Professorial Fellow of Trinity College, University of Oxford. Her research focuses on ATP-sensitive potassium (KATP) channels.

Proposed Topics

- Multicomponent High-entropy Materials – Cantor Alloys

- Mathematical Modelling: Art of Problem Solving

- Renewable Energy for a Low-carbon Future

- Conservation laws. Noether's Theorem

- Particle Accelerators: From Making Higgs Bosons to Curing Cancer

- Human-AI Interaction: Digitalisation and Collective Action

- Transportation: Future Powertrains

- Intelligent Manufacturing of Personalised Products

- Modelling Sports Dynamics

- The Role of Big Data in a Smart City

- The Dark Side of the Force: Dark Energy and Dark Matter

This course is for students of:

Engineering related degrees, Material Science and Technology, Physics, Mathematics, Transportation, Space Science and Technology, Computer Science, Artificial Intelligence, etc.

Module B

STEM: Maths, Physics, Computer Science and Engineering
STEM：数学 - 物理 - 计算机 - 工程

Module Description

How will big data drive future smart city innovation? What is the best path to a low carbon future: solar, wind or nuclear? How will Artificial Intelligence enable rapid and stable intelligent manufacturing of personalised products?

Students will explore ways to apply creative reasoning and science to solve real problems while crossing traditional boundaries of disciplines. As disciplines converge into new hybrid fields students engage with the highest-level academicians and leading experts who invent and research the cutting-edge solutions of the modern world. This programme focuses on practical aspects of mathematical modelling, physics and engineering, asks questions about the worth of technology transfer and encourages students to find missing links between everyday phenomena..

Learning Outcomes:

- Have the requisite knowledge and understanding to make their own critical scientific assessments of current issues.

- Develop critical thinking skills necessary for mathematical modeling.

- Develop an understanding of the scale of the Universe.

- Describe and apply the principles of Constructor Theory.

- Gain insight into quantum computing and nanotechnology for a variety of applications.

- Comprehend the historical evolution of Newtonian mechanics and its place in contemporary world as well as in the future.

Proposed List of Lecturers (Partial)

Prof. Sir Mike Brady

Fellow of the Royal Society, Fellow of the Royal Academy of Engineering, Fellow of the Academy of Medical Sciences, Professor in the Department of Oncology. Professor Brady was Deputy Chairman of Oxford Instruments plc from 1994 to 2014. He was awarded the Faraday Medal for the year 2000, and a Third Millennium medal of the IEEE.

Prof. Artur Ekert

Fellow of the Royal Society, Professor of Quantum Physics at the Mathematical Institute, University of Oxford. He was awarded the 1995 Maxwell Medal and Prize by the Institute of Physics, the 2007 Hughes Medal by the Royal Society and the 2019 Micius Quantum Prize. His research extends over most aspects of information processing in quantum-mechanical systems.
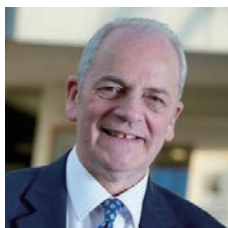
Prof. Brian Cantor

Fellow of the Royal Academy of Engineering, Commander of the British Empire. Professor of Materials in the Department of Materials, Former Vice-President of the Royal Academy of Engineering. He was awarded the Rosenhain and Platinum Medals of the Institute of Materials, Minerals and Mining. He has published over 300 papers and books, given over 100 invited talks in more than 15 countries.


Prof. Harish Bhaskaran

Professor of Applied Nanomaterials in the Department of Materials, EPSRC Fellow in Manufacturing. He is an inventor of phase change photonic computing and continues work in establishing the field. His work has been featured widely over the last several years in Science, Nature, The Economist, MIT Technology Review, Fortune, Wired, BBC etc.

Dr Julian Dye

Departmental Lecturer at the Institute of Biomedical Engineering (IBME), the Director of Research in the RAFT Institute. Dr Dye established a research programme to develop a new approach to skin reconstruction, inventing an artificial skin material called 'Smart Matrix', a pro-angiogenic synthetic dermal replacement.
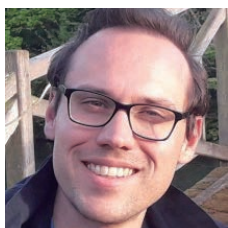
Prof. Dino Sejdinovic

Professor at the Department of Statistics, Turing Fellow of the Alan Turing Institute. He is broadly interested in statistical foundations underpinning large-scale machine learning algorithms. Professor Sejdinovic conducts research at the interface between machine learning and statistical methodology with a focus on kernel and nonparametric methods.

Prof. Martin Bureau

Lindemann Fellow and Tutor in Physics at Wadham College, University of Oxford, and Professor in Astrophysics within the Department of Physics, University of Oxford. He is particularly interested in using observations and theoretical studies of the gas, stars, and dark matter that make up galaxies to constrain their formation and evolution.

Prof. Cameron Hepburn

Professor of Environmental Economics at the University of Oxford, Director of the Economics of Sustainability Programme at the Institute for New Economic Thinking at the Oxford Martin School. He is involved in policy formation, advising various governments, the UN, the OECD and international financial institutions, and is a member of the DECC Secretary of State's Economics Advisory Group.